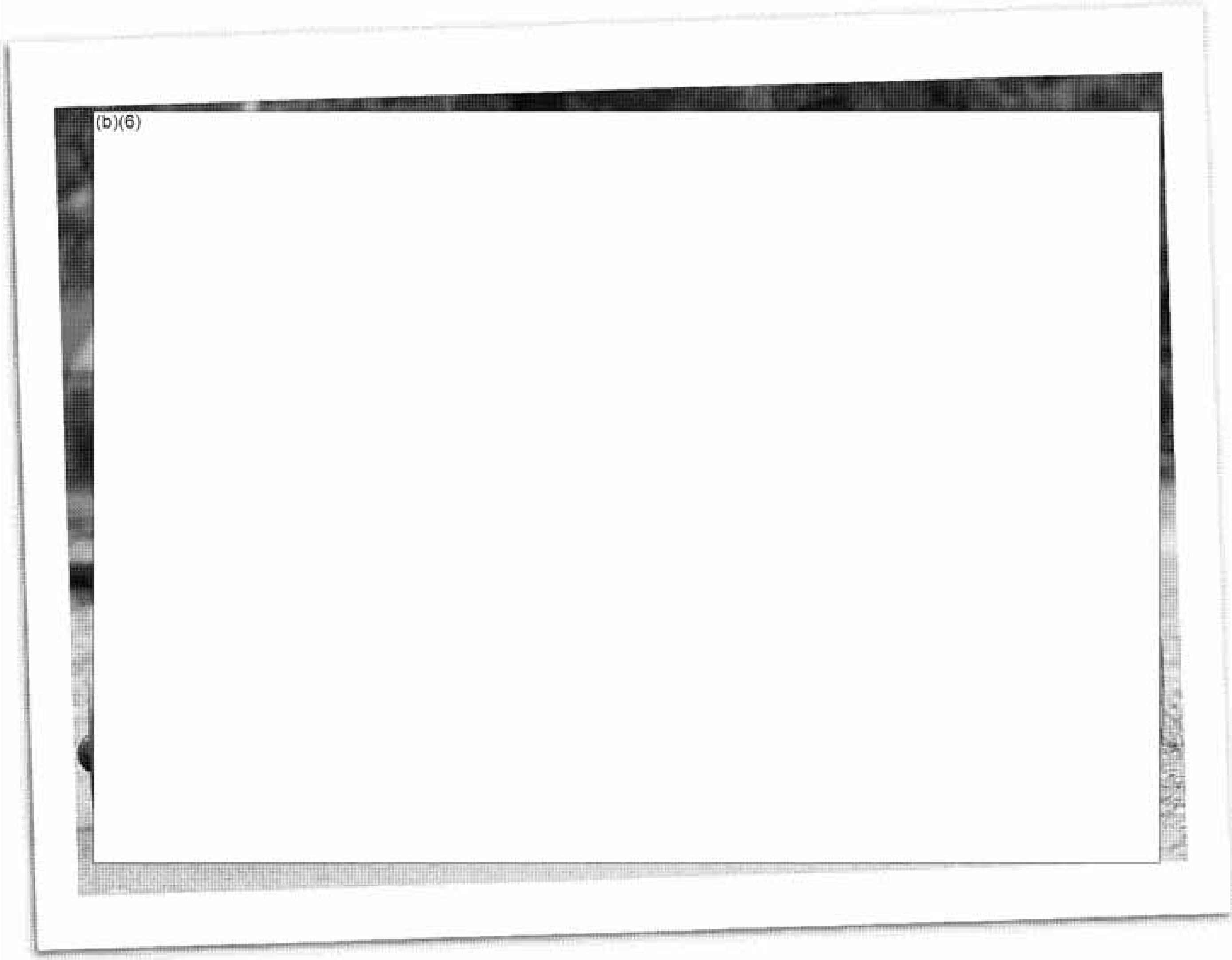
APPENDICES



Smart Course to Success: Arkansas's Race to the Top

Arkansas - Race to the Top Application

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Appendix A

(b)(6)

Smart Course to Success: Arkansas's Race to the Top

ARKANSAS DEPARTMENT OF EDUCATION

Race to the Top Participating Local Education Agency

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding ("MOU") is entered into by and between Arkansas Department of Education ("ADE") and ____________________________ ("Participating LEA"). The purpose of this agreement is to establish a framework of state collaboration. By entering into this agreement, the Participating LEA will indicate its commitment to implementing the principles and elements provided in the attached Preliminary Scope of Work. This MOU also articulates the roles and responsibilities of the ADE and the Participating LEA in the implementation of an approved Race to the Top grant program.

In order to participate, the LEA must agree to implement all applicable elements (listed in the Preliminary Scope of Work attached) of the state plan and <u>return the executed MOU on or before May 19</u>. Only those LEAs with high priority schools (see Appendix B) will be required to implement the elements under the *Low Performing School* section (E) of the MOU.

1. SCOPE OF WORK

Exhibit I, the Preliminary Scope of Work, indicates which portions of the ADE's proposed state plan the Participating LEA is agreeing to implement. (In order to participate, the LEA must agree to implement all elements of the state plan that require LEA action. Again, only those LEAs listed as high priority (attached) will be required to implement the elements under the *Low Performing School* section of the Scope of Work.)

2. PROJECT ADMINISTRATION

A. PARTICIPATING LEA RESPONSIBILITIES

To assist the ADE in implementing the tasks and activities described in the state's Race to the Top application, the Participating LEA subgrantee will:

I. Implement the elements if the LEA Scope of Work as identified in Exhibit I of this agreement;
II. Participate in the development of a final detailed MOU that will be required (within 90 days) if the Race to the Top grant is received;
III. Actively participate in all relevant convenings, communities of practice, or other practice-sharing events organized or sponsored by the ADE or by the U.S. Department of Education ("ED");
IV. Post to any website specified by the ADE or ED, in a timely manner, all non-proprietary products and lessons learned and developed using funds associated with the Race to the Top grant;
V. Participate, as requested, in any evaluations of this grant conducted by the ADE or ED;
VI. Be responsive to ADE or ED requests for information including the status of the project, project implementation, outcomes, and any problems anticipated or encountered; and
VII. Participate in meetings and telephone conferences with the ADE to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products and lessons learned, (c) plans for subsequent years of the Race to the Top grant period, and (d) other matters related to the Race to the Top grant and associated plans.

B. ADE RESPONSIBILITIES

To assist Participating LEAs in implementing tasks and activities described in the ADE's Race to the Top application, the ADE will:

I. Work collaboratively with, and support the Participating LEA in carrying out the LEA plan as identified in Exhibits I of this agreement;
II. Timely distribute the LEA's portion of Race to the Top grant funds during the course of the project period and in accordance with the LEA Plan;
III. Provide feedback on the LEA's status updates, annual reports, any interim reports, and project plans and products; and
IV. Identify sources of technical assistance for the project.

C. JOINT RESPONSIBILITIES

I. The ADE and the Participating LEA will each appoint a key contact person for the Race to the Top grant.
II. These key contacts from the ADE and the Participating LEA will maintain frequent communication to facilitate cooperation under this MOU.
III. ADE and the Participating LEA grant personnel will work together to determine appropriate timelines for project updates and status reports throughout the grant period.
IV. ADE and the Participating LEA grant personnel will negotiate in good faith to continue to achieve the overall goals of the ADE's Race to the Top grant, even when the state plan requires modifications that affect the Participating LEA, or when the LEA plan requires modifications.

D. ADE RECOURSE FOR LEA NON-PERFORMANCE

If the ADE determines the LEA is not meeting its goals, timelines, budget, or annual targets or is not fulfilling other applicable requirements, the ADE will take appropriate action, which could include a collaborative process between the ADE and the Participating LEA, or any of the measures that are detailed in 34 CFR section 80.43 including temporarily withholding funds or disallowing costs.

3. ASSURANCES

The Participating LEA hereby certifies and represents that it:

I. Has all requisite power and authority to execute this MOU.
II. Is familiar with, and is committed to, the elements of ADE's Race to the Top grant application and is supportive of the goals and plans for implementation.
III. Agrees to be a Participating LEA and will implement those elements of the ADE Plan indicated in Exhibit I, if the State application is funded. Only those LEAs listed as high priority (attached) will be required to implement the elements under the Low Performing section of the MOU.)
IV. Will provide a detailed Scope of Work in a format provided by the ADE. The final Scope of Work will describe the LEA's specific goals, activities, timelines, budgets, key personnel, and annual targets for key performance measures in a manner that is consistent with the Preliminary Scope of Work (Exhibit I) and with the State Plan. The Final Scope of Work is due no later than 90 days after the Race to the Top grant is awarded to Arkansas.
V. Will continue to fulfill all obligations set forth in Arkansas law, including, but not limited to, those obligations related to the creation and operation of personnel policy committees (A.C.A §6-17-203 and §6-17-205).
VI. Understands the signature of the local teachers' association president does not, nor should it be construed to, represent waiver by the union of its right to bargain (if applicable) regarding any element of the school district's LEA Plan in Exhibit I, if that element is a mandatory subject of collective bargaining or is contrary to any provision of the collective bargaining agreement between the local teacher association and the school district. This assurance is only applicable if the LEA and the local teachers' association have entered into collective bargaining agreement.

VII. Will comply with all of the terms of the Grant, the ADE's subgrant, and all applicable Federal and ADE laws and regulations, including laws and regulations applicable to the Program, and the applicable provisions of EDGAR (34 CFR Parts 75, 77, 79, 80, 82, 84, 85, 86, 97, 98 and 99).

4. MODIFICATIONS

This Memorandum of Understanding may be amended only by written agreement signed by each of the parties involved, and in consultation with ED.

5. DURATION/TERMINATION

This Memorandum of Understanding shall be effective, beginning with the date the grant is received and ending upon the expiration of the grant project period, or upon mutual agreement of the parties, whichever occurs first.

6. SIGNATURES

LEA Superintendent or Director - required:

____
Signature/Date

____
Print Name/Title

President of Local School Board (or equivalent):

____
Signature/Date

____
Print Name/Title

Local Teachers' Association Leader (if applicable):

____
Signature/Date

____
Print Name/Title

Authorized State Official - required:
By its signature below, the State hereby accepts the LEA as a Participating LEA.

____
Signature/Date

____
Print Name/Title

A. EXHIBIT I – PRELIMINARY SCOPE OF WORK

LEA hereby agrees to participate in implementing the state plan in each of the elements identified below. The letters and numbers below correspond to the sections in the Race to the Top application.

Elements of State Reform Plans	
B. Standards and Assessments	
(B)(3) Supporting the transition to enhanced standards and high-quality assessments • The Local Education Agency (LEA) will implement the National Common Core Standards and assessments, as adopted by the Arkansas State Board of Education. • The LEA will ensure that professional development programs at all schools focus on effective curriculum and instruction consistent with the new National Common Core Standards. • The LEA will institute interim and formative assessment models to build a systemic assessment system within the LEA. The LEA will ensure teachers and principals receive professional development on the use of these assessment models. • The LEA agrees to participate in on-going evaluation studies of the National Common Core Standards, assessments, and curriculum. • The LEA agrees to develop a plan to adopt at least one (1) STEM (Science, Technology, Engineering, Mathematics) program. The LEA will partner with industry experts, museums, higher education institutions, research centers and/or other STEM-capable community partners in this effort.	
C. Data Systems to Support Instruction	
(C)(3) Using data to improve instruction:	
(i) Use of local instructional improvement systems • The LEA will use computer-based applications and graphical interfaces that are easy for students, parents, teachers, principals and the general public to use and that shows the progress toward improved student learning, as defined by ADE. • The LEA will ensure that it implements a technology-based instructional improvement system, as defined by ADE. • The LEA will assist the ADE with testing and implementing any new or improved data and instructional improvement systems provided through the Race to the Top (RTTT) grant. • The LEA will use data to drive instruction and improvement. This data may originate from assessments or evaluations. • The LEA will provide all necessary employee information as required for the Single Sign On system.	
(ii) Professional development on use of data • The LEA will ensure that teachers and principals participate in effective professional development on the use of its instructional improvement system. • The LEA will ensure that teachers and principals participate in effective professional development on the use of state and local-level data systems developed during the term of the grant.	

• The LEA will ensure that teachers and principals participate in professional development provided or approved by the ADE in the area of drop out prevention (as related to the implementation of an ADE developed early warning system).	
(iii) Availability and accessibility of data to researchers • The LEA will provide requested data from its instructional improvement system to support ADE's efforts to make data available to researchers for the purpose of evaluating the effectiveness of instructional materials, strategies, and approaches for educating all students and to help drive educational decisions and policies.	
D. Great Teachers and Leaders	
(D)(2) Improving teacher and principal effectiveness based on performance:	
(i) Measure student growth • The LEA will use student growth data, as defined by the ADE, to inform and drive instructional practices.	
(ii) Design and implement teacher and principal evaluation system • The LEA will adopt and implement (or continue to use an approved comparable model) a teacher evaluation system developed by the Arkansas Teacher Evaluation Task Force and the Arkansas Principal Evaluation Task Force. If the LEA wants to continue to use a comparable model then the LEA will ensure that its evaluation system conforms to ADE requirements. • The LEA will utilize the student growth measure (as defined by the ADE) in the teacher and principal evaluation systems. The LEA will ensure that a teacher or principal will not be rated effective (as defined by the ADE) or highly effective (as defined by the ADE) unless the teacher or principal has achieved acceptable rates of student growth. • If the LEA does not currently have a teacher and/or principal evaluation system, then the LEA must adopt the state-developed model(s) or comparable model(s). • The LEA will submit its teacher and principal evaluation system to the ADE for review and approval (unless it is using the state-approved system) and will report its results as required by the ADE.	
(iii) Conduct annual evaluations • The LEA will implement teacher and principal evaluation systems to assess the performance of teachers and principals on an annual basis (or as prescribed by the ADE).	
(iv)(a) Use evaluations to inform professional development • The LEA will use the results from teacher and principal evaluations and its professional development system to establish an Individual Professional Development Plans for each teacher and principal that is, in part, based on an analysis of student performance data and results of prior evaluations.	
(iv)(c) LEAs will use the evaluations to inform hiring decisions. • The LEA will base decisions to award employment contracts to teacher and principals on effectiveness as demonstrated on annual evaluations.	

(iv)(d) LEAs will use evaluations to inform the removal of teachers and principals (after ample time for improvement). • The LEA will base decisions surrounding the removal of teachers and principals on their level of effectiveness demonstrated on their annual evaluation.	
(D)(5) Providing effective support to teachers and principals:	

(i) Quality professional development
 	
LEAs will ensure every teacher and principal has access to ADE's comprehensive instructional improvement system (see below). LEAs will ensure every teacher and principal has a professional development plan that provides opportunities to address weakness areas as identified by the instructional improvement system and annual evaluations.
 	
ADE will provide the LEA with this comprehensive instructional improvement system that may include the following online professional learning resources (please think of professional learning resources as tools, and not just online professional development):
 	
o access to a wide range of strategies and resources;
o best experts in literacy, mathematics, ELL instruction, science, SPED instruction and early childhood education direct to the desktop and at the fingertips of teachers and principals;
o a wide range of examples of classroom practice that help teachers see research in action;
o a custom publishing tool that allows:
  ▪ instructional coaches and leaders to add content to existing resources or make new ones;
  ▪ reorganization of content modules or mixing of resources from a variety of sources;
  ▪ access to the LEA's own cases of professional practice.
o virtual coaching to compliment face-to-face work;
o professional learning groups; and
o online message board to facilitate conversation and reflection on practice, sharing of lesson plans and student work, and more.	

(ii) Measure effectiveness of professional development • The LEA will evaluate, using a state-provided evaluation process, the effectiveness of professional development provided to its teachers and principals and provide that information to the ADE for program development purposes.	

Authorized LEA Signature/Date

Authorized State Signature/Date

Print Name/Title

Print Name/Title

<u>If an LEA has a school appearing on the attached "high priority" list (see Appendix B), the ADE requests its participation in the elements listed below. These elements, along with the LEA's application for School Improvement Grants (1003g) will provide for a systemic approach in helping the state's highest priority schools.</u>

E. Turning Around the Lowest-Achieving Schools
<u>(E)(2) Turning around the lowest-achieving (high-priority) schools</u> • If the LEA is identified by the ADE as having schools in the lowest 5% (Tier I or II) of the state (pertaining to student achievement <u>and</u> growth), the LEA will select and implement one of the four school intervention models described in the RTTT grant application (see Appendix A) and the School Improvement Grant (1003g) application. • The LEA will ensure that an intervention plan, using one of the four models listed in Appendix A, is submitted to the ADE within 90 days of grant approval. • The LEA will work collaboratively with a state-assigned school improvement director and a state specialty team to successfully implement the school intervention model selected. • The LEA (with high priority middle and high schools) will collaborate with the Arkansas Department of Career Education to ensure a Career Coach is available to its students in the high priority school. • The LEA (with high priority elementary schools) will hire a licensed math teacher to provide math instruction for all 3rd graders in the high priority school.

ONLY SUPERINTENDENTS WHO HAVE SCHOOLS ON THE ATTACHED HIGH PRIORITY LIST SHOULD SIGN IN THIS SECTION.

Authorized LEA Signature/Date **Authorized State Signature/Date**

Print Name/Title **Print Name/Title**

Arkansas's Race to the Top Application
LEA PARTICIPATION
May 28, 2010

A-1-2 Summary Table

	LEA Demographics			Signatures on MOUs			MOU Terms	Preliminary Scope of Work – Participation in each applicable Plan Criterion													
Participating LEAs	# of Schools	# of K-12 Students	# of K-12 Students in Poverty	LEA Supt. (or equivalent)	President of local school board (if applicable)	President of Local Teachers' Association (if applicable)	Uses Standard Terms & Conditions?	(B)(3)	(C)(3)(i)	(C)(3)(ii)	(C)(3) (iii)	(D)(2) (i)	(D)(2) (ii)	(D)(2) (iii)	(D)(2)(iv)(a)	(D)(2)(iv)(c)	(D)(2) (iv)(d)	(D)(5)(i)	(D)(5)(ii)	(E)(2) – (iii) 19 schools(14 LEAs)
Academics Plus	2	541	134	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Alma School District	4	3451	1205	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Alpena School District	2	576	253	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Arkadelphia School District	5	1942	813	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Arkansas Virtual Academy	2	500	253	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Armorel School District	2	445	89	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Ashdown School District	5	1546	655	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Atkins School District	3	1000	390	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Augusta School District	3	484	352	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Bald Knob School District	3	1318	664	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Barton-Lexa School District	2	766	464	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Batesville School District	6	2875	1087	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bauxite School District	2	1432	349	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bay School District	2	530	209	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bearden School District	2	578	353	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Beebe School District	7	3215	1039	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Benton County Charter School of the Arts	2	701	24	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Benton School District	7	4587	1230	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bentonville School District	15	13060	2305	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Bergman School District	3	1088	354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Berryville School District	4	1868	784	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Bismarck School District	3	983	427	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Blevins School District	4	631	393	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Blytheville School District	7	3022	2198	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Booneville School District	3	1415	650	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bradford School District	2	487	249	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Bradley School District	2	411	239	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Brinkley School District	2	695	503	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Bryant School District	10	7669	1695	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Buffalo Island Central School District	4	805	432	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Cabot School District	14	9877	2146	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Caddo Hills School District	2	551	300	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Calico Rock School District	2	409	177	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Camden Fairview School District	5	2455	1548	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Carlisle School District	2	718	252	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cave City School District	5	1347	704	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Cedar Ridge School District	3	819	328	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Cedarville School District	3	936	554	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Centerpoint School District	3	1045	532	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Charleston School District	2	866	240	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Clarendon School District	2	541	412	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	

Arkansas's Race to the Top Application

LEA PARTICIPATION

May 28, 2010

Clarksville School District	5	2548	1232	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cleveland County School District	3	898	396	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Clinton School District	4	1321	608	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Concord School District	2	448	200	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Conway School District	15	9083	2968	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Corning School District	3	1064	569	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Covenant Keepers Charter	2	194	189	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Cotter School District	2	669	338	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cross County School District	2	596	353	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Crossett School District	3	1909	921	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cutter Morning Star School District	2	687	316	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Danville School District	3	900	580	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Dardanelle School District	4	1952	981	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Decatur School District	3	490	312	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Deer/Mount Judea School District	4	374	212	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
DeQueen School District	7	2516	1583	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Dermott School District	2	441	428	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Des Arc School District	2	607	273	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
DeWitt School District	4	1360	673	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Dierks School District	2	515	210	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Dollarway School District	5	1607	1458	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dover School District	3	1353	514	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Drew Central School District	3	984	613	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Dumas School District	4	1508	1097	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Earle School District	3	763	722	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
East End School District	2	629	261	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
East Poinsett County School District	3	742	419	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
eSTEM Elementary	1	359	129	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
eSTEM Middle	1	390	113	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
eSTEM High	1	182	57	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
El Dorado School District	8	4625	2507	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Elkins School District	4	1179	301	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
EmersonTaylor School District	4	628	234	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
England School District	2	774	467	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Eureka Springs School District	3	660	282	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Farmington School District	5	2150	543	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Fayetteville School District	14	8566	2512	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Flippin School District	3	849	407	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Fordyce School District	3	987	517	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Foreman School District	2	558	242	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Forrest City School District	5	3270	240	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Fort Smith School District	26	13792	7683	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fouke School District	3	1031	417	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Fountain Lake School District	2	1231	428	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Genoa Central School District	3	924	298	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Gentry School District	4	1440	668	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Glen Rose School District	3	990	382	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gosnell School District	2	1416	708	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gravette School District	4	1762	596	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Green Forest School District	3	1231	703	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Greenbrier School District	6	3064	783	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Greene County Tech School District	5	3349	1170	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Greenland School District	3	815	299	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Greenwood School District	5	3550	641	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Gurdon School District	3	768	440	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

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Guy-Perkins School District	2	466	185	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hackett School District	2	639	222	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hamburg School District	6	1954	1316	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hampton School District	2	606	283	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Harmony Grove School District-Benton	4	1027	317	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Harmony Grove School District-Camden	3	1050	389	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Harrisburg School District/Weiner School District	7	2646	1628	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Harrison School District	7	2775	1028	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hartford School District	2	365	191	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hazen School District	2	647	339	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Heber Springs School District	3	1707	686	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hector School District	2	628	396	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Helena-West Helena School District	6	2308	2218	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hermitage School District	2	463	327	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Highland School District	3	1567	780	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hillcrest School District	2	435	210	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hope School District	5	2541	1786	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Horatio School District	2	825	420	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hot Springs School District	8	3611	2471	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Hoxie School District	3	1005	561	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Hughes School District	2	419	365	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Huntsville School District	6	2339	1164	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Imboden Area Charter	1	69	52	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Izard County Consolidated School District	3	513	291	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Jackson County School District	3	804	416	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Jacksonville Lighthouse Academy	1	348	173	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Jasper School District	6	897	441	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Jessieville School District	3	930	390	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Jonesboro School District	9	5222	3090	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Junction City School District	2	550	236	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
KIPP Blytheville	1	75	56	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
KIPP Delta	3	533	461	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Kirby School District	2	435	212	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lafayette County School District	2	801	549	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Lake Hamilton School District	6	3975	1412	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Lakeside School District Hot Springs	5	1192	768	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lakeside School District Lake Village	5	3038	952	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lamar School District	3	1089	512	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lavaca School District	3	838	249	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Lawrence County School District	4	1049	502	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lead Hill School District	2	370	201	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Lee County School District	3	1116	981	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Lincoln Consolidated School District	4	1326	623	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
LISA Academy LR	2	465	113	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
LISA Academy NLR	3	380	100	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Little Rock Preparatory	1	65	55	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Little Rock School District	44	24380	14029	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Little Rock Urban Collegiate Charter	1	696	599	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Lonoke School District	4	1872	787	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Magazine School District	2	544	304	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Magnet Cove School District	2	696	251	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Magnolia School District	4	2876	1649	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Malvern School District	4	2135	1125	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mammoth Spring School District	2	396	208	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Manila School District	3	1023	524	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	

*Marion School District/Turrell School District**	10	4582	2532	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Marked Tree School District	2	600	398	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Marmaduke School District	2	731	315	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Marvell School District	2	545	596	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mayflower School District	3	1021	353	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Maynard School District	2	465	289	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
McCrory School District	2	656	309	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
McGehee School District	2	1173	726	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mena School District	5	1942	795	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Midland School District	2	512	246	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mineral Springs School District	4	504	353	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Monticello School District	4	2076	978	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mount Ida School District	2	534	262	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mount Vernon-Enola School District	2	506	274	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mountain Home School District	6	4010	1541	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mountain Pine School District	2	612	363	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Mountainburg School District	3	676	367	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Mulberry/Pleasant View BiCounty School District	4	399	249	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
*Murfreesboro School District/Delight School District**	4	827	343	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Nashville School District	4	1898	979	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Nemo Vista School District	3	498	212	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Nettleton School District	7	3142	1444	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Nevada School District	2	399	274	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Newport Special School District	4	1422	1048	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Norfork School District	2	465	245	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Norphlet School District	2	427	180	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
North Little Rock School District	20	9119	5192	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Omaha School District	2	429	235	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Osceola Communication, Arts, and Business School	1	115	54	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Osceola School District	6	1492	1095	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ouachita River School District	4	680	404	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Ouachita School District	2	471	159	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Ozark Mountain School District	6	688	389	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Ozark School District	5	1863	729	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Palestine-Wheatley School District	3	648	445	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pangburn School District	2	739	310	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Paragould School District	6	2853	1372	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Paris School District	3	1114	487	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Parkers Chapel School District	2	721	132	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Pea Ridge School District	4	1598	460	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Perryville School District	2	1061	376	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Piggott School District	2	993	387	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Pine Bluff School District	10	4821	3358	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pocahontas School District	4	1836	793	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Pottsville School District	4	1618	483	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Poyen School District	2	543	240	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Prairie Grove School District	4	1713	499	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Prescott School District	3	991	621	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Pulaski County Special School District	36	17126	7948	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Quitman School District	2	612	234	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Rector School District	2	601	258	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Riverview School District	4	1303	666	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Rogers School District	20	13774	6127	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Rose Bud School District	2	821	308	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Russellville School District	10	5144	2225	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	

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Salem School District	2	749	369	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Scranton School District	2	408	130	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Searcy County School District	3	925	506	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Searcy School District	6	3973	1230	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Sheridan School District	6	4116	1157	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Shirley School District	2	476	291	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Siloam Springs School District	5	3861	1402	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Sloan-Hendrix School District	3	502	269	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Smackover School District	2	898	316	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
South Conway County School District	5	2300	1113	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
South Mississippi County School District	5	1272	787	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
South Side Bee Branch School District	2	533	201	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Southside School District	3	1518	606	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Spring Hill School District	2	472	151	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Springdale School District	25	18188	8282	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Star City School District	3	1686	862	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Stephens School District	2	349	282	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Strong-Huttig School District		472	364	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Stuttgart School District	4	1855	971	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Texarkana School District	8	4377	2481	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Trumann School District	4	327	231	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Two Rivers School District	4	909	613	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Valley Springs School District	3	964	292	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Van Buren School District	11	5843	2288	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
*Van Cove School District/Wickes School District**	5	1147	593	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Vilonia School District	7	2976	695	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Viola School District	2	410	158	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Waldron School District	3	1651	870	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Warren School District	2	323	153	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
West Fork School District	3	1255	423	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
West Memphis School District	12	5923	4180	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
West Side School District/Cleburne County	2	519	158	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Western Yell County School District	2	498	287	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Westside Consolidated School District	3	1613	664	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Westside School District/Johnson County	2	618	383	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
White County Central School District	2	705	258	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
White Hall School District	7	2975	820	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wonderview School District	2	416	140	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Woodlawn School District	2	553	137	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Wynne School District	4	2855	1382	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Yellville-Summit School District	3	837	413	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	
Totals	**1,047**	**453,960**	**207,336**	**247**	**247**	**104**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**247**	**13**

* These districts are going through a consolidation or annexation process. Staffing and enrollemnt of these schools are not finalized. For the purpose of

Arkansas Performance Goals and Measures

	Core Goal Description	Indicators	Measures						
			2007-08 Baseline	09-10 Goal	11-12 Goal	13-14 Goal	15-16 Goal	17-18 Goal	19-20 Goal
High School	Core Goal #1 Increase the High School Graduation Rate	Arkansas 4-Year Cohort Graduation Rate (NGA Compact Rate)	69.4%	74%	78%	83%	87%	92%	95%
High School	Core Goal #2 Increase Postsecondary and Career Readiness	% of Students Graduating with Smart Core	58%	62%	66%	70%	75%	80%	85%
		% of Students Graduating with Smart Core Plus (Successful Completion of an AP, IB, or Concurrent Credit Course, Receiving a Career Readiness Certificate)	49%	53%	58%	62%	67%	73%	80%
		% of Students Not Requiring College Remediation	48.7%	53%	56%	60%	64%	69%	70%
Postsecondary	Core Goal #3 Increase Participation in Postsecondary Education	% of Public High School Graduates Enrolling in an Arkansas Post-Secondary Institution within One Year	54.4%	58%	63%	67%	70%	73%	75%
		% of Public High School Graduates Enrolling in an Arkansas Postsecondary Institution within Four Years	64.5%	66%	70%	74%	79%	84%	87%
		Number of Adults Age 25 and Above Enrolling in an Arkansas Postsecondary Institution	5,144	5,600	6,100	6,600	7,000	7,200	7,500
Postsecondary	Core Goal #4 Increase Postsecondary Completion	% of Public School Graduates Receiving a 2-year degree from an Arkansas Postsecondary Institution within Three Years of Graduating	3.2%	5%	7%	11%	14%	17%	20%
		% Public School Graduates Receiving a 4-year Degree from an Arkansas Postsecondary Institution within Six Years of Graduating	16.7%	19%	21%	24%	27%	29%	33%
		Number of Adults Age 25 and Above Receiving a two or four-year degree from an Arkansas Postsecondary Institution	4,851	5,050	5,250	5,620	5,960	6,260	6,700

`ARKANSAS'S RACE TO THE TOP APPLICATION BUDGET

(Evidence for selection criterion (A)(2)(i)(d))

Budget Part I: Budget Summary Table

(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1	Project Year 2	Project Year 3	Project Year 4	Total
1. Personnel	$ 3,354,744.00	$ 6,712,738.00	$ 6,737,966.00	$ 5,399,992.00	$ 22,205,440.00
2. Fringe Benefits	$ 897,736.00	$ 905,359.00	$ 913,158.00	$ 5,206,395.00	$ 7,922,648.00
3. Travel	$ 996,080.00	$ 1,153,627.00	$ 455,627.00	$ 367,626.00	$ 2,972,960.00
4. Equipment	$ 1,004,600.00	$ 480,000.00	$ 220,000.00	$ 5,000.00	$ 1,709,600.00
5. Supplies	$ 214,687.00	$ 214,487.00	$ 98,463.00	$ 83,363.00	$ 611,000.00
6. Contractual	$ 12,364,937.00	$ 9,235,437.00	$ 9,576,270.00	$ 6,151,936.00	$ 37,328,580.00
7. Training Stipends	$ 3,189,736.00	$ 3,189,736.00	$ 3,189,736.00	$ 3,189,737.00	$ 12,758,945.00
8. Other	$ 3,601,000.00	$ 3,601,000.00	$ 3,601,000.00	$ 3,501,000.00	$ 14,304,000.00
9. Total Direct Costs	$ 25,623,520.00	$ 25,492,384.00	$ 24,792,220.00	$ 23,905,049.00	$ 99,813,173.00
10. Indirect Costs*	$ 532,793.00	$ 494,935.00	$ 402,486.00	$ 108,846.00	$ 1,539,060.00
11.Funding for Involved LEAs	$ -	$ -	$ -	$ -	$ -
12. Supplemental Funding for Participating LEAs	$ 18,392,292.00	$ 18,392,291.00	$ 18,392,291.00	$ 18,392,291.00	$ 73,569,165.00
13. Total Costs (lines 9-12)	$ 44,548,605.00	$ 44,379,610.00	$ 43,586,997.00	$ 42,406,186.00	$ 174,921,398.00
14. Funding Subgranted to Participating LEAs (50% of Total Grant)	LEA's will receive $88,077,193 in RTTT funds (50.3%)				
15. Total Budget	$ 44,548,605.00	$ 44,379,610.00	$ 43,586,997.00	$ 42,406,186.00	$ 174,921,398.00

Budget Part I: Budget Summary Narrative

In order to bring about comprehensive reform, Arkansas proposes 22 distinct projects in our Race to the Top (RTTT) proposal. Each of these projects represents a significant investment in capacity development and education service delivery that will benefit both current and future students. The table on the previous page provides an overview of funding requirements for each of the 22 projects. Detailed budgets for each project and explanations of their component costs are provided in the project level budgets found in the remainder of this appendix.

Arkansas is a rural state with 259 local education agencies (LEAs). The average size LEA student population is 1770 and more than one third of our school districts have fewer than 630 students. Capacity has long been a challenge in Arkansas and synergies from economies of scale non-existent. Consequently, in addition to the 22 distinct projects in this application to be funded, there are additional key financial considerations in our budget that mitigate this rural capacity challenge and capture it into a strength for disseminating our transformation plan throughout our state, including the smallest and poorest regions where the need is arguably the greatest.

A minimum funding floor of $21,875 per LEA was created as the Title I allocation for 33% of our LEAs would fall below this threshold. We believe this minimum funding floor will ensure that no mandate is unfunded and that every LEA can participate to the full extent of RTTT that the MOU envisions. The breakdown of the subgrant can be found on the table in *Budget Part I: LEA Subgrant Allocations.*

Our budget also reflects the support we need to reach the goals that embody our aim to meet the four education goals set out in the Race to the Top:

<u>College and Career Readiness – Standards and Assessments</u>

- Effect a smooth transition to the new national Common Core Standards and common assessments, including a well correlated system of formative, interim, and summative assessments.
- Develop quality curriculum tools to assist teachers in effective instruction in the classroom.
- Furnish incentives to encourage schools to help students complete our rigorous Smart Core course of study that prepares them for college and careers.

Leveraging funds to further support Race to the Top education reform plans:

Arkansas, in collaboration with its partners, the Council of Chief State School Officers, the National Center for Research on Evaluation, Standards and Testing, and WestEd, has agreed to serve as the lead state on a consortium applying for an Enhancing Assessment Grant through the USDOE. This grant will focus on developing a formative assessment system for all students that will help teachers, principals, and parents build the best education plan for their students. The proposal will specifically focus on developing formative assessments in

English language arts and math and will go above and beyond what we are currently requesting in RTTT. The assessments will be culturally, linguistically, and developmentally appropriate for students with disabilities and for English language learners in all content areas. The goals of the grant include:

- Increasing teachers' capacity to use formative assessments to improve student achievement.
- Increasing teachers' understanding of academic language development and to use formative assessment to meet the academic language learning needs of English language learners and students with disabilities, primarily in the context of general education classrooms.
- Researching the effects of the proposed intervention on teachers' content knowledge and use of assessment.

Data Quality

- Strengthen our instructional improvement system so its continuum of students' performance data are readily available for educators to use in planning daily instruction and also in identifying their own professional development needs.
- Continue to enhance our statewide longitudinal data system to communicate smoothly across time and agencies for a cohesive approach to tracking students' records and performance data through Pre-20 and on into the workforce.
- Ensure our education system is characterized by a meaningful growth model defined by students' achievements based on multiple measures.

Leveraging funds to further support Race to the Top education reform plans:

ADE has been awarded a $9.8 million Statewide Longitudinal Data Systems grant to support the ongoing development and implementation of our data systems. This grant will allow us to examine student progress from early childhood into career, including matching teachers to students, while protecting student privacy and confidentiality consistent with applicable privacy protection laws.

Plans include creating a robust growth model designed to provide educators to have a more distinct picture of the educational improvement students are making as well as "dashboards" and other easy-to-understand representations of student and school performance to inform educators and the public.

Arkansas has already created a quality longitudinal data system that has been recognized as one of the best in the nation by the Data Quality Campaign. This funding, along with an approved RTTT grant, will allow us to take our infrastructure and professional development to the next level so data is able to be easily used by teachers, administrators and policy-makers to reach informed decisions that will improve the quality of education for students in Arkansas.

Teacher and Leaders Effectiveness

- Prioritize science, technology, engineering, and mathematics in teacher preparation and in the curriculum and instruction teachers deliver to students.
- Promote educators' effectiveness with a fair evaluation process clearly connected to evidence-based performance objectives and adequately supported with ongoing professional development and specialized assistance when needed.
- Study various options for comprehensive differentiated compensation plans that can be tested in our schools.
- Concentrate on ways to ensure highly competent teachers comprise the faculties of all schools, including those in hard-to-staff locations as well as high-need subject areas.
- Use new tools to measure how well our colleges of education prepare teachers so we can cooperatively improve teacher training and expand alternative routes to licensure.
- Recruit and retain effective teachers using creative strategies, incentives, and rewards that can be extended into the next generation of educators.

Leveraging funds to further support Race to the Top education reform plans:

Arkansas has been a leader in the country for state policies concerning equitable distribution of teachers and leaders. Our state dollars have flowed in support of this focus. Along with the various projects listed in our RTTT application to ensure we have an effective teacher in every classroom and a quality principal in every school, we are also considering other grant opportunities with this focus, such as the Teacher Incentive Fund released recently.

Intensive Supports and Effective Interventions

- Restructure ADE's organization and support network for troubled school districts so we can more readily detect early signs of distress and assist quickly and decisively.
- Equip persistently low-achieving elementary schools with math specialists to prepare students for higher-level math, and place college and career coaches in all chronically low-achieving secondary schools to advise and encourage students toward their progression into higher education and the workforce.
- Intensify our focus on persistently low-performing schools by mobilizing a turnaround network that stretches from ADE to local expertise and other resources for enduring systemic revitalization.

Leveraging funds to further support Race to the Top education reform plans:

Race to the Top funds, coupled with over $40 million in School Improvement Grants, will allow the state to accelerate our Smart Accountability timeline *(see Section E)* with a cohesive push for improvement in concert with the entire staff of persistently low performing schools *and* powerful resources described in *Section E* of the application. SIG funds will be targeted toward building instructional capacity within the school building itself, focusing on research-based strategies, need-specific professional development, and alignment across subject matter, grades, school service sectors, and accountability measures. At the same time, Race to the Top resources will be aimed at strengthening the complementary infrastructure, leadership, and support capacity of school districts, regional cooperatives, and state agencies.

Overall Support for Effective Implementation

- Continuously improve our education system with the impetus and support of best practices identified and disseminated by our new Office of Innovation.
- Remain fully accountable for all Race to the Top grant funds and their appropriate expenditure for each plan component by contracting with a project management office.
- Institutionalize our Race to the Top reforms as our everyday procedural norms and values, so sustaining them will be an organizational priority we share well into the future.

Budget Part II: Project-Level Budget Table

Project Name: *OFFICE OF INNOVATION* Associated with Criteria: *A2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$120,000	$120,000	$120,000	$120,000	**$480,000**
2. Fringe Benefits	$30,000	$30,000	$30,000	$30,000	**$120,000**
3. Travel	$3,720	$3,720	$3,720	$3,720	**$14,880**
4. Equipment	$10,000				**$10,,000**
5. Supplies	$2,000	$2,000	$2,000	$2,000	**$8,000**
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$165,720	$155,720	$155,720	$155,720	**$632,880**
10. Indirect Costs*	$16,500	$15,570	$15,570	$15,570	**$63,210**
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$182,220**	**$171,290**	**$171,290**	**$171,290**	**$696,090**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

OFFICE OF INNOVATION (A2)

Personnel

Personnel: The following requested personnel will all be hired as employees of the project.	% FTE	Base Salary	4-Year Total
Office of Innovation Director (1): To work with LEAs in developing projects to pioneer innovative, non-traditional education models. Responsibilities of this role include providing research support, technical assistance and communication to LEAs on best practices and implementation strategies of those strategies, partnering with Institutions of Higher Education, Education Service Cooperatives, and expert organizations for ongoing human capacity and technical support. This role will be sustained after Race to the Top through restructuring of ADE's budget and staff assignments.	100%	$80,000	320,000
Assistant to the Office of Innovation Director (1)	100%	$40,000	$160,000

Fringe Benefits

Fringe benefits will be calculated at 25%:	%	Base Salary	Total	4-year Total
Fridge benefits for the Office of Innovation staff	25%	$120,0000	$30,000	$120,000

Indirect Costs

Indirect Costs:	%	Personnel Costs	Total	4-Year Total
Indirect costs associated with the Office of Innovation	10%	$600,000	$60,000	$240,000

Travel

Travel: Travel expenses include the average mile reimbursements of $.042	# trips	$ per trip	Total
Project meetings and regional meetings. 250 miles round trip for regional/project meetings @ $.042, hotel costs $150.00 per night, and $55.00 meals = $310.00	Approx 12 per year Funds may also be combined for out-of-state conferences	$310.00 per trip	$3,720 per year **14,880**

Equipment

Equipment:	Cost of item	Item Description	Total
Laptop computer, printer, Blackberry (2 staff)	$10,000	Laptop computer, printer, Blackberry	**$10,000**

Supplies

Supplies:	Cost of item	Item Description	Total
Office supplies and meeting materials	Estimating $2000 per year	Professional texts, flip charts, markers, notebooks, handouts and other office materials	$2,000 **$8,000**

Budget Part II: Project-Level Budget Table

Project Name: *RTTT PROJECT MANAGEMENT OFFICE* Associated with Criteria: *A2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$437,500	$437,500	$437,500	$437,500	**1,750,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$437,500	$437,500	$437,500	$437,500	**1,750,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$437,500**	**$437,500**	**$437,500**	**$437,500**	**$1,750,000**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

RTTT PROJECT MANAGEMENT OFFICE (A2)

Contractual

Contractual:	**% of Total Budget**	**Total**
Office of the Project Management Office (PMO) & Fiscal Management Team: An RFP will be released to secure professional services to manage all aspects of the Race to the Top grant. These responsibilities include, but are not limited to: 1. assisting in the vetting and validation of LEA Scopes of Work detailed in their MOUs; 2. monitoring and managing the implementation of Race to the Top funds consistent with the LEA Scopes of Work and other objectives in the state's plan; 3. monitoring and managing implementation of Race to the Top funds at the SEA level and providing independent, objective feedback on how the SEA can increase capacity for investments based on LEA feedback; 4. developing, cross-training, and eventually transferring the PMO capacity from the provider to an internal team of ADE staff, including the tools, processes, data tracking systems and protocols necessary to continue monitoring and managing the reform processes with internal funds after the Race to the Top grant period concludes. Arkansas will prepare a PMO Vendor RFP ready to be issued within 48 hours of a Race to the Top grand award. This will allow the State to aggressively commence ensuring strong, rigorous and comprehensive scopes of work are finalized at the LEA level, the data systems are ready to collect and report Race to the Top related data, and the learning curve to fund deployment is steep and fast, changing this lack of expertise challenge to a world-class strength over the course of four years.	1%	$1,750,000

Budget Part II: Project-Level Budget Table

Project Name: *LEA MINIMUM FUNDING FLOOR* Associated with Criteria: *A2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$914,792	$914,791	$914,791	$914,791	**$3,659,165**
13. Total Costs (lines 9-12)	$914,792	$914,791	$914,791	$914,791	**$3,659,165**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

LEA MINIMUM FUNDING FLOOR (A2)

Supplemental Funding for Participating LEAs

Activity	Approx. # of LEAs	Total
Minimum Funding Floor: All participating LEAs will receive a minimum "floor of funds" to ensure that all RTTT obligations are met.	82 LEAs	$3,659,165

Budget Part II: Project-Level Budget Table

Project Name: *TOTAL INSTRUCTIONAL ALIGNMENT* Associated with Criteria: *B3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$214,000	$214,000	$214,000	$214,000	**$856,000**
2. Fringe Benefits	$53,500	$53,500	$53,500	$53,500	**$214,000**
3. Travel	$45,000	$45,000	$45,000	$45,000	**$180,000**
4. Equipment	$15,000	$10,000	$10,000	$5,000	**$40,000**
5. Supplies	$100,000	$100,000	$25,000	$25,000	**$250,000**
6. Contractual	$1,456,667	$1,456,667	$1,000,000	$696,666	**$4,610,000**
7. Training Stipends					
8. Other	$250,000	$250,000	$250,000	$250,000	**$1,000,000**
9. Total Direct Costs (lines 1-8)	$2,134,167	$2,129,167	$1,597,500	$1,289,166	**$7,150,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$2,002,500**	**$1,760,525**	**$1,693,791**	**$1,702,304**	**$7,159,120**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

TOTAL INSTRUCTIONAL ALIGNMENT (B3)

Personnel

Personnel: The following requested personnel will be hired as employees of the project.	% FTE	Base Salary	Total
ADE Program Coordinator (1): This person be responsible for the development and implementation of all activities in supporting the transition to the Common Core Standards and assessments	100%	$90,000	$360,000
Staff (2)	100%	$62,000	$496,000

Fringe Benefits

Fringe Benefits will be calculated at 25%.	%	Personnel Cost	Total
Fringe benefits for the ADE Program Coordinator and transition staff.	25%	$856,000	$214,000

Travel

Travel:	Yearly Budget	Total
Travel, lodging, and meals for the ADE Program Coordinator and transition staff	$45,000	$180,000

Equipment

Technology costs	Yearly Budget	Total
Computers and Blackberries	$10,000	$40,000

Supplies

Supplies:	Yearly Budget	Total
Supplies for Summer Institutes	Year 1 & 2 $100,000 Year 3 & 4 $25,000	$250,000

Contractual

Contractual:	Total
Contract with Margaret Heritage: Lead the statewide professional development and capacity building efforts in formative assessment through institutes and virtual communication. Costs include Margaret Heritage's travel and expenses as well as the development for online professional development programs.	$370,000
Release RFP(s) for the development of professional training modules and all associated materials including technology based tools. Training modules will include, but no be limited to, Common Core Standards, frameworks, curriculum materials and assessment concepts and skill, etc. Modules shall be developed as a trainer of training package for supervisors of professional learning including superintendents, central office staff, and cooperatives; supervisors at the school site who will support collaborative professional learning teams including principals and assistant principals; teacher leaders and school administrators who will facilitate team learning at their schools or in there districts; and, teachers who will participate in collaborative professional learning teams.	$4,000,000

Other

Activity	Yearly Budget	Total
Summer Institutes: Professional development for education cooperative, ADE, and school teams, along with representatives from higher education to focus on formative assessment as an integration of a process of assessment use, including the provision of feedback to learners and of a purposefully designed methodology to gather evidence. LEAs will use their RTTT funds to send school teams to the summer institutes.	$250,000	1,000,000

Budget Part II: Project-Level Budget Table

Project Name: *SMART CORE INCENTIVES*
Associated with Criteria: *B3*
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other	$3,000,000	$3,000,000	$3,000,000	$3,000,000	**$12,000,000**
9. Total Direct Costs (lines 1-8)	$3,000,000	$3,000,000	$3,000,000	$3,000,000	**$12,000,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$3,000,000**	**$3,000,000**	**$3,000,000**	**$3,000,000**	**$12,000,000**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

SMART CORE INCENTIVES (B3)

Other

Activity	Yearly Budget	Total
Research shows that the skills and knowledge gained through Arkansas's more rigorous Smart Core curriculum are the same as those required for high school graduates to succeed in their first year of college or in jobs that promise a well-paying career track. Our high school graduates are expected to number between 25,000 and 30,000 over the next few years. We have budgeted an annual appropriation of $3 million to underpin an incentive program encouraging districts to encourage their students to enroll in and graduate with completion of the Smart Core curriculum. School districts must devote the incentive to fit individual circumstances and needs. For example, the money can underwrite tutoring or after-school and summer programs, support hiring elementary math and science specialists, or fund professional development for math, science, foreign language, and AP instruction.	$3,000,000	$12,000,000

Budget Part II: Project-Level Budget Table

Project Name: *UNIFIED RESOURCE PORTAL* Associated with Criteria: *C3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$790,000	$809,750	$829,994		**$2,429,744**
2. Fringe Benefits	$252,800	$259,120	$265,598		**$777,518**
3. Travel	$120,000	$100,000	$88,000		**$308,000**
4. Equipment	$789,000	$320,000	$210,000		**$1,319,000**
5. Supplies	$15,000	$15,000	$15,000		**$45,000**
6. Contractual	$1,350,000	$1,350,000	$1,350,000		**$4,050,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$3,316,800	$2,853,870	$2,758,592		**$8,929,262**
10. Indirect Costs*	$331,680	$285,387	$275,859		**$892,926**
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$3,648,480**	**$3,139,257**	**$3,034,451**		**$9,822,188**

Budget Part II: Project-Level Budget Narrative

UNIFIED RESOURCE PORTAL (C3)

Personnel

Personnel: The following requested personnel will all be hired as employees of the project.	% FTE	Base Salary	Total
SSO Project Manager: This individual will be responsible for the overall leadership and management of the Single Sign-On System. Individual will be an expert in the area of software development.	100%	$75,000	$230,672
IT Specialist—Electronic Transcript System: This individual will be responsible for integrating the Single Sign-On System with ADE's existing Electronic Transcript System transcript system. Individual will be proficient in the field of software development and will report to the SSO Project Manager.	100%	$65,000	$199,916
IT Specialist—Longitudinal Data System: This individual will be responsible for integrating the Single Sign-On System with ADE's implementation of Longitudinal Data System BI. Individual will be proficient in the field of software development and will have experience using Longitudinal Data System. Individual will report to the SSO Project Manager.	100%	$65,000	$199,916
IT Specialist—APSCN: This individual will be responsible for integrating the Single Sign-On System with ADE's existing APSCN system. Individual will be proficient in the field of software development and will report to the SSO Project Manager.	100%	$65,000	$199,916
IT Specialist—Data Visualization: This individual will be responsible for integrating the Single Sign-On System with ADE's existing Data Visualization website. Individual will be proficient in the field of web/software development and will report to the SSO Project Manager.	100%	$65,000	$199,916
IT Specialist--Professional Development Portal: This individual will be responsible for integrating the Single Sign-On System with ADE's Professional Development Portal. Individual will be proficient in the software development and will report to the SSO Project Manager.	100%	$65,000	$199,916
IT Specialist--Ad Hoc Systems (2): These individuals will be responsible for integrating the Single Sign-On System with ADE's various ad hoc systems. Individuals will be proficient in the field of software development and will report to the SSO Project Manager.	200%	$130,000	$399,831
IT Specialist--Programming (3): These individuals will be responsible for the development of the Single Sign-On System. Individual will be experienced in the field of software development and will report to the SSO Project Manager.	300%	$180,000	$553,613
Administrative Assistant (2): These individuals will be responsible for assisting the Single Sign-On development staff. Individual will report to the SSO Project Manager.	200%	$80,000	$246,050

Fringe Benefits

Fringe Benefits	%	Personnel Costs	Total
Fringe benefits	32%	$2,429,744	$777,518

Travel

Travel:	Total
Travel To Conferences (Vendor, User Group, etc.)	$ 75,000
Professional Development/Training (Certifications, Developer Training, etc.)	$115,000
Educational Cooperative Training (Training to user-base)	$118,000

Equipment

Equipment:	Total
Single Sign On Servers & Equipment: Acquisition of enterprise-grade servers, network architecture and software necessary to support single sign on infrastructure. Includes iSCSI network storage, virtualization software, operating system licenses and necessary hardware.	$1,250,000
Staff Equipment: Staff computers, network equipment and necessary IT purchases to support thirteen staff members in single sign on office.	$69,000

Supplies

Equipment:	Yearly Budget	Total
Office Supplies: General office supplies necessary for day-to-day and administrative operation of single sign on office.	$15,000	$45,000

Contractual

Contractual:	Yearly Budget	Total
Electronic Transcript System: Development of directory and authentication module to connect electronic transcript system to single sign on architecture.	$150,000	$450,000
Professional Development Portal: Development of directory and authentication module to connect professional development portal to single sign on architecture.	$150,000	$450,000
Longitudinal Data System/Business Intelligence: Development of directory and authentication module to connect longitudinal data system and business intelligence system to single sign on architecture.	$300,000	$900,000
APSCN Student & Financial Management Systems: Development of directory and authentication module to APSCN SMS & FMS to single sign on architecture.	$300,000	$900,000
Project Management: Third-party project management consultant to ensure successful completion of single sign on system project.	$250,000	$750,000
Other: Contractual expenses associated with developing single sign on modules for third party and ad hoc systems.	$200,000	$600,000

Budget Part II: Project-Level Budget Table

Project Name: *INSTRUCTIONAL IMPROVEMENT SYSTEM, LEADERSHIP SUPPORT SPECIALISTS & TECHNICAL SUPPORT TEAMS* Associated with Criteria: *C3 and D5* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$1,200,000	$1,200,000	$1,200,000	$1,200,000	**$4,800,000**
2. Fringe Benefits	$300,000	$300,000	$300,000	$300,000	**$1,200,000**
3. Travel	$90,240	$90,240	$90,240	$90,240	**$360,960**
4. Equipment	$28,000	----	----	-----	**$28,000**
5. Supplies	$16,000	$16,000	$16,000	$16,000	**$64,000**
6. Contractual	$5,000,000	$4,000,000	$4,000,000	$4,000,000	**$17,000,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$6,634,240	$5,606,240	$5,606,240	$5,606,240	**$23,452,960**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$6,634,240**	**$5,606,240**	**$5,606,240**	**$5,606,240**	**$23,452,960**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

**INSTRUCTIONAL IMPROVEMENT SYSTEM,
LEADERSHIP SUPPORT SPECIALISTS & TECHNICAL SUPPORT EXPERTS
(C3 AND D5)**

Personnel

Personnel: The following requested personnel will be hired as employees of the project.	**% FTE**	**Base Salary**	**Total**
Leadership Support Specialists (8) – The Leadership Support Specialists will work with the schools to provide on-site professional development and support in the knowledge and skills needed to effectively utilize an Instructional Improvement System (IIS). These specialists will model data-driven decision making on-site with staff.	100%	$75,000 x 8 specialists) = $600,000	$600,000 per year **$2,400,000**
Technical support/technology experts (8) – This team of innovative educators and consultants will provide consultation in collaboration on all PD development and supporting materials (including but not limited to the instructional improvement system) to ensure incorporation of 21st century learning skills.	100%	$75,000 x 8 specialists) = $600,000	$600,000 per year **$2,400,000**

* Due to the rigorous plan of implementation proposed in the Arkansas RTTT application, many of the positions will be downsized at the completion of the 4-year grant cycle because the tools and trainings will be developed and the implementation will reach capacity levels. These highly trained professionals will assume vacant state and LEA positions of leadership and support (as demonstrated with Reading First staff). Based on data, essential positions will be sustained with current state and LEA funding.

Fringe Benefits

Fringe Benefits will be calculated at 25%.	**% FTE**	**Base Salary**	**Total**
Fringe: calculated for Leadership Support Specialists	100%	75,000 x 8 specialists = $600,000 per year x 25% = $150,000 in benefits per year	$150,000 in benefits per year **$600,000**
Fringe: calculated for Technical support/technology experts	100%	75,000 x 8 specialist = $600,000 per year x 25% = $150,000 in benefits per year	$150,000 in benefits per year **$600,000**

Travel

Travel: Travel expenses include the average mile reimbursements of $.042, in addition to an amount of per diem of $55	**# trips**	**$ per trip**	**Total**
Monthly project meetings and regional meetings. 250 miles round trip for regional/project meetings @ $.042, hotel costs $150.00 per night, and $55.00 meals = $310.00	48 (12 per year) x 16 people	$310.00 per trip	$59,520 per year **$238,080**
Daily on-site coaching and support for schools 15 school trips for 15 days per month on-site with schools 100 miles round trip to schools @ $0.42 x estimated 15 trips = $630.00 per person	15 trips x 12 months x 8 people (Leadership Support Specialists)	$630.00 per person per month	$60,480.00 per year **$241,920**

Equipment

Equipment:	**Cost of item**	**Item Description**	**Total**
Laptop computer and printer (8): A laptop and printer will be needed by specialists.	$3500	Laptop computer and printer	**$28,000.00** **First year only**

Supplies

Supplies:	**Cost of item**	**Item Description**	**Total**
Instructional Materials:	Estimating $2000 per specialist (8)	Professional texts, flip charts, markers, notebooks, handouts will be needed for support of implementation of IIS system.	$16,000.00 per year **$64,000**

Contractual

Contractual:		**Total**
Instructional Improvement System	Estimating $5,000,000 first year for implementation, customization, and professional development. Estimating $4,000,000 for remaining three years to continue customization and maintenance	$5,000,000 (1st year) $4,000,000 (2nd – 4th years) Total request is **$17,000,000 for grant period**

Budget Part II: Project-Level Budget Table

Project Name: ***MARKETING OF THE PROFESSIONAL TEACHING PERMIT***
Associated with Criteria: ***D1***
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other	$100,000	$100,000	$100,000		**$300,000**
9. Total Direct Costs (lines 1-8)	$100,000	$100,000	$100,000		**$300,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$100,000**	**$100,000**	**$100,000**		**$300,000**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

MARKETING THE EXPANSION OF THE PROFESSIONAL TEACHERS PERMIT (PTP) (D1)

Other

Professional Teaching Permit (PTP)Expansion	Amount
The PTP opportunity brings other professionals in the community into AR's high school classrooms. Example a sitting judge is teaching government at a local high school. Also a mathematics professor from a local community college is teaching mathematics at the high school in town. This project/program needs to be marketed on a larger scale in the state. Proposal is to expand the marketing at approximately $100,000 per year for the life of the grant. Marketing promotions may include: • Develop video and companion brochure/give-aways to deliver at community, business and industry meetings • Speaker's bureau to deliver program to local chambers of commerce and/or rotary groups • Develop print and video spots with paid advertising campaign in newspapers and on TV • Expand the billboard campaign to include some rural southern regions of the state	$300,000

Budget Part II: Project-Level Budget Table

Project Name: ***NEW TEACHER EVALUATION SYSTEM***
Associated with Criteria: ***D2***
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel	$80,372	$82,783	$85,267		**$248,422**
2. Fringe Benefits	$20,093	$20,696	$21,317		**$62,105**
3. Travel	$686,000	$686,000			**$1,372,000**
4. Equipment	$1,800				**$1,800**
5. Supplies	$41,125	$41,125			**$82,250**
6. Contractual	$84,000	$99,000			**$183,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$913,390	$929,604	$106,583		**$1,949,577**
10. Indirect Costs*	$91,340	$92,960	$10,658		**$194,958**
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$1,004,729**	**$1,022,564**	**$117,242**		**$2,144,535**

Project-Level Budget Narrative

NEW TEACHER EVALUATION SYSTEM (D2)

Personnel

Personnel: The following requested personnel will all be hired as employees of the project.	% FTE	Base Salary	Total
1 FTE: The Program Manager will be responsible for overall program implementation. Coordinate the implementation schedule, and support the training of the teachers and principal assessors. The direction, development and management. The director will serve as liaison to the ADE for project dissemination.	100%	$ 60,214	$186,115
.5 Administrative Assistant: Manages the day to day operations of the program office.	100%	$20,158	$62,306

Fringe Benefits

Fringe Benefits:	%	Personnel Expense	Total
Fringes were calculated at 25% of salary	25%	$248,421	$ 62,105

Travel

Travel:	Total
Meals, Administrator Training: $71 per diem	$497,000
Lodging, Administrator Training; 4 nights, 875 administrators per year	$630,000
Service Charges & Taxes, Administrator Training	$70,000
Mileage, Administrator Training	$175,000

Equipment

Equipment:	Cost of Item	Total
Technology Costs (1staff), $1,200 per: includes half allocation for shared admin resource	$1,200	$ 1,800

Supplies

Supplies:	Unit Cost	Total
Training Text: A Framework for Teachings (1750)	$21.00	$36,750
Training Materials for Administrators (1750)	$25.00	$43,750
Certificates (1750)	$1.00	$1,750
Video Training: Cost of Training Per Educator for (1750)	$14.00	$24,500

Contractual

Contractual:	Total
Trainers for Administrator Training, $600 day, 4 days of training, 70 trainers	$168,000
College Curriculum Development	$15,000

Budget Part II: Project-Level Budget Table

Project Name: *NEW PRINCIPAL EVALUATION SYSTEM* Associated with Criteria: *D2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$80,372	$80,372	$80,372	$20,158	**$261,272**
2. Fringe Benefits	$20,093	$20,093	$20,093	$5039.50	**$65,318.50**
3. Travel	$51,120	$228,667	$228,667	$228,666	**$737,120**
4. Equipment	$1,800				**$1,800**
5. Supplies					
6. Contractual	$25,000	$24,500	$27,000		**$76,500**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$178,385	$353,632	$359,132	$353,863.50	**$1,,142,012.50**
10. Indirect Costs*	$17,839	$35,363	$35,613	$25,386	**$114,201**
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$196,224**	**$388,995**	**$391,745**	**$279,249.50**	**$1,256,213.50**

Project-Level Budget Narrative

NEW PRINCIPAL EVALUATION SYSTEM (D2)

Personnel

Personnel: The following requested personnel will all be hired as employees of the project.	% FTE	Base Salary	Total
1 FTE: The Program Manager will be responsible for overall program direction, development and management. The director will serve as liaison to the ADE for project dissemination.	100%	$60,214	$186,115
.5 Administrative Assistant: Manages the day to day operations of the program office.	50%	$20,158	$62,306

Fringe Benefits

Fringe Benefits:	%	Personnel Expense	Total
Fringes were calculated at 25% of salary .	25%	$248,422	$62,105

Travel

Travel: Planning Phase	Total
Lodging and Meals for Taskforce Working Sessions (36 people x 8 days)	$40,320
Mileage, Taskforce; 36 people, three different meetings	$10,800
Travel: Implementation Phase	
Meals, Administrator Training: $71 per diem	$248,500
Lodging, Administrator Training; 4 nights, 875 administrators per year	$315,000
Service Charges & Taxes, Administrator Training	$35,000
Mileage, Administrator Training	$87,500
TOTAL	$686,000

Equipment

Equipment:	Cost of Item	Total
Technology Costs (1staff), $1,200 per: includes half allocation for shared admin resource	$1,200	$ 1,800

Contractual

Contractual:	Total
Contracted Services: Facilitator to lead the Principal Evaluation Task Force: state procurement rules will limit it to $25,000 per contract length.	$37,500
Contract with Trainers for Principal / Superintendent Training, $600 day, 2 days of training, 40 days of training. The training will be for two days and there will be approximately twenty trainers hired.	$24,000
College Curriculum Development: Hire five (5) professors from AR colleges/universities to update teacher preparation curriculum to include the New Principal Evaluation training into the Education Leadership programs for the state. Rate is $600 day; 5 days	$15,000

Budget Part II: Project-Level Budget Table

Project Name: *INSTRUCTIONAL FACILITATORS* Associated with Criteria: *D2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends	$2,340,000	$2,340,000	$2,340,000	$2,340,000	**$9,360,000**
8. Other					
9. Total Direct Costs (lines 1-8)	$2,340,000	$2,340,000	$2,340,000	$2,340,000	**$9,360,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$2,340,000**	**$2,340,000**	**$2,340,000**	**$2,340,000**	$9,360,000

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

TUITION REIMBURSEMENT FOR INSTRUCTIONAL FACILITATORS NARRATIVE (D2)

Training Stipends

Description of the IF Tuition Reimbursement /training stipend	Total Amount
Arkansas currently has approximately 1300 teachers serving in the role as instructional facilitators (IF). Since the establishment of the IF, many of these educators are seeking this endorsement. This tuition reimbursement (stipend) is to award 1300 teachers (325 teachers per year a total of $7200 in tuition reimbursement. This amount was computed on the fact that the program is an eighteen (18) hour program at a cost of approx. $400 per semester hour to be implemented over the four years of the grant. If $7200 is not need by all of the 1300 educators, then educators training to become IFs will be allowed to participate in this program. (1300 @ $7,200 ea = $9,360,000)	**$ 9,360,000**

Budget Part II: Project-Level Budget Table

Project Name: ***DIFFERENTIATED COMPENSATION PILOT*** **Associated with Criteria:** ***D2*** **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel 2. Fringe Benefits 3. Travel 4. Equipment 5. Supplies 6. Contractual 7. Training Stipends 8. Other		$3,333,333	$3,333,333	$3,333,334	**$10,000,000**
9. Total Direct Costs (lines 1-8) 10. Indirect Costs* 11. Funding for Involved LEAs 12. Supplemental Funding for Participating LEAs		$3,333,333	$3,333,333	$3,333,334	**$10,000,000**
13. Total Costs (lines 9-12)		**$3,333,333**	**$3,333,333**	**$3,333,334**	**$10,000,000**

Project-Level Budget Narrative:

DIFFERENTIATED COMPENSATION PILOT (D2)

1) Personnel

Personnel	Total
Differentiated Compensation Pilot: Through the Race to the Top grant, Arkansas proposes to bring ten LEAs (inviting our persistently low performing schools and those that have experience with implementing differentiated compensation or have a desire to move in that direction) to the table to study how a state-wide model for differentiated compensation could work. The participating LEAs will also have an opportunity because of Race to the Top to pilot this new system with the understanding that they must sustain any successful efforts. Specific teachers and methodologies have yet to be decided. At an average incentive of $10,000 per teacher, effecting up to 1000 teachers is expected. It is the state's intention to use this pilot to prove the efficacy of differentiated compensation models.	$10,000,000

Budget Part II: Project-Level Budget Table

Project Name: *EFFECTIVE SPECIAL EDUCATION (SPED)* Associated with Criteria: *D3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$75,000	$77,500	$80,000	$82,500	**$315,000**
2. Fringe Benefits	$22,500	$23,200	$23,900	$24,600	**$94,200**
3. Travel	-	-	-	-	-
4. Equipment	$4,000	-	-	-	**$4,000**
5. Supplies	-	-	-	-	-
6. Contractual	$100,000	-	-	-	**$100,000**
7. Training Stipends	$72,000	$72,000	$72,000	$72,000	**$288,000**
8. Other	$250,000	$250,000	$250,000	$250,000	**$1,000,000**
9. Total Direct Costs (lines 1-8)	$523,500	$422,700	$425,900	$429,100	**$1,801,200**
10. Indirect Costs*	$52,350	$42,270	$42,590	$42,910	**$180,120**
11. Funding for Involved LEAs	-	-	-	-	-
12. Supplemental Funding for Participating LEAs	$540,000	$540,000	$540,000	$540,000	**$2,160,000**
13. Total Costs (lines 9-12)	**$1,115,850**	**$1,004,970**	**$1,008,490**	**$1,012,010**	**$4,141,320**

Project-Level Budget Narrative:

EFFECTIVE SPECIAL EDUCATION (SPED) (D3)

Personnel

Personnel: The following requested personnel will be hired as an employee of the ADE to provide leadership for this project.	% FTE	Base Salary	Total
Coordinator for High Priority Teacher Recruitment (1): The Coordinator will be responsible for activities outlined in AR 6-17-310 to assure the students in Arkansas are taught by highly qualified and effective teachers. In this capacity, the individual will provide leadership for development and coordination of programs, materials and other activities to recruit and retain teachers licensed in special education.	100%	$75,000 A 3% cost of living increase will be reflected in yrs. 2-4.	$75,000

Fringe Benefits

Fringe Benefits: Benefits were based on the total anticipated salary. The calculation was estimated to be 30% of the salary.	%	Total
Fringe benefits are considered to be social security, retirement, unemployment and insurance.	30%	$22,500

Equipment

Equipment: Purchases of equipment will follow SEA policy for procurement.	Cost of Item	Item Description	Total
Laptop Computer (1) and Color Printer (1): One laptop computer and one color printer will be needed to supply the needs of the person hired to staff the Office of Teacher Recruitment.	$2,000 $2,000	Laptop Computer Color Printer	$4,000

Contractual

Contractual: The Project will use procurement procedures outlined by the State of Arkansas for professional services contracts.	% of Time	Total
Requests for proposals will be solicited from accredited colleges of education within the state that offer special education coursework leading to special	10% for each college of	$100,000

education endorsement. The priority for proposals will be the development and expansion of online courses for training teachers in all areas of the state.	education	

Training Stipends

Training Stipends: Stipends will be in the form of reimbursement for tuition and incidental costs associated with graduate coursework in the area of special education.	Description	Cost	Total
General education licensed teachers will receive tuition reimbursement to assist with enrollment in graduate level special education courses. Increased numbers of teachers with special education knowledge will lead to more effective and qualified teachers.	Maximum of $3,600 per teacher to reimburse for tuition and incidentals.	$3,600 per teacher X 20 teachers per year = $72,000 per year	$288,000

Other

Activity	Purpose	Cost	#LEAs Involved	Total
Stipends for the expansion of mentoring programs.	To enable veteran general education teachers who add special education endorsement to receive support through mentors during their first year teaching special education.	$2,500 including benefits per mentor + $2,500 including benefits per veteran teacher for 1 year of mentoring = (Estimate 25 pairs each year)	266	$500,000
Stipends for relocation and moving expenses.	To recruit teachers to special education in areas of the state designated as having a critical shortage.	$2,500 per teacher estimating a minimum of 1 per district	50 – The number of districts designated as critical is identified each year.	$500,000

Supplemental Funding for Participating LEAs

Pilot program for administrative assistants/due process clerks.	To fund administrative assistants/due process clerks to assist schools in completing special education paperwork.	approx. $18,000 per clerk X 30 schools for 4 years.	3	$2,160,000

Budget Part II: Project-Level Budget Table

Project Name: *EFFECTIVE ENGLISH AS A SECOND LANGUAGE (ESL) TEACHERS AND ADMINISTRATORS* Associated with Criteria: *D3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies	$14,062	$14,062	$14,063	$14,063	**$56,250**
6. Contractual					
7. Training Stipends	$402,736	$402,736	$402,736	$402,737	**$1,610,945**
8. Other					
9. Total Direct Costs (lines 1-8)	$416,798	$416,798	$416,799	$416,799	**$1,667,195**
10. Indirect Costs					
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$416,798**	**$416,798**	**$416,799**	**$416,799**	**$1,667,195**

Project-Level Budget Narrative:

EFFECTIVE ESL TEACHERS & ADMINISTRATORS (D3)

Supplies

Supplies	Per Person Cost	Total
Instructional materials (books, printing)	$125.00 (x 450 people	$56,250

Training Stipends

Training Stipends: Stipends will be in the form of reimbursement for tuition and incidental costs associated with graduate coursework in the area of special education.	Description	Cost	Total
General education licensed teachers will receive tuition reimbursement to assist with enrollment in graduate level special education courses. Increased numbers of teachers with special education knowledge will lead to more effective and qualified teachers.	Maximum of $3,600 per teacher to reimburse for tuition and incidentals.	$3,595 per teacher X 112 teachers per year = $402,736 per year	$1,610,945

** Note: The Arkansas Department of Education would be partnering with the Race to the Top grant in providing ESL endorsement training for teachers; ADE will provide state funding for a supplemental summer program for teachers (the summer ESL Academy) to increase the number and percentage of teachers needed to provide instructional services for English Language Learners (ELLs).

Budget Part II: Project-Level Budget Table

Project Name: ***Expansion of the Teach for America Program***
Associated with Criteria: ***D3***
(Evidence for selection criterion (A)(2)(i)(d))

Budget Categories	Project Year 1 (a)	Project Year 2 (b)	Project Year 3 (c)	Project Year 4 (d)	Total (e)
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$1,694,000		$1,694,000		**3,388,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$1,694,000		$1,694,000		**3,388,000**
10. Indirect Costs*					
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$1,694,000**		**$1,694,000**		**$3,388,000**

BUDGET PART II: PROJECT-LEVEL BUDGET NARRATIVE

EXPANSION OF THE TEACH FOR AMERICA PROGRAM (D3)

Contractual

TFA EXPANSION	**Amount per category for four (4) years**
As Arkansas seeks to expand its partnership with TFA to 210 teachers for 2010 through 2014, the following expansions in the MOU will be necessary, for the additional 110 teachers:	
a) $3000 paid by ADE to TFA per teacher (for 110 new teachers) for training per year =$330,000 per year	$1,320,000
b) $3000 paid by LEAs to TFA per teacher (for 110 new teachers) for training per year	$1,320,000
c) $1200 in stipends for the Mentors of TFA candidates each year = $132,000 per year.	$ 528,000
Praxis III assessment for 110 new teacher per year @$500	$220,000
TOTAL	$ 3,388,000

Budget Part II: Project-Level Budget Table

Project Name: *RECRUITMENT AND RETENTION TRAINING FOR PRINCIPALS* Associated with Criteria: *D3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$800,000	$800,000			**$1,600,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$800,000	$800,000			**$1,600,000**
10. Indirect Costs*	-				-
11. Funding for Involved LEAs	-				-
12. Supplemental Funding for Participating LEAs	-				-
13. Total Costs (lines 9-12)	**$800,000**	**$800,000**			**$1,600,000**

Project-Level Budget Narrative

RECRUITMENT AND RETENTION TRAINING FOR PRINCIPALS (D3)

Contractual

Contractual	Total
Through Race to the Top funding, Arkansas will extend an RFP to provide professional learning opportunities for principals that will focus on key strategies to ensuring all schools are staffed with highly effective teachers. The state will contract with experts to help principals: • build communication and marketing plans for their school (using data and incentives); • establish criteria that the school and district are seeking in an effective educators and develop a rubric to measure the educator on the continuum to ensure quality hiring practices and mutual consent between the school and district; • understand their role in quality induction of new teachers; and • support new and veteran teachers with quality professional development planning and implementation.	$1,600,000

Budget Part II: Project-Level Budget Table

Project Name: *DEVELOPMENT AND EXPANSION OF STEM-RELATED LEARNING OPPORTUNITIES* Associated with Criteria: *D3* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)					
10. Indirect Costs					
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs	$16,937,500	$16,937,500	$16,937,500	$16,937,500	**$67,750,000**
13. Total Costs (lines 9-12)	$16,937,500	$16,937,500	$16,937,500	$16,937,500	**$67,750,000**

BUDGET PART II: PROJECT-LEVEL BUDGET NARRATIVE

DEVELOPMENT AND EXPANSION OF STEM-RELATED LEARNING OPPORTUNITIES (D3)

Our goal is to increase quality STEM programming in all school districts, integrating it thoroughly into the curriculum. All participating LEAs must implement at least one STEM program that focuses on professional development for their teachers or programs for their students, and we encourage both in tandem. Although not exhaustive, the application provides a list of programs that have successfully engaged students and teachers in the STEM fields. New Race to the Top grant funding will support a network of technical assistance to help school districts determine the type of program that best meets their local needs and circumstances. A district may also choose to build on its current STEM programming by personalizing a choice that matches their specific needs with a "Build-Your-Own" program.

Budget Part II: Project-Level Budget Table

Project Name: *DEVELOPMENT AND IMPLEMENTATION OF AN IHE COLLEGE OF EDUCATION REPORT CARD* **Associated with Criteria:** *D4* **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$80,000	$80,000	$80,000	$80,000	**$320,000**
2. Fringe Benefits	$20,000	$20,000	$20,000	$20,000	**$80,000**
3. Travel	-	-	-	-	-
4. Equipment	$5,000	-	-	-	**$5,000**
5. Supplies	$300	$100	$200	$100	**$700**
6. Contractual	-	-	-	-	-
7. Training Stipends	-	-	-	-	-
8. Other	-	-	-	-	-
9. Total Direct Costs (lines 1-8)	$105,300	$100,100	$100,200	$100,100	**$ 405,700**
10. Indirect Costs	-	-	-	-	-
11. Funding for Involved LEAs	-	-	-	-	-
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$105,300	$100,100	$100,000	$100,100	**$ 405,700**

BUDGET PART II: PROJECT-LEVEL BUDGET NARRATIVE

COLLEGES OF EDUCATION – REPORT CARD DEVELOPMENT AND IMPLEMENTATION (D4)

Personnel

1 FTE – IHE CE Report Card Facilitator	
To employ or contract with a person temporarily (4-years) to work with partners and current data analysts to develop and implement the IHE College of Education Report Card. This person will also lead the stakeholder group in discussions about analyzing the data to improvement teacher and principal prep programs.	80,000
TOTAL	$320,000

Fringe Benefits

1-FTE	
Fringe: IHE CE Report Card Facilitator @ 25%	$20,000 (per year) Total = $80,000
TOTAL	$80,000

Equipment

Technology: computer, printer, Blackberry	$5,000

Supplies

Supplies for various planning meetings including: flip charts, markers, planning materials, etc…	$700
TOTAL	$700

Budget Part II: Project-Level Budget Table

Budget Part II: Project-Level Budget Table Project Name: *Six State Consortium* Associated with Criteria: *D4* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$365,000	$365,000	$365,000		**$1,095,000**
2. Fringe Benefits	$91,250	$91,250	$91,250		**$273,750**
3. Travel					
4. Equipment	$150,000	$150,000			**$300,000**
5. Supplies	$26,200	$26,200	$26,200	$26,200	**$104,800**
6. Contractual	$50,000	$50,000	$50,000		**$150,000**
7. Training Stipends	$375,000	$375,000	$375,000	$375,000	**$1,500,000**
8. Other (Task Force)	$1,000	$1,000	$1,000	$1,000	**$4,000**
9. Total Direct Costs (lines 1-8)	$1,058,450	$1,058,450	$908,450	$402,200	**$3,427,550**
10. Indirect Costs*	$10,584	$10,584	$9,084	$4,022	**$34,274**
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$1,069,034**	**$1,069,034**	**$917,534**	**$406,222**	**$3,461,824**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

BUDGET PART II: PROJECT-LEVEL BUDGET NARRATIVE

IMPLEMENTATION OF A PILOT PROGRAM FROM THE SIX-STATE CONSORTIUM INITIATIVE (D4)

Personnel

1 FTE - Facilitator of Technology	Total
To employ a highly skilled Facilitator of Technology who with will work .5 with an AR public college/university and .5 with two schools in a neighboring district for the purpose of training both facilities on the use of 21st century technology. Many faculty members in Arkansas colleges of education are not technologically savvy enough to recruit Generation Y students into their colleges. Secondly, there is often a disconnect between existing educators in AR school districts in this area as compared to many novice Gen Y teachers. Arkansas youngsters in K-12 classrooms are often advanced beyond the skills of their educators. Salary $90,000 for three years.	$270,000
1 FTE- Program Administrator (For length of program)	
The program administrators will work .5 with an AR public college/university and .5 with two schools in a neighboring district for the purpose of coordinating the technology training, working conditions and evaluation surveys as well as collection of data for analysis of this pilot.	$225,000
Maximum of 5-FTE -Salary for Intern Teachers at one-half of entry level salary	
The University and LEA will make a new arrangement for intern teachers (student teachers) to assume a classroom with an experienced teacher as a mentor 100% assigned to them and their classroom. (Mentor has a maximum of 2 paid interns.) The two intern teachers shared an entry level teacher's salary (approx, $30,000 a year) and have the opportunity to experience the full school year.	$600,000
TOTAL	$1,095,000

Fringe Benefits.

1-FTE	Total
Fringe benefits are 25% of total salary for Facilitator of Technology ($90,000)	$67,500
Fringe benefits are 25% of total salary for Program Administrator ($75,000)	$56,250
Fringe benefits are 25% of total salary for 5 FTEs of the Intern Teachers Salary at a rate of $30,000 per year. ($37,500 per year= $150,000)	$150,000
TOTAL	$273,750

Equipment

C.O.W. (Computers on Wheels) – to purchase 50 COW per school site (total of 100) at a cost of $3000 per unit. The COW is in essence an I-phone without the phone components. It is a handheld computer to train faculty and classrooms of students on accessing the internet.	$300,000

Supplies

Supplies for the 360 Analysis:	
a) TOP - Tool for Observing Peers ($10 per person per copy or $750 per year.	$3000
b) My Teacher Checklist: is a very short checklist of the students' perception of their teacher. It is a pre/post checklist from the fall and the spring semesters. (30 students in the one elementary site for each of the 35 teachers = 2100 check-sheets needed, and 150 students for each of the 35 teachers in the secondary site = 10,500.) A total of 12,600 check-sheets @$2.00 each : $25,200 per year	$100,800
c) NASSP assessments: Teacher of Principal and Principal of Self ($50 per administrator) 5 administrators is $250 per year	$1000
TOTAL	$104,800

Contractual

Contract with "ARE-ON" Technology	
This system will allow lectures of top educators in various fields from both K-12 and post secondary environments to be accessible to all K-12 and post secondary students in the pilot sites. Estimated cost of $50,000 per year.	$150,000

Training Stipends

Stipends for the teachers and administrators at the two LEAs for the duration of the pilot. It is anticipated that approximately 75 educators will participate in the pilot including the peer observations, and 360 degree analysis. The stipend is $5,000 per educator (75) for all four years of the pilot.	$1,500,000

Other

Teacher & Principle Preparation Task Force	
From the recommendations of the Six-State Consortium and as a result of the report cards from the IHE, a task force will be established for the purpose of "Re-visioning" Arkansas' teacher preparation programs. This task force will review research in the areas of relevancy of required coursework for the undergraduate degrees, field experiences, cohort models, residency programs, performance assessments, pre-service professional growth plans, and innovative internships and explore multiple models for student teaching experiences including authentic experiences and incentives.	$4,000

Budget Part II: Project-Level Budget Table

Project Name: *WORKING CONDITION STUDY* Associated with Criteria: *D5* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$350,000				**$350,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$350,000				**$350,000**
10. Indirect Costs*					
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$ 350,000**				**$350,000**

Project-Level Budget Narrative

WORKING CONDITIONS STUDY (D5)

Contractual

Contractual	Total
RFP: The purpose for this study is to: (1) ensure the state does what it can to provide the professional development necessary to leaders in the area of improved working conditions for teachers, and (2) to ensure that the working conditions in our schools do not prohibit the overall success that can come from the implementation of Arkansas's Race to the Top plans.	$350,000

Budget Part II: Project-Level Budget Table

Project Name: *BUILDING STATE LEADERSHIP CAPACITY* Associated with Criteria: *E2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel					
2. Fringe Benefits					
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual	$2,163,500	$2,163,500	$2,163,500	$2,163,500	**$8,654,000**
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$2,163,500	$2,163,500	$2,163,500	$2,163,500	**$8,654,000**
10. Indirect Costs					
11. Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	$2,163,500	$2,163,500	$2,163,500	$2,163,500	**$8,654,000**

Project-Level Budget Narrative

BUILDING STATE LEADERSHIP CAPACITY (E2)

Contractual

Contractual	Total
Arkansas Leadership Academy (ALA) is a nationally recognized statewide partnership of 15 universities; 9 professional associations; 15 education cooperatives; the state's department of education, higher education, and career education; the Arkansas Educational Television Network; Tyson Foods, Inc; WalMart Stores, Inc.; two superintendent representatives; the Office of the Governor; and the State Board of Education, a total of 49 partners. From a base of research and best practices, ALA designs creative and innovative approaches to establish learning communities in our public schools. By developing human resources and by modeling and advocating collaboration, support, shared decision making, team learning, risk taking, and problem solving, ALA facilitates systemic improvement within an organization. In sync with ALA for many years, we'll expand our relationship to build the critical human support structure at the state and regional level to effect purposeful change in schools and districts that struggle academically. The **Deep Knowledge Leadership Team Institute** will provide intense professional development for the state's specialty teams, school improvement directors, and ACSIP leaders assigned to each district with a PLA school. Teams will learn to build the capacity to create positive learning environments, improve systems within the district, and develop the skills and tools that coalesce staff into teams. The team-intensive approach begets shared "ownership" and responsibility for moving together toward significantly better learning and performance for students and adults alike.	$2,164,500 per year x 4 years = $8,654,000

Budget Part II: Project-Level Budget Table

Project Name: *SCHOOL TURNAROUND OFFICE* **Associated with Criteria:** *E2* **(Evidence for selection criterion (A)(2)(i)(d))**					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$110,000	$110,000	$110,000	$110,000	**$440,000**
2. Fringe Benefits	$27,500	$27,500	$27,500	$27,500	**$110,000**
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$137,500	$137,500	$137,500	$137,500	**$550,000**
10. Indirect Costs*	$12,500	$12,500	$12,500	$12,500	**$50,000**
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$150,000**	**$150,000**	**$150,000**	**$150,000**	**$600,000**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

SCHOOL TURNAROUND OFFICE (E2)

Personnel

Personnel: The following requested personnel will all be hired as employees of the project.	% FTE	Base Salary	4-Year Total
A school turnaround coordinator will be hired to work solely with our persistently low performing schools and their LEAs.	100%	$80,000	320,000
Assistant (1)	100%	$30,000	$120,000

Fringe Benefits

Fringe Benefits will be calculated at 25%.	%	Base Salary	Total	4-year Total
Fridge benefits for the School Turnaround Office staff	25%	$110,000	$27,500	$110,000

Indirect Costs

Indirect Costs:	%	Personnel Costs	Total	4-Year Total
Indirect costs associated with the Office of Innovation	10%	$600,000	$60,000	$240,000

Budget Part II: Project-Level Budget Table

Project Name: *MATH TEACHERS AND COLLEGE & CAREER COACHES* Associated with Criteria: *E2* (Evidence for selection criterion (A)(2)(i)(d))					
Budget Categories	**Project Year 1 (a)**	**Project Year 2 (b)**	**Project Year 3 (c)**	**Project Year 4 (d)**	**Total (e)**
1. Personnel	$240,000	$240,000	$240,000	$240,000	**$960,000**
2. Fringe Benefits	$60,000	$60,000	$60,000	$60,000	**$240,000**
3. Travel					
4. Equipment					
5. Supplies					
6. Contractual					
7. Training Stipends					
8. Other					
9. Total Direct Costs (lines 1-8)	$300,000	$300,000	$300,000	$300,000	**$1,200,000**
10. Indirect Costs*					
11.Funding for Involved LEAs					
12. Supplemental Funding for Participating LEAs					
13. Total Costs (lines 9-12)	**$300,000**	**$300,000**	**$300,000**	**$300,000**	**$1,200,000**

All applicants must provide a break-down by the applicable budget categories shown in lines 1-15.
Columns (a) through (d): For each project year for which funding is requested, show the total amount requested for each applicable budget category.
Column (e): Show the total amount requested for all project years.
*If you plan to request reimbursement for indirect costs, complete the Indirect Cost Information form at the end of this Budget section. Note that indirect costs are not allocated to lines 11-12.

Budget Part II: Project-Level Budget Narrative

MATH TEACHERS AND COLLEGE & CAREER COACHES (E2)

Personnel

Personnel:	% FTE	Base Salary	4-Year Total
Funds will provide for a math teacher ($60,000) at our two persistently low performing elementary schools. Funds will also provide for 3 college and career coaches ($40,000) to be placed in 5 of our lowest achieving middle and high schools. See *Section E2* for more details.	100%	$60,000 x 2 = $120,000 $40,000 x 3 = $120,000 = $240,000	$960,000

Fringe Benefits

Fringe Benefits will be calculated at 25%.	%	Base Salary	Total	4-year Total
Fridge benefits for the math teachers and college and career coaches	25%	$240,000	$60,000	$240,000

Budget: Indirect Cost Information

To request reimbursement for indirect costs, please answer the following questions:

Does the State have an Indirect Cost Rate Agreement approved by the Federal government?

YES ●
NO ○

If yes to question 1, please provide the following information:

Period Covered by the Indirect Cost Rate Agreement (mm/dd/yyyy):

From: _7_/_1_/_2007_ To: _6_/_30_/_2010_

Approving Federal agency: _X_ED ___Other

(Please specify agency): ________________

Directions for this form:

1. Indicate whether or not the State has an Indirect Cost Rate Agreement that was approved by the Federal government.

2. If "No" is checked, ED generally will authorize grantees to use a temporary rate of 10 percent of budgeted salaries and wages subject to the following limitations:
(a) The grantee must submit an indirect cost proposal to its cognizant agency within 90 days after ED issues a grant award notification; and
(b) If after the 90-day period, the grantee has not submitted an indirect cost proposal to its cognizant agency, the grantee may not charge its grant for indirect costs until it has negotiated an indirect cost rate agreement with its cognizant agency.

3. If "Yes" is checked, indicate the beginning and ending dates covered by the Indirect Cost Rate Agreement. In addition, indicate whether ED, another Federal agency (Other) issued the approved agreement. If "Other" was checked, specify the name of the agency that issued the approved agreement.

ARKANSAS GENERAL ASSEMBLY

HOUSE INTERIM COMMITTEE ON EDUCATION
and
SENATE INTERIM COMMITTEE ON EDUCATION

Senator Jimmy Jeffress
Senate Chair

Representative Bill Abernathy
House Chair

May 21, 2010

The Honorable Arne Duncan
Secretary of Education
U.S. Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

Dear Secretary Duncan:

Please accept this letter as a statement of our enthusiastic support for Arkansas's Race to the Top Phase II proposal. As highlighted in our first Race to the Top submission, Arkansas has a strong and consistent belief that an educated citizenry is of the utmost importance for the economic and social well-being of our state and nation. We have backed up this belief with demonstrable and measurable actions, putting in place laws and policies to improve and strengthen our state's system of public education.

As with our initial Race to the Top application, we are submitting a proposal for your consideration that addresses the four major policy areas that underpin the Race to the Top initiative:

- Standards and assessments that measure the skills and knowledge necessary to ensure that students will be able to participate in a global economy;
- Data systems that have been enhanced to support teachers and principals in the use of instructional information that enables them to refine and improve their instructional strategies;
- Recruitment, training, and retention of great teachers and leaders; and
- Turning around our academically underperforming schools.

Arkansas's policymakers have repeatedly demonstrated their commitment to our state's public education system. We will continue to work to refine and improve our education system. We hope that our Race to the Top Phase II proposal will provide additional funding to help us achieve the goals we have set for ourselves.

Thank you for your favorable consideration. We look forward to hearing from you in the very near future.

Sincerely,

Senator Jimmy Jeffress
Chair
Senate Education Committee

Representative Bill Abernathy
Chair
House Education Committee

Arkansas Department of Human Services

Division of Child Care and Early Childhood Education

P.O. Box 1437, Slot S-140 Little Rock, AR 72203-1437 • 501-682-0494 • Fax: 501-682-2317 • TDD: 501-682-1550

May 21, 2010

Race to the Top Selection Committee
US Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

Secretary Duncan:

Please accept this letter of support on behalf of the Division of Child Care and Early Childhood Education/Department of Human Services for the Arkansas' Department of Education Race to the Top Application. The Division and Department have a rich history of partnering to deliver one of the best state funded pre-K programs in the nation, as well as many other activities that support quality early childhood education.

We are excited about this opportunity to continue coordination efforts on behalf of our youngest citizens, as well as improving the education opportunities as children transition into the K-12 system.

We look forward to a positive response.

Sincerely,

Tonya Russell

Tonya Russell, Director
DHS/Division of Child Care and Early Childhood Education

STATE OF ARKANSAS

Department of Career Education

Mike Beebe
Governor

William L. "Bill" Walker, Jr.
Director

May 25, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue SW
Washington, DC 20202

Dear Secretary Duncan:

It is with great confidence that I submit this letter of support for the Arkansas Department of Education's Race to the Top application.

The Department is supportive of all activities of this grant. My agency, the Arkansas Department of Career Education, has been a participant in activities leading to the submission of this grant.

In Arkansas, the Department of Education has led the way in bringing education reform to the state's public schools. The Department has always sought collaboration with other education-related entities; for example, the College and Career Readiness Team brings together a variety of participants with expertise in all areas of academic preparation and career readiness. This College and Career Readiness Team has done much valuable work to lay the foundation for successful implementation of Arkansas's proposed Race to the Top project. Moreover, I know that the state's public schools are eager to continue school reform that will prepare students for success in education beyond high school and the workplace.

Education in Arkansas has always been data-driven, with decisions based upon sound information. I pledge that the Department of Career Education will continue to collect the data that will be critical to making the Race to the Top project an ongoing success.

The Department of Career Education pledges to provide the necessary supplemental funding and staff to support the career and technical education activities described in this application. The Department of Career Education looks forward to collaboration with the Department of Education, the Department of Higher Education, and the Arkansas Association of Two-Year Colleges to ensure student success in high school and beyond.

If I can provide additional information, please let me know.

Sincerely,

John L. Davidson, Deputy Director
Career and Technical Education
john.davidson@arkansas.gov
501/682-1040

10/JLD/151

Arkansas Department of Higher Education

114 East Capitol • Little Rock, Arkansas • 72201-3818 • (501) 371-2000 • Fax (501) 371-2001

Mike Beebe
Governor

Dr. Jim Purcell
Director

May 18, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

Dear Selection Committee:

I am pleased to offer this letter of support for Arkansas's Race to the Top Phase II application. As you will note in the document, the planned activities thoroughly address the four pillars that will lead to greater student success in our schools—standards and assessments, data systems to support instruction, great teachers and leaders, and turning around our lowest achieving schools by building upon past success.

Development of the proposal has been highly inclusive of our education stakeholders and represents sound thinking outside of the box to provide schools that will enable our students to compete globally.

Arkansas continues to trail all but one or two states in its educational attainment and per capita income. There is no doubt that the two are inextricably linked and without a significant change in educational attainment we will continue to suffer consequences that will impact generations to come.

Arkansas has proven that it has the will to capitalize on opportunities when presented. Over the past decade, the state has earned a reputation of exponential progress through gubernatorial, legislative, Board, and agency leadership. This opportunity will prove to be no different. The state has shown its willingness to work together for the common good of our citizenry, to break down silos and territoriality, and set minor differences aside to accomplish educational goals.

If funded, the activities in this proposal will strengthen nationally-recognized gains already made by the state through other funded projects and expedite the progress that we know can be realized. There is no state that is more worthy of positive consideration and none that will work harder to realize its goals for student success.

We look forward to the opportunity to create overarching improvements in our schools. Thank you for your consideration and support.

Cordially,

Jim Purcell, Ed.D.
Director

SOUTHERN ARKANSAS UNIVERSITY
Magnolia

Education Renewal Zone
Building A Bridge To Our Future
Southwest B

May 19, 2010

To Race To The Top Selection Committee Members:

The purpose of this letter is to provide my unequivocal support of the Race to the Top grant proposal by the Arkansas Department of Education.

In my capacity as Director of the Southwest-B Education Renewal Zone at Southern Arkansas University, I have had the opportunity to work closely with a number of school districts that will benefit immensely as part of Arkansas' far reaching vision to address our particular challenges with rigor and relevance embedded in our strategic initiative. What I find most appealing is the great potential for the students at our 39 ERZ partner schools at Ashdown, Bradley, Dierks, Fouke, Genoa, Hope, Lafayette, Mineral Springs, Nevada, Prescott, Stephens, and Texarkana school districts.

Southern Arkansas University and the Southwest-B Education Renewal Zone already enjoy excellent working relationships with our three regional education service centers of South Central, Southwest, and DeQueen Mena, and we stand ready to provide comprehensive leadership in support of the Arkansas Department of Education's goals for the Race To The Top proposal.

The Southwest-B Education Renewal Zone at Southern Arkansas University hopes that this letter of support for expanded educational opportunities for students in Southwest Arkansas will be strongly considered. Please contact my office for any clarification or additional information that you may have. I would be elated to respond immediately to facilitate the approval of this extremely important initiative.

Sincerely,

Roger Guevara

Dr. Roger C. Guevara
ERZ Director
Southern Arkansas University
P.O. Box 9408
Magnolia, AR 71754
(870)235-5014 Office
(870)904-4900 Mobile

May 19, 2010

U. S. Secretary of Education Arne Duncan
U. S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

The College of Education at the University of Arkansas at Little Rock would like to express our support for **Arkansas' selection as a Race to the Top recipient**. As the Associate Dean of the College of Education, I have seen many examples of poorly prepared students coming from our public school system. Project STEM Starters, one of the STEM options listed in the state's proposal, include major thrusts that will significantly aid the quality of math and science teaching in Arkansas. I am especially enthusiastic about the use of an Inquiry-Based Science Curriculum and the comprehensive teacher professional development focused on STEM at the early grades. The inquiry-based method has been shown for many years to be successful not only at improving education, but also in enhancing enthusiasm for STEM disciplines.

Sincerely,

Bruce D. Smith, Ph.D.
Associate Dean, College of Education
University of Arkansas at Little Rock
2801 South University Avenue
Little Rock, AR 72204

ARKANSAS SCIENCE & TECHNOLOGY AUTHORITY

423 Main Street, Suite 200
Little Rock, Arkansas 72201

www.asta.ar.gov

Phone: 501.683.4400
Fax: 501.683.4420

The Honorable Arne Duncan
Secretary of Education
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Re: Race to the Top

Dear Secretary Duncan:

This is a letter of support – enthusiastic and strong support – for the Race to the Top application from the Arkansas Department of Education. The Arkansas Science & Technology Authority was created to bring the benefits of science and advanced technology to the people and state of Arkansas. We know that in the 21st Century economy STEM education is critically important to global competitiveness and the cornerstone of our national wellbeing.

The Authority is very familiar with today's challenges: energy, water, climate change, and economic competitiveness. All of these are science and engineering challenges. There is deep concern among those who are addressing the scale, global reach, and complexity of the challenges, that the existing K-12 educational system – despite winning two World Wars and the Cold War – is incapable of producing the talent, in the numbers required, to meet these challenges and win the global economic race to the top.

Arkansas proposes to address the four pillars of sustainable educational reform as it simultaneously emphasizes STEM education, to achieve synergistic improvements of both the educational system in general and STEM education in particular. If successful, the synergistic effort can be replicated statewide.

The Authority is committed already, as a member of the Governor's Workforce Cabinet (where we are charged with coordinating STEM educational efforts) and through participation on other boards and commissions, to advance the knowledge and innovations and help the Arkansas Department of Education prepare the talent that Arkansas and the Nation need to compete in the global economy.

I hope you will find this proposal worthy of the Department's support.

Sincerely,

John W. Ahlen

John W. Ahlen, Ph.D.
President

AAIMS

Arkansas Advanced Initiative for Math and Science

encouraging rigor, rewarding excellence

May 20, 2010

Mr. Arne Duncan

US Secretary of Education
US Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

Dear Secretary Duncan,

Arkansas Advanced Initiative for Math and Science is pleased to support Arkansas's application for Race to the Top funds. These funds will allow the state to build on the success of the past. The funds will give the state the incentive and the once-in-a-lifetime opportunity to achieve its vision by implementing proven practices in all schools.

Arkansas Advanced Initiative for Math and Science is pleased to be a part of Arkansas's Competitive Preference Priority Emphasis on STEM Education. We are a part of the National Math and Science Initiative, and we have a record of success. The Race to the Top grant will allow us to expand our AP Teacher Incentive Program to sixty additional schools.

Arkansas has created a comprehensive system of reform initiatives and education policies that can provide a world-class education to its students. However, we have not had the funds to scale-up these initiatives. The Race to the Top funds would allow this.

Arkansas Advanced Initiative for Math and Science supports Arkansas's application. We believe that it is visionary, sound, feasible, and sustainable.

Yours truly,

Tommie Sue Anthony

Tommie Sue Anthony, President
Arkansas Advanced Initiative for Math and Science

University of Arkansas at Little Rock
2801 South University Avenue Speech 217 Little Rock, Arkansas 72204-1099
Phone (501)-683-7684 Fax (501)-683-7683
www.ualr.edu/aaims

ARKANSAS EDUCATION ASSOCIATION
An NEA State Affiliate

DONNA MOREY, *President*
RICH NAGEL, *Executive Director*

1500 West 4th Street
Little Rock, AR 72201-1064

May 21, 2010

The Honorable Mike Beebe
Governor of Arkansas
State Capitol
Little Rock, AR 72201-1019

Dr. Tom Kimbrell, Commissioner
Arkansas Department of Education
4 Capitol Mall
Little Rock, AR 72201-1019

Gentlemen:

The Arkansas Education Association (AEA) is pleased to support the Arkansas Department of Education's Phase II Race to the Top Grant Application. AEA's leaders and staff have worked collaboratively with our local associations, the Arkansas Department of Education and other stakeholders to complete Arkansas's second application. We are proud to provide this letter of support.

This letter of support is consistent with our vision of a great public school for every student. It is also in keeping with our mission to advocate for education professionals and to unite our members and the state to fulfill public education's promise to prepare every student to succeed in a diverse and interdependent world.

We thank both of you and the other members of your education leadership team, including Heather Gage and Phyllis Stewart, for recognizing, listening to and responding positively to our recommendations. We thank the AEA Board of Directors, local association leaders, and members of the AEA staff for their support of this effort.

Sincerely,

Donna

Donna Morey
AEA President

Rich

Rich Nagel
AEA Executive Director

Office: (501) 375-4611 • Toll Free: (800) 632-0624 • Fax: (501) 375-4620 • www.aeaonline.org

Arkansas Association
of Educational Administrators

219 South Victory
Little Rock, AR 72201
501.372.1691
Fax: 501.372.2807
www.aaea.ws

May 19, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

RE: ARRA Race to the Top Phase II Application

Dear Secretary Duncan and the Race to the Top Selection Committee,

The Arkansas Association of Educational Administrators support the State's efforts in submitting a RTT application. AAEA also supports the State's direction outlined in the preliminary application – a strong commitment to collaboration between LEAs and the Arkansas Department of Education in creating an education system to prepare our students to be successful and productive citizens in the 21st century. AAEA believes that the major components of the State application clearly and effectively address the four pillars put forth by USDE as the overall goals of all ARRA funding: 1) graduating college- and career-ready students, 2) using longitudinal data systems to improve instruction, 3) increasing teacher and administrator effectiveness, and 4) providing intensive support and intervention to students in lower-performing schools. The State application also embraces the concept of common core standards and assessments.

AAEA believes that this application represents a unified effort to build upon the successful state reform initiatives already in place and propel Arkansas education to ever higher levels of student achievement. AAEA pledges support in this very worthwhile endeavor and the Association is strongly committed to the effective implementation of meaningful school reform. AAEA respectfully requests that the application review team give serious consideration to the approval and funding of Arkansas' RTT Phase II application.

Sincerely,

Mike Mertens
Interim Executive Director
AR Association of Educational Administrators

Sincerely,

Belinda Akin
President
AR Association of Educational Administrators

ASBA
ARKANSAS
SCHOOL BOARDS
ASSOCIATION

May 18, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

Dear Secretary Duncan:

I write to offer support of Arkansas's application for Race to the Top. We understand that the state is seeking a grant from the U.S. Department of Education to challenge and improve K-12 education through four goals:

- To adopt benchmarked standards and assessments which prepare students for success in college and in the workplace.
- To turn around our lowest performing schools.
- To recruit, develop, retain and reward effective principals and teachers.
- To build data systems that measure student success and provide information to teachers and principals on how they can improve their practices.

Race to the Top represents an opportunity for Arkansas to continue in stimulating innovation and making fundamental reforms for student achievement.

As an association with a specific interest in continuously improving the student achievement of our students and after several years of implementing many successful reforms, we see the importance of Arkansas receiving this grant to help take the state to new levels. We fully support the application.

Sincerely,

Dan Farley

Dan Farley
Executive Director

c: Dr. Tom Kimbrell
Arkansas Education Commissioner

6th and Ringo Streets / P.O. Box 165460 / Little Rock, AR 72216-5460
501.372.1415 phone / 501.375.2454 fax

www.arsba.org

May 19, 2010

Dr. Tom Kimbrell, Commissioner
Arkansas Department of Education
Four Capitol Mall, Room 304A
Little Rock, Arkansas 72201-1019

Dear Dr. Kimbrell;

The Arkansas Education Service Cooperatives are enthusiastic partners with the Arkansas Department of Education in the Race to the Top application. Arkansas has a compelling history of educational reform and we have always been proud to be a strong collaborative partner in the development and implementation of educational reform efforts in our state. We believe that the work defined in the Race to the Top proposal builds on the hard work the state has completed and provides us with a unique opportunity to expand and enhance our reform agenda so that it can assure a quality education for every child in our state.

As a principle partner, the Arkansas Education Cooperatives are committed to assisting and supporting schools as they strive to deliver a high quality education. We are ready to leverage our unique position, located between school districts, the State Department of Education and Higher Education, to facilitate meaningful collaboration and to implement the critical reform elements required to increase the quality and accountability in our educational system. The Education Service Cooperatives pledge to assist in building consensus, influence decisions, implement systemic plans with defined outcomes, provide high quality systemic professional development and design and implement the necessary supports to our school districts that will ultimately impact thousands of Arkansas students.

As practitioners, we must fundamentally change the way teaching and learning takes place. However, creating such a reality remains difficult. Now is the time for us to re-engineer, not just classrooms, but the entire state-wide educational system. We are ready to serve in critical leadership and service delivery roles within this process. With RttT funds, we have a once in a lifetime opportunity to get it right-to further develop Arkansas' vision of a world class educational system; craft systemic action plans that maximize the effectiveness of systems; redesign the instructional delivery system based on the common standards; identify and address technology needs; train effective teachers and leaders; expand our data system to support instructional decision; measure successes while documenting challenges; and build an infrastructure that supports the ability of our lowest-achieving schools to implement a successful turnaround model. All of these components of the RttT application are directly related to our own mission which is:

> "To support high achievement for <u>all</u> Arkansas students by providing quality support services that enhance teaching, learning, and leadership in our schools."

Thank you for providing us this opportunity to expand our partnership and enhance our work designed to ensure that Arkansas' educators develop the skills and knowledge needed to enable all students to perform at the highest levels of achievement.

Sincerely,

Becky Jester

Becky Jester, Chairperson
Arkansas Education Service Cooperatives

Cc: Heather Gage, Special Advisor to the Commissioner

Arch Ford Education Service Cooperative
Director: Phillip Young
Teacher Center Coordinator: Carolyn Doyel

Arkansas River Education Service Cooperative
Director: Carolyn McCoy
Teacher Center Coordinator: Carol Santucci

Crowley's Ridge Education Service Cooperative
Director: John Manning
Teacher Center Coordinator: Barbara Cox

Dequeen/Mena Education Service Cooperative
Director: John Ponder
Teacher Center Coordinator: Kathy Heagwood

Great Rivers Education Service Cooperative
Director: Suzann McCommon
Teacher Center Coordinator: Helen Baldwin

Northcentral Education Service Cooperative
Director: Dr. Dennis Martin
Teacher Center Coordinator- Pam Brooks

Northeast Arkansas Education Service Cooperative
Director: Donna Harris

Northwest Arkansas Education Service Cooperative
Director: Buddy Auman
Teacher Center Coordinator: Teresa Chance

Ozarks Unlimited Resources Cooperative
Director: Richard Nance
Teacher Center Coordinator: Dr. Kim Fowler

Western Arkansas Education Service Cooperative
Director: Guy Fenter
Teacher Center Coordinator: Pat Yick

South Central Education Service Cooperative
Director: Marsha Daniels
Teacher Center Coordinator: Debbie Cearley

Southeast Arkansas Education Service Cooperative
Director: Karen Eoff
Teacher Center Coordinator: Marilyn Johnson

Southwest Arkansas Education Service Cooperative
Director: Lindy Franks
Teacher Center Coordinator: Phoebe Bailey

Wilbur D. Mills Education Service Cooperative
Interim Director: Shirley Hooks
New Director as of July, 2010- Jeff Johnson

Arkansas Leadership Academy

346 N. West Avenue, Room 300
College of Education and Health Professions
University of Arkansas
Fayetteville, Arkansas 72701
Voice: (479) 575-3030
Fax: (479) 575-8663
www.arkansasleadershipacademy.org

May 18, 2010

Dear Secretary Duncan;

The Arkansas Leadership Academy supports the application of the state of Arkansas for the Race to the Top funding. We believe the application addresses the four pillars—standards and assessments; data systems to support instruction; great teachers and leaders; and turning around our lowest achieving schools by building upon the success we have seen in the past several years. The state of Arkansas has made great strides in education in the last decade, and this funding would allow us to continue to build upon these innovations.

The process our state has utilized in the creation of our application has been collaborative and inclusive. There has been input from urban and rural voices, parents and students from diverse backgrounds, and from the business community as well as the education sector. Every effort has been made to gather data and input from successful programs, in order to sustain and see these practices scale up across our state.

It is our hope that Arkansas will continue to accelerate in educational progress. We have been wise stewards of the relatively low levels of funding in our small state. We know that economic development and educational progress are strongly linked, and our students and educators have set high standards for the future. We support the content of this application and feel that it will serve to further our goals and enable our students, educators, and communities to benefit and continue to reach those high standards of academic achievement and leadership.

Respectfully,

Debbie Davis

Dr. Debbie Davis
Director, Arkansas Leadership Academy

WINTHROP
ROCKEFELLER
FOUNDATION

U.S. Secretary of Education Arne Duncan
U.S Department of Education
400 Maryland Avenue, SW
Washington, DC, 20202

Dear Secretary Duncan:

The Winthrop Rockefeller Foundation extends its full support of Arkansas Department of Education's Race to the Top application. The efforts of Arkansas Department of Education and stakeholders from across the state have been tremendous to ensure a quality application is submitted respectfully for your review. WRF supports the Arkansas Department of Education's application because we strongly believe the proposal will contribute to sustainable impact and transformative change in the Arkansas schools system.

WRF's mission is to improve the lives of Arkansans in three interrelated program areas: education, economic development, economic, racial and social justice. The application mirrors WRF's program goals to increase high school and college graduation rates and increase educational attainment and economic mobility. It represents a very important opportunity for Arkansas to secure funding for innovation and leadership required to accelerate improvement in the state's education outcomes. Funding the Arkansas Department of Education's Race to the Top proposal will greatly facilitate transforming the K-12 school system into a system of excellence.

We ask that the U.S. Department of Education partner with WRF, and other funders and stakeholders by supporting the Arkansas Department of Education's Race to the Top application. Thank you for thoughtful consideration of the Arkansas Department of Education's Race to the Top Application. If you have any questions or need additional information on WRF's support of Arkansas' Race to the Top application, do not hesitate to call or email me at swest@wrfoundation.org.

Sincerely,

Dr. Sherece Y. West, Ph.D.
President and Chief Executive Officer

The
WALTON FAMILY
FOUNDATION

| P.O. Box 2030 | Bentonville | AR 72712-2030

May 18, 2010

Secretary Arne Duncan
U.S. Department of Education
400 Maryland Avenue, S.W.
Washington, DC 20202

Dear Secretary Duncan,

The Walton Family Foundation is pleased to express support for the State of Arkansas's Race to the Top Fund application. Our foundation invests in programs that improve accountability, transparency, choice and incentives in public schools across our nation. We have been active in the support and development of this application in our home state, and believe that there are a number of components that, if funded for action, will lead to meaningful reform of public education throughout our state.

This is a once in a lifetime opportunity to secure funding for far-reaching improvement in our schools. We believe the application addresses the four pillars—standards and assessments; data systems to support instruction; great teachers and leaders; and turning around our lowest achieving schools. The commitments put forth in this application will achieve these goals by building upon the success we have seen in our state for the past several years and by thinking outside the box to envision the schools we need for our students to compete globally.

We urge you to consider the Arkansas Race to the Top Fund application favorably.

Sincerely,

Buddy D. Philpot
Executive Director
Walton Family Foundation

P.479.464.1570 | F.479.464.1580 | www.waltonfamilyfoundation.org

MID-CONTINENT COMPREHENSIVE CENTER

University OUTREACH • College of Continuing Education • The University of Oklahoma

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73072-7820
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Email: info@mc3edsupport.org
http://www.mc3edsupport.org

Belinda Biscoe, Ph.D.
Director
Donna Richardson, Ed.D.
Associate Director

Partners:

American Indian Institute
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Educational Training, Evaluation, Assessment, and Measurement Department (E-TEAM)
College of Continuing Education
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Mountain Plains Regional Resource Center (MPRRC)
Utah State University
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Northrop Grumman Information Technology
Arthur E. Gross, FACHE
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North Central Regional Resource Center (NCRRC)
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Southeast Regional Resource Center (SERRC)
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Elizabeth Beale, Ed.D.
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Texas A&M University-Kingsville
Rosie Garcia-Belina, Ed.D.
kfreg00@tamuk.edu

May 19, 2010

Dr. Tom Kimbrell
Commissioner
Arkansas Department of Education
#4 Capitol Mall
Little Rock, Arkansas 72201

Dear Dr. Kimbrell:

The Mid-Continent Comprehensive Center (MC3) is thrilled to support Arkansas' Race to the Top Phase II application.

MC3 is a federally funded regional comprehensive center serving Arkansas, Kansas, Missouri, and Oklahoma. As MC3's Director, I can speak to the true collaborative spirit that has been fostered between the Arkansas Department of Education (ADE) and MC3. Specifically, ADE continues to collaborate with MC3 on initiatives in areas including English language learners, alternative learning environments, the Arkansas Longitudinal Data Use for Improved Student Learning Pilot Project, the Pacesetter's Academy, statewide systems of support, and others.

Based on our experience with ADE, we enthusiastically endorse your application. We believe Arkansas' application aligns well with the priority areas of standards and assessments, data systems to support instruction, great teachers and leaders, and turning around low achieving schools. We believe Arkansas has the potential to dramatically improve student achievement through the programs outlined in your application, and as always, MC3 stands ready to provide Arkansas with technical assistance and support for implementing and strengthening these programs.

We wish you success with your Race to the Top application.

Warm regards,

Belinda Biscoe

Belinda Biscoe, Ph.D.
MC3 Director
Assistant Vice President for University Outreach
University of Oklahoma

The Mid-Continent Comprehensive Center is funded by the United States Department of Education.

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

Secretary Arne Duncan:

Race to the Top: what a pivotal platform to pursue, praise, and promote in our 21st century learning classroom. In this era of change, educators have been comforted to know that legislature is committed to finding solutions to help all students become successful not only in their hometowns, but also in the world. I am proud to be an Arkansas teacher where my state has also committed to promoting education and is seeking ways to make learning meaningful and useful for students entering our global economy. Race to the Top is an endeavor that strives for all schools to change whatever negative status they possess due to circumstances, assessments, or inadequate resources, because all students who attend an Arkansas school deserve a future.

I like to think of Arkansas as a state that represents education like one of its diamonds in a mine. Arkansas is a miner who continues to work, dig, and pull with so many different resources and tools until a treasure is found. Race to the Top can be one of those tools. Each student symbolizes that diamond and that treasure which possesses worth and value. Race to the Top can be the tool that will work, dig, and pull in our school systems to ensure that all children at any school have the opportunity to learn how to read, to think critically, to solve global problems, and to become a productive citizen.

By using the knowledge that Race to the Top will provide, school will have great teachers and leaders, data to help develop strategies to address multiple problems, and instructional techniques that are current and methodologically sound. Although Arkansas already has a foundation that seeks out the greatest teachers, provides effective strategies in the classroom, and researches up-to-date techniques to address multiple types of learners, she still needs to be ready to evolve just as swiftly as our ever-evolving economy and world.

Thank you for letting Arkansas be a part of this once in a lifetime opportunity. I am looking forward to seeing all of the successful moments that lie ahead.

Susan Waggener

Susan Waggener
2009 Arkansas Teacher of the Year

Helping Children Be Healthy, Wealthy and Wise.

ARKANSAS ADVOCATES
FOR CHILDREN & FAMILIES

1977-2008
For Thirty-One Years

Richard Huddleston
Executive Director

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Little Rock, AR 72201
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(501) 371-9681 Fax
www.aradvocates.org

Northwest Office:
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(479) 927-9800
(479) 751-1110 Fax

May 24, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan:

Arkansas Advocates for Children & Families (AACF) is pleased to offer this letter in support of Arkansas's Race to the Top application. The mission of AACF is to ensure that all children and families have the resources and opportunities they need to lead healthy and productive lives and realize their full potential. We believe this application includes strategies and activities that, if funded, could lead to greater educational success and achievement for Arkansas's children.

As outlined in the application, Arkansas has made major strides in improving its P-12 education system over the past decade. We believe the activities outlined in this application will build upon past successes and improve key aspects of the education system, in areas such as standards and assessments; turning around our lowest performing schools; better data systems to measure student success and provide the information needed to allow teachers and principals to improve their effectiveness.

Race to the Top represents a unique opportunity to move our P-12 education system forward and improve educational outcomes for our most vulnerable children, a critical step to improving long-term economic outcomes for children and families in this high poverty state. As Arkansas's only statewide, independent, multi-issue, child advocacy organization, it is our hope that you will approve this application and allow our education system (and state) to take yet another major step forward in improving educational outcomes for our most vulnerable, at-risk children.

Sincerely,

(b)(6)

Rich Huddleston
Executive Director

A Member of
VOICES
FOR AMERICA'S CHILDREN

ViPS
Volunteers *in*
Public Schools

May 26, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

Dear Secretary Duncan:

I write to offer support of Arkansas's application for Race to the Top. We understand that the state is seeking a grant from the U.S. Department of Education to challenge and improve K-12 education through four goals:

- To adopt benchmarked standards and assessments which prepare students for success in college and the work place.
- To turn around our lowest performing schools.
- To recruit, develop, retain and reward effective principals and teachers.
- To build data systems that measure student success and provide information to teachers and principals on how they can improve their practices.

Race to the Top represents an opportunity for Arkansas to continue working to stimulate innovation and make fundamental reforms for student achievement.

As an organization with a mission of working to improve the achievement of our students through community involvement in our schools, we see the importance of Arkansas receiving this grant to help our students reach new levels. We fully support the application and respectfully encourage your favorable consideration of it.

Sincerely,

(b)(6)

Debbie Milam
Director

Little Rock School District • 616 N. Harrison Street • Little Rock, AR 72205 • (501) 447-ViPS

KIPP: DELTA
PUBLIC SCHOOLS

CENTRAL OFFICE
415 Ohio Street
Helena-West Helena
Arkansas, 72342
Phone: 870.753.9035
Fax: 870.753.9440
www.kippdelta.org

May 21, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC. 20202

Dear Secretary Duncan,

I am writing this letter to endorse the Arkansas Race To The Top (RTTT) application. As a charter school in the state of Arkansas, we have received support from all levels of the Arkansas Department of Education and the State Board of Education. Over the last eight years, the state has continued to become more inclusive of charters and recognize them as a legitimate path to improving education in Arkansas.

Furthermore, as a KIPP leader part of a national network, I have the vantage point of seeing the benefit of existing in Arkansas opposed to other states. Compared to my peers in other states, the process of applying for a charter and expanding our efforts has been relatively smooth. We are grateful that we are not fighting politics but are able to focus on educating students. It is also impressive to see the commitment that Arkansas has to collecting and distributing accurate data. As a small state, it is clear that it has taken the lead in data collection and dissemination.

The state has made grave efforts to focus on high poverty communities and turning around low performing schools. RTTT funds will help continue this fight in a comprehensive way enabling Arkansas to become a leader and a model for improving education for those who have historically fallen below the status quo. KIPP Delta Public Schools is committed to working with the state to help provide a model of excellence from which other schools may learn and benefit. We look forward to being a part of a national exemplar with the implementation of RTTT funds in Arkansas.

Sincerely,

Scott Shirey
Executive Director

KIPP DELTA COMMUNITIES

HELENA-WEST HELENA

BLYTHEVILLE

CAMDEN FAIRVIEW PUBLIC SCHOOLS
OFFICE OF THE SUPERINTENDENT
625 Clifton Street
Camden, Arkansas 71701
May 20, 2010

U.S. Secretary of Education Arne Duncan
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan:

I write to you in support of the Arkansas Department of Education Race to the Top grant. As Superintendent of Schools for a rural 2,400 student school district, I see this grant as an opportunity for Arkansas to continue its march forward in the delivery of teaching, learning and student academic success.

In the last decade, Arkansas has had a laser-like focus on student academic success, and this grant can help provide even more opportunities for students in all schools in the state. Educators across Arkansas have provided input on how this grant could further education for our students. As a member of the Race to the Top task force, I attended stakeholders' meetings and visioning meetings designed to assimilate different perspectives into the development of this grant. It contains many innovative ideas including better teacher preparation programs, alternative methods of certification, a more effective and efficient teacher appraisal system, and the tremendous opportunity/challenge for developing national standards and assessments. It also would allow us to pursue a more user-friendly longitudinal data system that would not only give teachers the ability to delve deeper into the data for each child, but also provide additional resources for remediation and enrichment tied directly to students' individual needs.

Arkansas has recently had the benefit of great leadership in education. The Commissioner's office has been staffed with visionary leaders such as Ray Simon, Ken James and now Tom Kimbrell. The Deputy Commissioners are leaders recognized in Arkansas and nationally for their experience and insight in critical issue in education. Arkansas' Governor, Mike Beebe, has proven to be a strong advocate for education by providing additional funding for education even as state revenues are declining. This leadership has been instrumental in our state's climb from the bottom tier of most educational indicators to leading the region and nation in many critical areas. While much has been accomplished, we still have a long way to go, and this grant can significantly move us forward and improve work already in motion.

I support this grant totally in its scope and value this effort to enrich educational opportunities for students across Arkansas. The legislature, the Governor, the Arkansas Department of Education, local foundations, higher education, regional educational cooperatives, local school boards, superintendents, teacher unions, teachers, and parents have all come together to ensure that we will be innovative and reform-minded in improving education for all Arkansas students. Thank you for your consideration of this application, and please know that awarding a Race to the Top grant to our state will not only help to support past efforts, but also further assure success for all the children of Arkansas.

Sincerely,

Jerry Guess

Jerry Guess, Ed. D.
Superintendent of Schools

Siloam Springs School District

847 South Dogwood
Post Office Box 798
Siloam Springs, Arkansas 72761

Telephone 479.524.3191
Fax 479.524.8002
http://sssd.k12.ar.us

May 21, 2010

Arne Duncan, Secretary
U. S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Secretary Duncan:

I write to you in support of the Arkansas Department of Education Race to the Top grant. As Superintendent of Schools for a rural 4,000 student school district, I see this grant as an opportunity for Arkansas to continue its march forward in the delivery of teaching, learning and student academic success.

In the last decade, Arkansas has had a laser-like focus on student academic success, and this grant can help scale up opportunities for all schools in the State. Educators across Arkansas have provided input on how this grant could further education for our students. As a member of the Race to the Top task force, I attended two stakeholders' meetings and three visioning meetings designed to assimilate different perspectives into the development of this grant. It contains many innovative ideas including better teacher preparation programs, alternative methods of certification, a more effective and efficient teacher appraisal system, and the tremendous opportunity/challenge for developing national standards and assessments. It also would allow us to pursue a more user-friendly longitudinal data system that would not only give teachers the ability to delve deeper into the data for each child, but also provide additional resources for remediation and enrichment tied directly to the students individual needs.

Arkansas has recently had the benefit of great leadership in education. The Commissioner's office has housed visionary leaders such as Ray Simon, Ken James and now Tom Kimbrell. Arkansas' Governor, Mike Beebe, has proven to be a strong advocate for education by not cutting school funding, even as state revenues are declining. This leadership has been instrumental in our state's climb from the bottom tier of most educational indicators. While much has been accomplished, we still have a long way to go, and this grant can significantly move us forward and improve work already in motion.

I support this grant totally in its scope and value the great effort put forth to enrich educational opportunities for students across Arkansas. The legislature, the Governor, the Arkansas Department of Education, local foundations, higher education, regional educational cooperatives, local school boards, superintendents, teacher unions, teachers, and parents have all come together to ensure that we will be innovative and reform-minded in improving education for all Arkansas students. Thank you for your consideration of this application, and please know that awarding a Race to the Top grant to our state will not only validate past efforts, but also assure the possibility of success for all the children of Arkansas.

Sincerely in Education,

Ken Ramey

Ken Ramey, Superintendent
Siloam Springs School District

Augmented Benchmark Exams Grades 3 - 8 Combined Population

Grade 3 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**4%**	**15%**	**34%**	**48%**	**81%**
2008	6%	16%	30%	48%	**79%**
2007	8%	17%	34%	41%	**74%**
2006	11%	22%	34%	33%	**67%**
2005	13%	29%	35%	23%	**58%**

Grade 4 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**8%**	**14%**	**30%**	**48%**	**78%**
2008	12%	14%	30%	44%	**74%**
2007	15%	20%	30%	35%	**65%**
2006	17%	23%	35%	25%	**60%**
2005	24%	25%	33%	17%	**50%**

Grade 5 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**13%**	**16%**	**38%**	**33%**	**70%**
2008	14%	19%	39%	28%	**67%**
2007	20%	19%	36%	25%	**61%**
2006	26%	23%	32%	18%	**50%**
2005	34%	25%	31%	10%	**41%**

Grade 6 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**6%**	**14%**	**32%**	**48%**	**79%**
2008	10%	18%	30%	42%	**72%**
2007	13%	19%	30%	38%	**68%**
2006	17%	25%	32%	25%	**57%**
2005	25%	31%	28%	15%	**43%**

Grade 7 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**17%**	**15%**	**33%**	**35%**	**68%**
2008	20%	18%	33%	29%	**62%**
2007	25%	18%	34%	24%	**58%**
2006	30%	20%	35%	15%	**50%**
2005	37%	20%	31%	12%	**43%**

Grade 8 Math

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**23%**	**15%**	**39%**	**23%**	**61%**
2008	28%	16%	35%	21%	**56%**
2007	34%	18%	34%	13%	**48%**
2006	38%	18%	34%	10%	**44%**
2005	48%	19%	27%	6%	**33%**

Prof/Adv percentage is based on the actual numbers not the rounded numbers.

Grade 3 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
15%	**19%**	**33%**	**33%**	**67%**
16%	21%	33%	31%	64%
17%	23%	33%	26%	59%
21%	22%	33%	24%	57%
22%	28%	33%	17%	50%

Grade 4 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
7%	**23%**	**40%**	**30%**	**70%**
8%	26%	39%	28%	67%
11%	30%	37%	21%	59%
11%	28%	37%	24%	61%
14%	34%	37%	14%	51%

Grade 5 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
7%	**26%**	**44%**	**24%**	**68%**
10%	26%	39%	25%	64%
9%	32%	37%	22%	59%
10%	34%	41%	15%	56%
11%	42%	41%	6%	47%

Grade 6 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
7%	**26%**	**41%**	**26%**	**67%**
10%	26%	33%	31%	63%
9%	31%	39%	20%	60%
9%	32%	37%	22%	59%
9%	34%	40%	17%	57%

Grade 7 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
7%	**31%**	**43%**	**20%**	**63%**
8%	34%	38%	20%	57%
8%	35%	40%	17%	57%
10%	36%	39%	14%	53%
11%	39%	38%	12%	50%

Grade 8 Literacy

Bel Basic	Basic	Proficient	Advanced	Prof/Adv
7%	**22%**	**49%**	**22%**	**71%**
10%	23%	44%	23%	67%
12%	25%	42%	21%	63%
10%	25%	48%	18%	66%
13%	30%	45%	12%	57%

Grade 5 Science

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**18%**	**39%**	**36%**	**7%**	**43%**
2008	24%	39%	31%	6%	**37%**

Grade 7 Science

Year	Bel Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**30%**	**38%**	**27%**	**5%**	**33%**
2008	32%	36%	27%	5%	**32%**

COMBINED POPULATION
END OF COURSE EXAMS AND GRADE 11 LITERACY

	Algebra I-Mid-Year (January)					Algebra I-Spring (April)				
Year	Below Basic	Basic	Proficient	Advanced	Prof/Adv	Below Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**7%**	**21%**	**44%**	**27%**	**72%**	**7%**	**23%**	**40%**	**30%**	**70%**
2008	12%	36%	39%	13%	53%	9%	25%	41%	25%	66%
2007	13%	32%	40%	15%	55%	11%	28%	36%	26%	61%
2006	12%	37%	44%	8%	52%	12%	24%	37%	28%	65%
2005	18%	34%	36%	11%	47%	15%	25%	37%	23%	60%
2004	18%	50%	29%	3%	32%	15%	32%	39%	14%	53%
2003	24%	46%	26%	4%	30%	15%	41%	37%	7%	44%
2002	42%	49%	9%	1%	10%	21%	42%	30%	7%	37%
2001	57%	40%	3%	0%	3%	31%	48%	18%	2%	20%

	Geometry-Mid-Year (January)					Geometry-Spring (April)				
Year	Below Basic	Basic	Proficient	Advanced	Prof/Adv	Below Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**7%**	**30%**	**39%**	**24%**	**63%**	**5%**	**29%**	**47%**	**19%**	**66%**
2008	4%	27%	44%	27%	68%	7%	33%	40%	20%	60%
2007	10%	30%	38%	23%	61%	10%	30%	36%	23%	59%
2006	13%	36%	37%	14%	51%	9%	31%	42%	18%	60%
2005	15%	41%	34%	9%	43%	14%	31%	38%	17%	55%
2004	25%	49%	24%	2%	26%	13%	39%	38%	10%	48%
2003	33%	45%	20%	2%	22%	17%	43%	35%	4%	39%
2002	35%	46%	18%	1%	19%	28%	41%	27%	5%	32%
2001	33%	50%	15%	1%	16%	35%	47%	17%	2%	19%

	Biology- Mid-Year (January)					Biology- Spring (April)				
Year	Below Basic	Basic	Proficient	Advanced	Prof/Adv	Below Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**25%**	**39%**	**27%**	**10%**	**36%**	**22%**	**37%**	**30%**	**11%**	**41%**
2008	37%	38%	20%	5%	25%	33%	37%	23%	7%	30%

	Grade 11 Literacy- Spring (April)				
Year	Below Basic	Basic	Proficient	Advanced	Prof/Adv
2009	**9%**	**35%**	**55%**	**1%**	**57%**
2008	9%	40%	50%	1%	51%
2007	12%	37%	49%	1%	51%
2006	11%	44%	45%	0%	45%
2005	14%	40%	44%	1%	45%
2004	15%	40%	43%	2%	45%
2003	18%	40%	39%	2%	41%
2002	22%	41%	36%	1%	37%
2001	31%	47%	21%	1%	22%

Arkansas NAEP 2003-2009 — Grade 4 Mathematics

Gap - Average Scale Scores

Year	Statistic	Overall	White	Black	Hispanic	Asian	American Indian	NSLP Eligible	NSLP Not Eligible	SD	Not SD	ELL	Not ELL	Neither SD nor ELL	Male	Female
2003	Average Scale Score	229	237	206	221			221	239	202	233	221	229		228	230
2005		236	242	214	229			226	247	208	239	229	236		236	235
2007		238	245	217	230	236		229	249	216	240	222	239		238	237
2009		238	245	217	233	‡		229	250	215	240	227	238		239	236

Reporting standards not met in blank cells.

NOTE: The NAEP Math scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) Mathematics Assessments.

Year	White/Black Gap	White/ Hispanic Gap	Black/ Hispanic Gap	NSLP Not Eligible - Eligible Gap	Not SD-SD Gap	Not ELL-ELL Gap	Male - Female Gap
2003	31	16	15	18	31	8	-1
2005	29	13	15	20	30	7	1
2007	28	15	13	20	24	17	1
2009	28	12	16	22	25	11	3

Arkansas NAEP 2003-2009 – Grade 8 Mathematics

Gap - Average Scale Scores

Year	Statistic	Overall	White	Black	Hispanic	Asian	American Indian	NSLP Eligible	NSLP Not Eligible	SD	Not SD	ELL	Not ELL	Neither SD nor ELL	Male	Female
2003		266	275	239	248			256	276	219	273	‡	266		265	267
2005		272	281	243	266			260	282	227	277	‡	272		270	273
2007		274	282	254	256			263	285	233	279	247	275		274	274
2009		276	284	251	269			264	290	238	281	257	277		275	277

Reporting standards not met in blank cells.

NOTE: The NAEP Math scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) Mathematics Assessments.

Year	White/Black Gap	White/ Hispanic Gap	Black/ Hispanic Gap
2003	36	27	9
2005	38	15	23
2007	28	25	2
2009	34	15	19

NSLP Not Eligible - Eligible Gap
20
23
22
26

Not SD-SD Gap
54
50
45
43

Not ELL-ELL Gap
27
20

Male - Female Gap
-2
-3
0
-2

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Institute of Education Sciences

The Nation's Report Card

Mathematics 2009

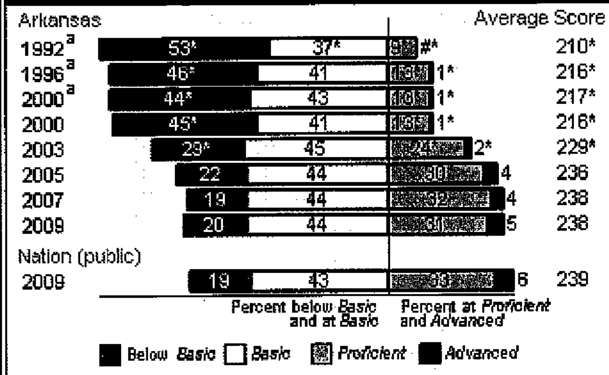
Snapshot State Report

Arkansas
Grade 4
Public Schools

Overall Results

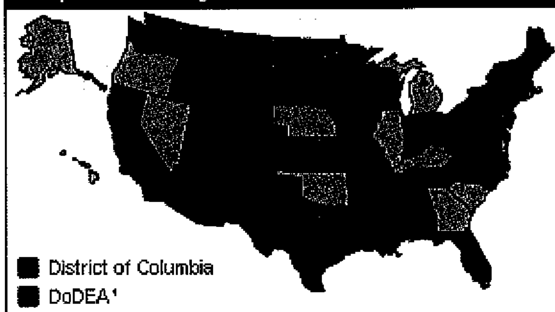
- In 2009, the average score of fourth-grade students in Arkansas was 238. This was not significantly different from the average score of 239 for public school students in the nation.
- The average score for students in Arkansas in 2009 (238) was not significantly different from their average score in 2007 (238) and was higher than their average score in 1992 (210).
- In 2009, the score gap between students in Arkansas at the 75th percentile and students at the 25th percentile was 38 points. This performance gap was not significantly different from that of 1992 (42 points).
- The percentage of students in Arkansas who performed at or above the NAEP *Proficient* level was 36 percent in 2009. This percentage was not significantly different from that in 2007 (37 percent) and was greater than that in 1992 (10 percent).
- The percentage of students in Arkansas who performed at or above the NAEP *Basic* level was 80 percent in 2009. This percentage was not significantly different from that in 2007 (81 percent) and was greater than that in 1992 (47 percent).

Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from state's results in 2009.
# Rounds to zero.
a Accommodations not permitted.
NOTE: Detail may not sum to totals because of rounding.

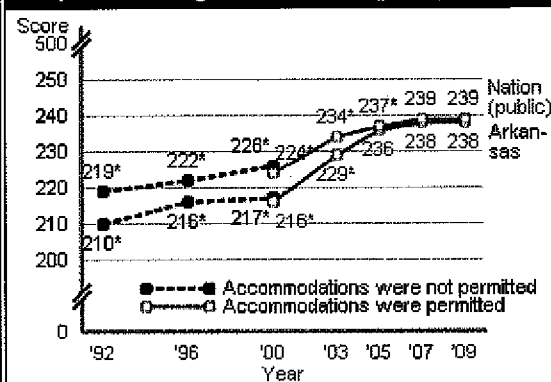
Compare the Average Score in 2009 to Other States/ urisdictions



[1] Department of Defense Education Activity schools (domestic and overseas).

In 2009, the average score in Arkansas was
- lower than those in 29 states/jurisdictions
- higher than those in 9 states/jurisdictions
- not significantly different from those in 13 states/jurisdictions

Compare the Average Score to Nation (public)



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender '					
Male 51		239	80	39	6
Female	49	236	80	34	4
Race/Ethnicity					
White 66		245	88	46	7
Black 23		217	56	12	#
Hispanic 8		233	79	26	2
Asian/Pacific Islander	2	‡	‡	‡	‡
American Indian/Alaska Native	1	‡	‡	‡	‡
National School Lunch Program '					
Eligible 59		229	72	23	2
Not eligible	41	250	92	55	9

Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

Score Gaps for Student Groups

- In 2009, male students in Arkansas had an average score that was not significantly different from that of female students. This performance gap was not significantly different from that in 1992 (1 point). '
- In 2009, Black students had an average score that was 28 points lower than that of White students. This performance gap was not significantly different from that in 1992 (29 points).
- In 2009, Hispanic students had an average score that was 12 points lower than that of White students. Data are not ' reported for Hispanic students in 1992, because reporting standards were not met.
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of poverty, had an average score that was 22 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was not significantly different from that in 1996 (23 points).

NOTE: Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1992–2009 Mathematics Assessments.

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Institute of Education Sciences

The Nation's Report Card

Mathematics 2009

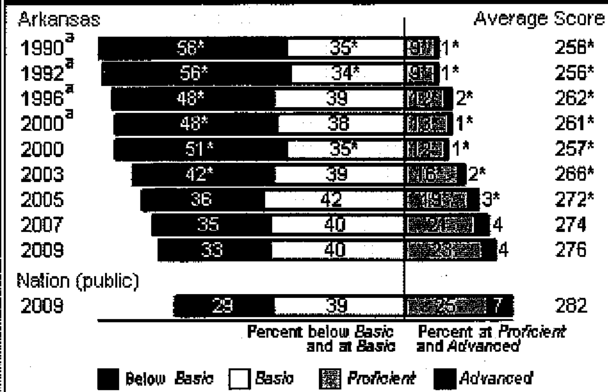
Snapshot State Report

Arkansas
Grade 8
Public Schools

Overall Results

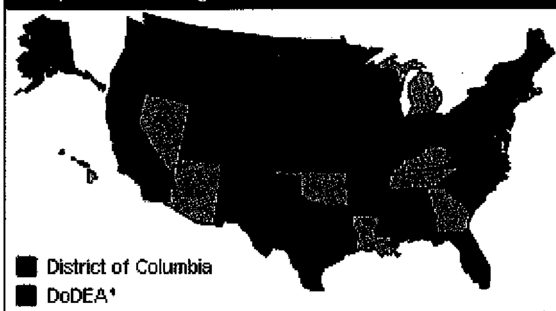
- In 2009, the average score of eighth-grade students in Arkansas was 276. This was lower than the average score of 282 for public school students in the nation.
- The average score for students in Arkansas in 2009 (276) was not significantly different from their average score in 2007 (274) and was higher than their average score in 1990 (256).
- In 2009, the score gap between students in Arkansas at the 75th percentile and students at the 25th percentile was 48 points. This performance gap was not significantly different from that of 1990 (45 points).
- The percentage of students in Arkansas who performed at or above the NAEP *Proficient* level was 27 percent in 2009. This percentage was not significantly different from that in 2007 (24 percent) and was greater than that in 1990 (9 percent).
- The percentage of students in Arkansas who performed at or above the NAEP *Basic* level was 67 percent in 2009. This percentage was not significantly different from that in 2007 (65 percent) and was greater than that in 1990 (44 percent).

Achievement-Level Percentages and Average Score Results



* Significantly different ($p < .05$) from state's results in 2009.
[a] Accommodations not permitted.
NOTE: Detail may not sum to totals because of rounding.

Compare the Average Score in 2009 to Other States/Jurisdictions

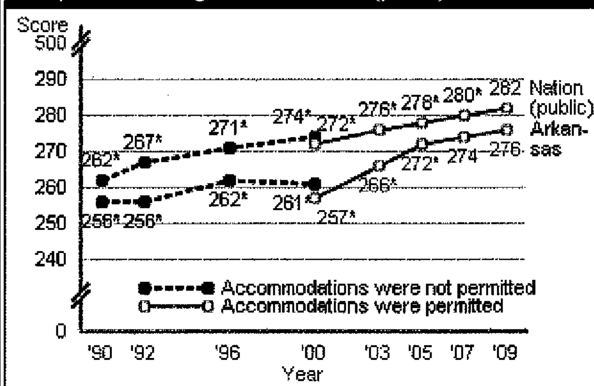


[1] Department of Defense Education Activity schools (domestic and overseas).

In 2009, the average score in **Arkansas** was

- lower than those in 35 states/jurisdictions
- higher than those in 6 states/jurisdictions
- not significantly different from those in 10 states/jurisdictions

Compare the Average Score to Nation (public)



* Significantly different ($p < .05$) from 2009.

Results for Student Groups in 2009

Reporting Groups	Percent of students	Avg. score	Percentages at or above *Basic*	Percentages at or above *Proficient*	Percent at *Advanced*
Gender					
Male	51	275	66	27	4
Female	49	277	68	27	5
Race/Ethnicity					
White	69	284	76	34	6
Black	21	251	36	8	#
Hispanic	8	269	63	15	1
Asian/Pacific Islander	1	‡	‡	‡	‡
American Indian/Alaska Native	1	‡	‡	‡	‡
National School Lunch Program					
Eligible	53	264	54	15	1
Not eligible	47	290	81	40	8

\# Rounds to zero. ‡ Reporting standards not met.

NOTE: Detail may not sum to totals because of rounding, and because the "Information not available" category for the National School Lunch Program, which provides free/reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed.

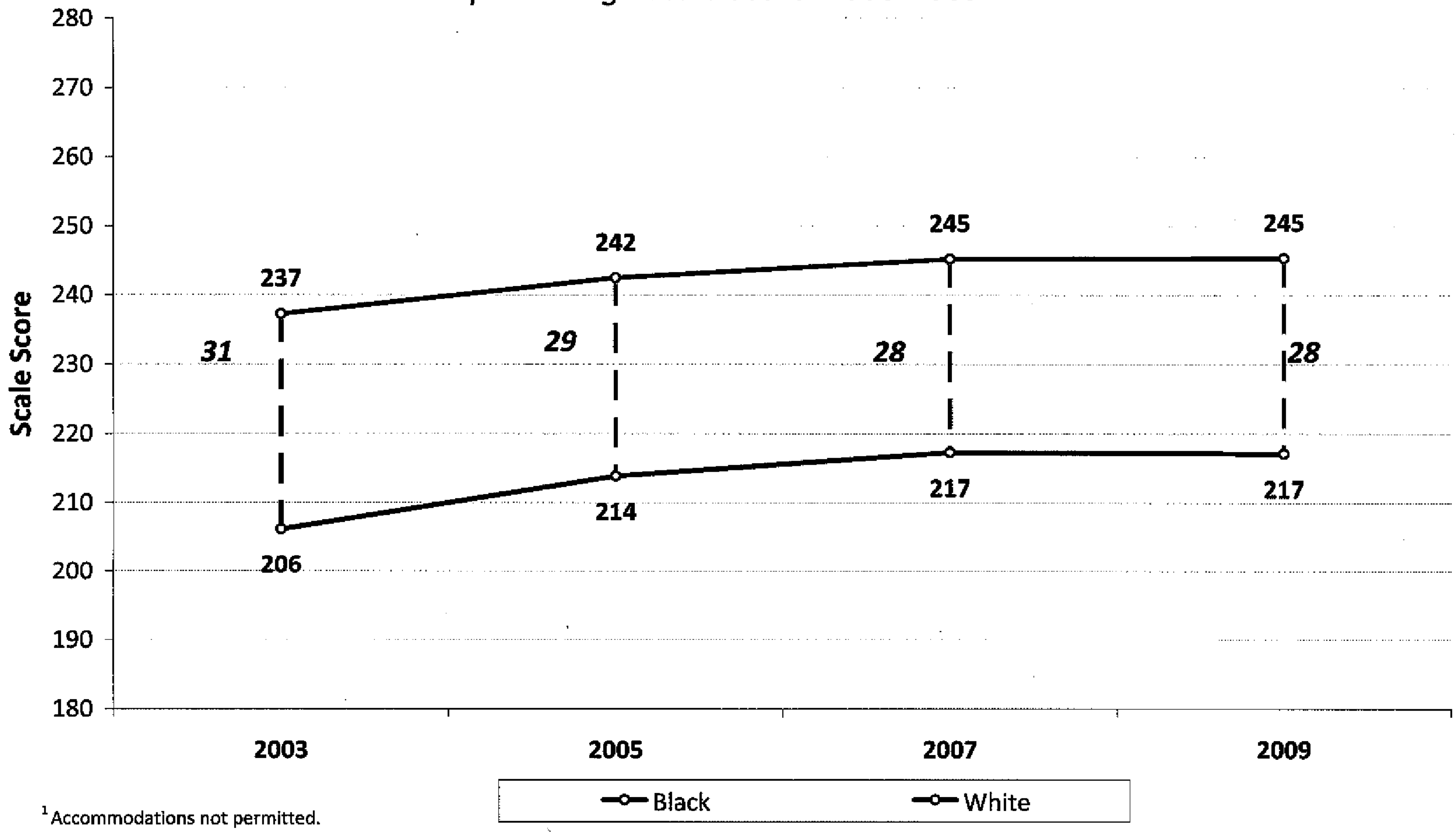
Score Gaps for Student Groups

- In 2009, female students in Arkansas had an average score that was not significantly different from that of male students. This performance gap was not significantly different from that in 1990 (2 points).
- In 2009, Black students had an average score that was 34 points lower than that of White students. This performance gap was not significantly different from that in 1990 (34 points).
- In 2009, Hispanic students had an average score that was 15 points lower than that of White students. Data are not reported for Hispanic students in 1990, because reporting standards were not met.
- In 2009, students who were eligible for free/reduced-price school lunch, an indicator of poverty, had an average score that was 26 points lower than that of students who were not eligible for free/reduced-price school lunch. This performance gap was not significantly different from that in 1996 (24 points).

NOTE: Statistical comparisons are calculated on the basis of unrounded scale scores or percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1990–2009 Mathematics Assessments.

NAEP Mathematics Grade 4 — White - Black

Gap - Average Scale Score: 2003-2009



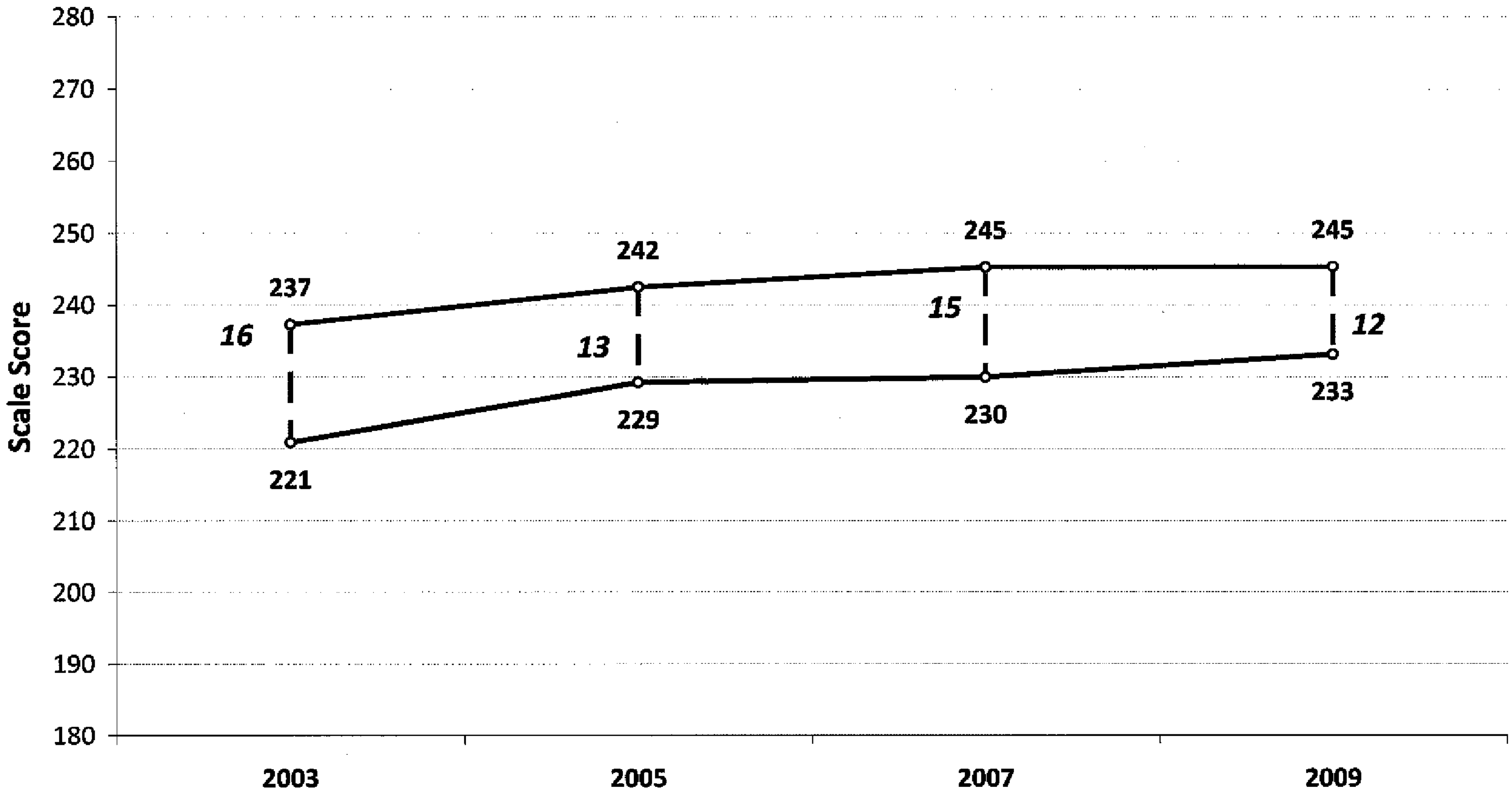
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — White - Hispanic

Gap - Average Scale Score: 2003-2009



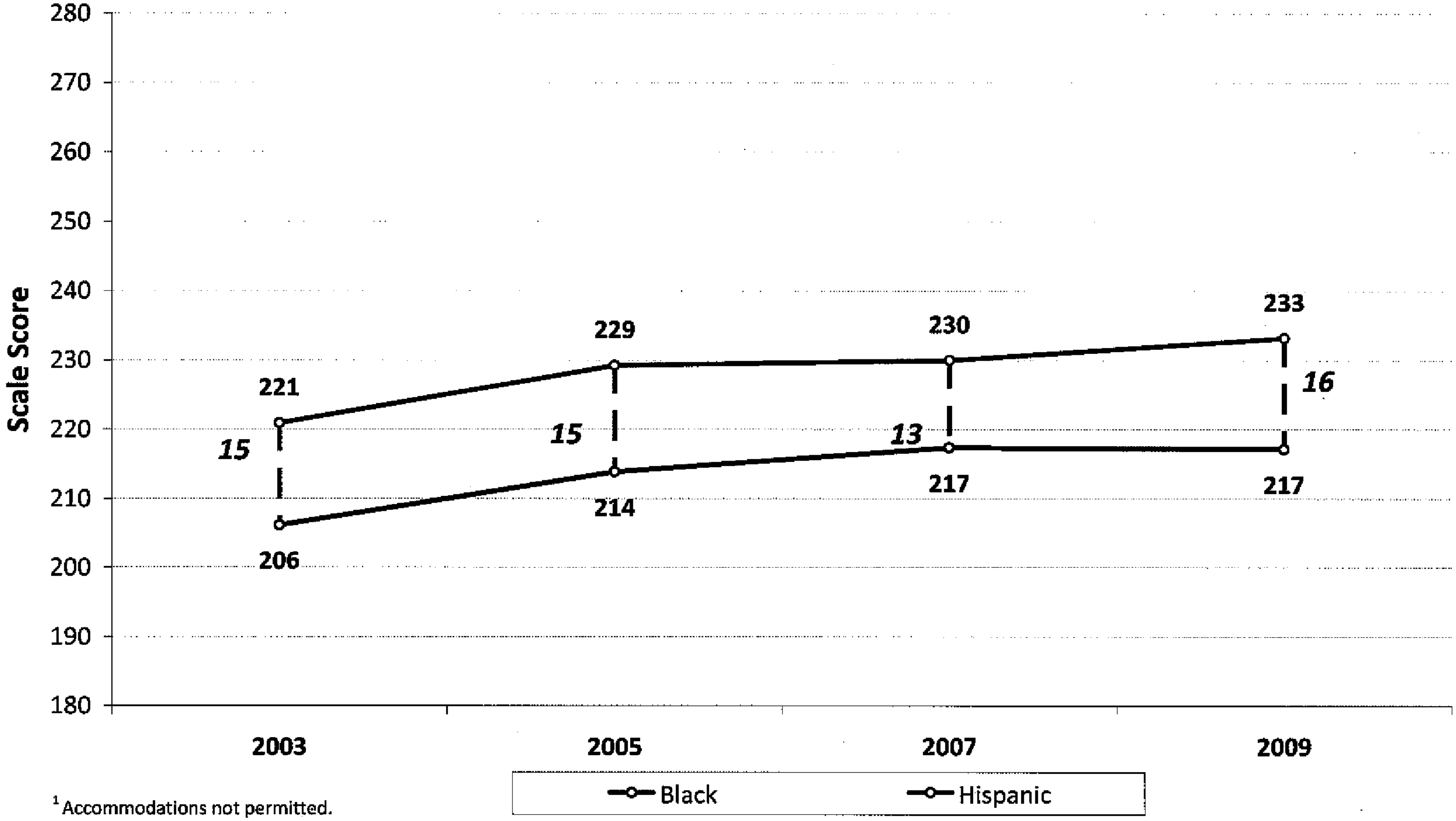
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — Hispanic - Black

Gap - Average Scale Score: 2003-2009



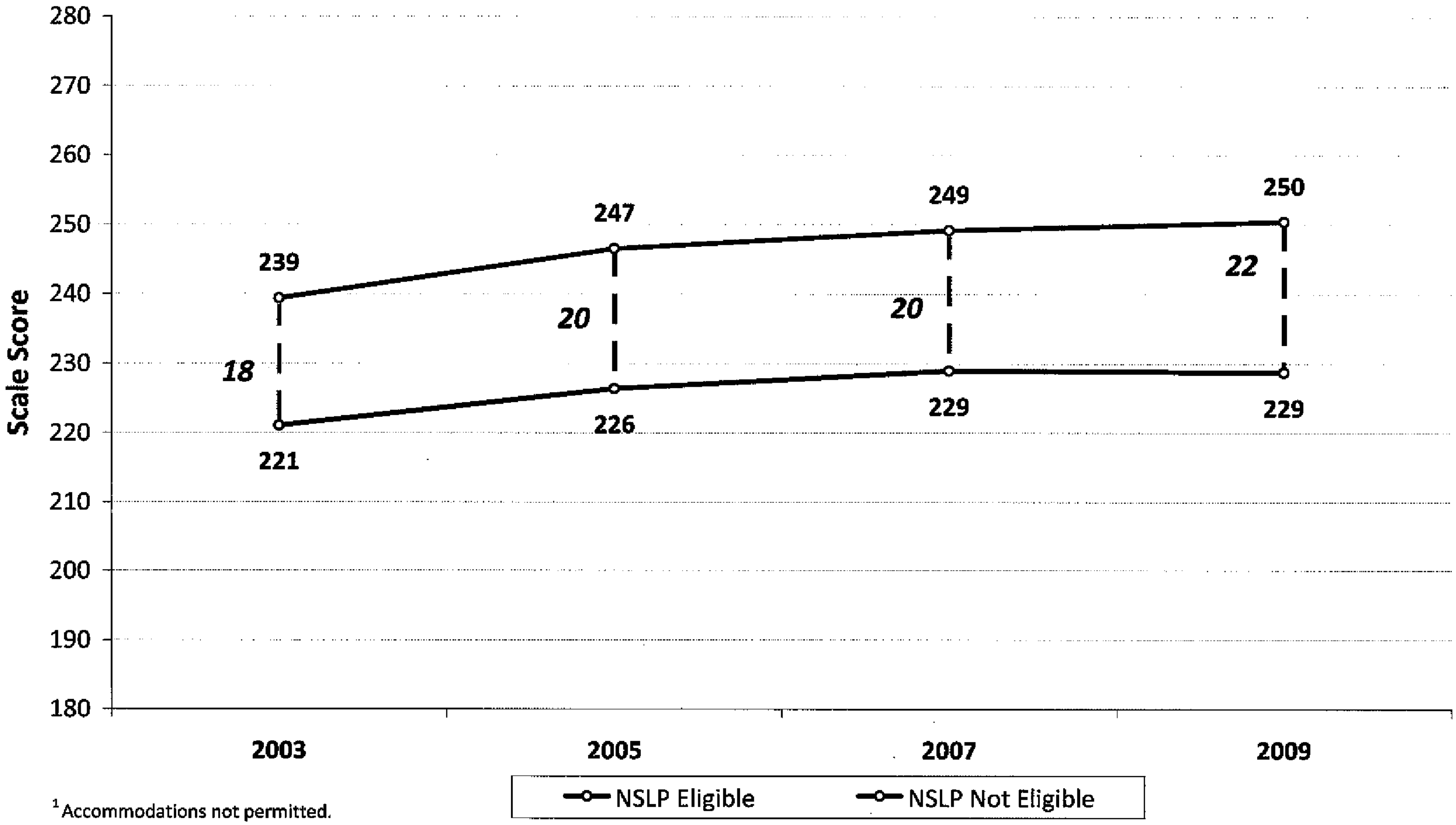
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — National School Lunch Program

Gap - Average Scale Score: 2003-2009



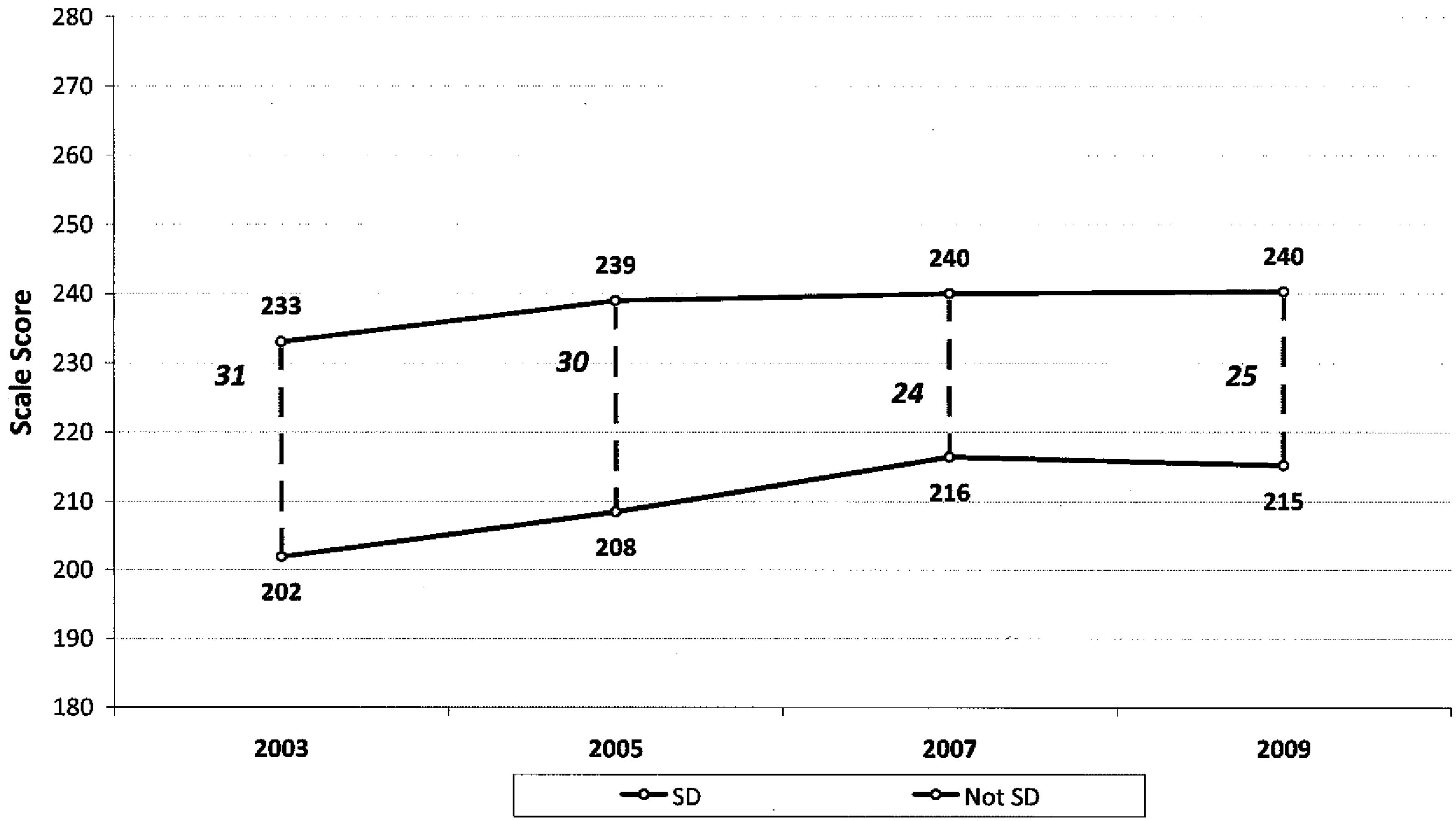
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — Students with Disabilities

Gap - Average Scale Score: 2003-2009

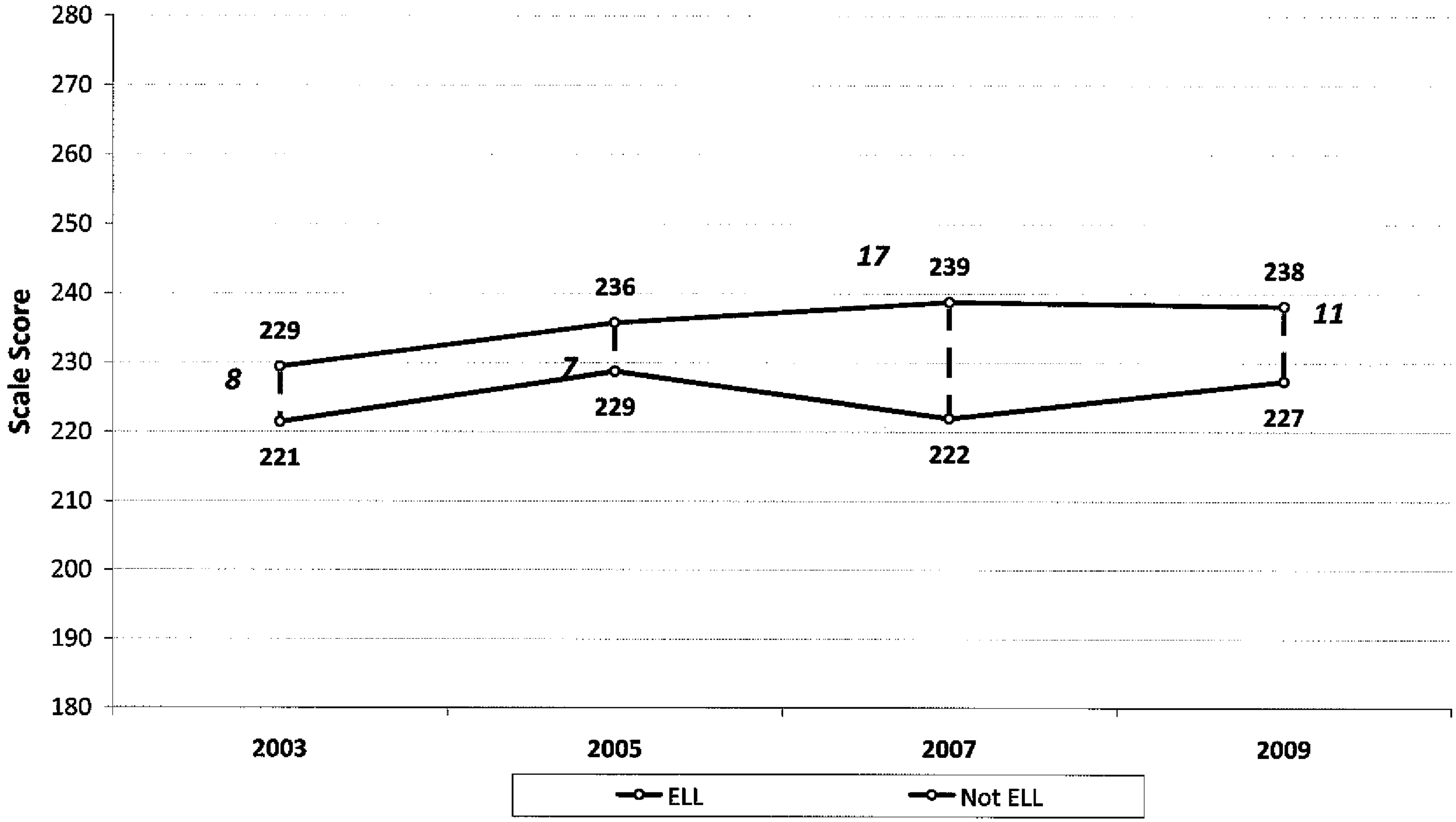


NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — English Language Learners

Gap - Average Scale Score: 2003-2009

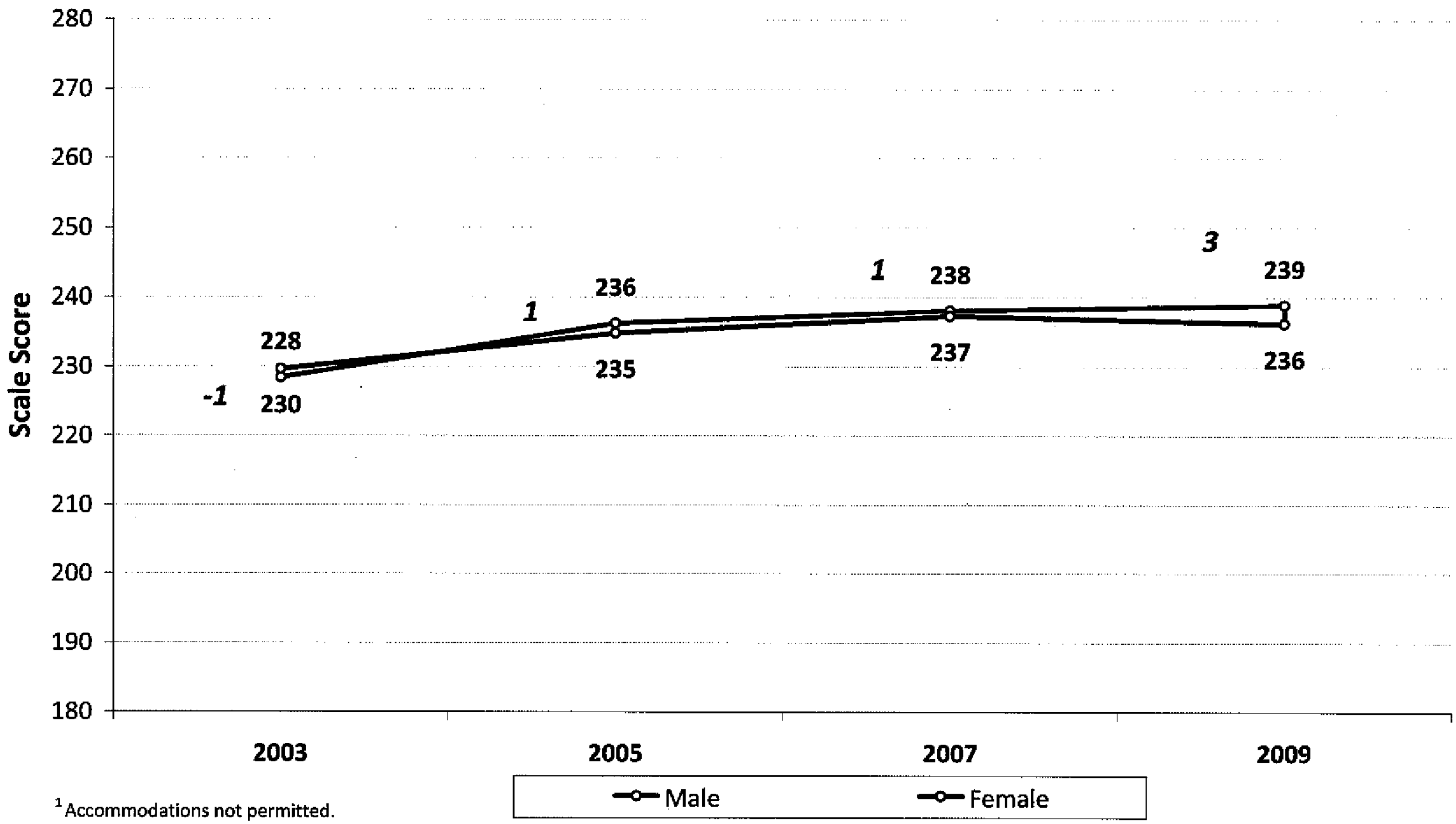


NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 4 — Gender

Gap - Average Scale Score: 2003-2009



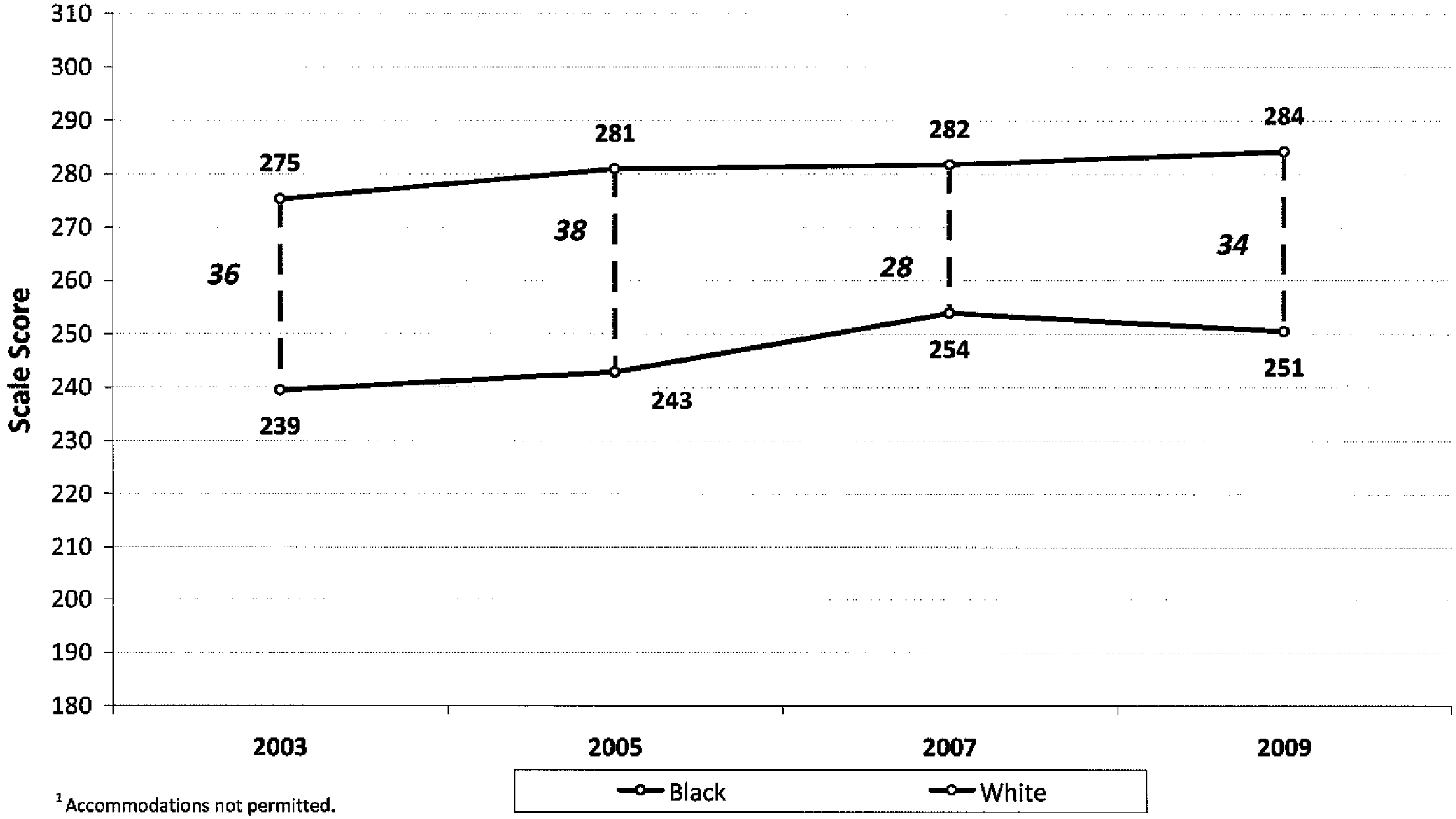
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 8 — White - Black

Gap - Average Scale Score: 2003-2009



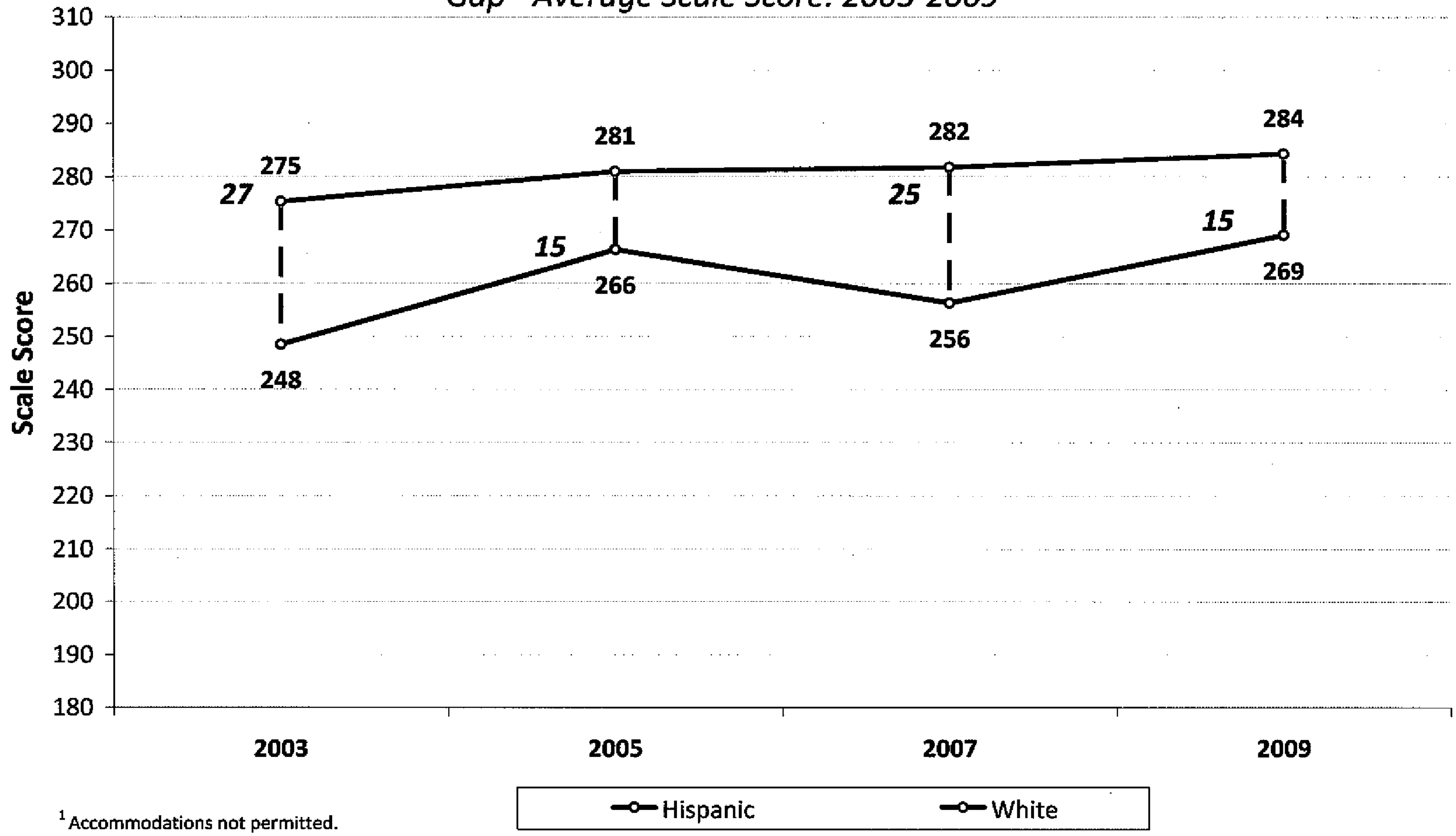
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 8 — White - Hispanic

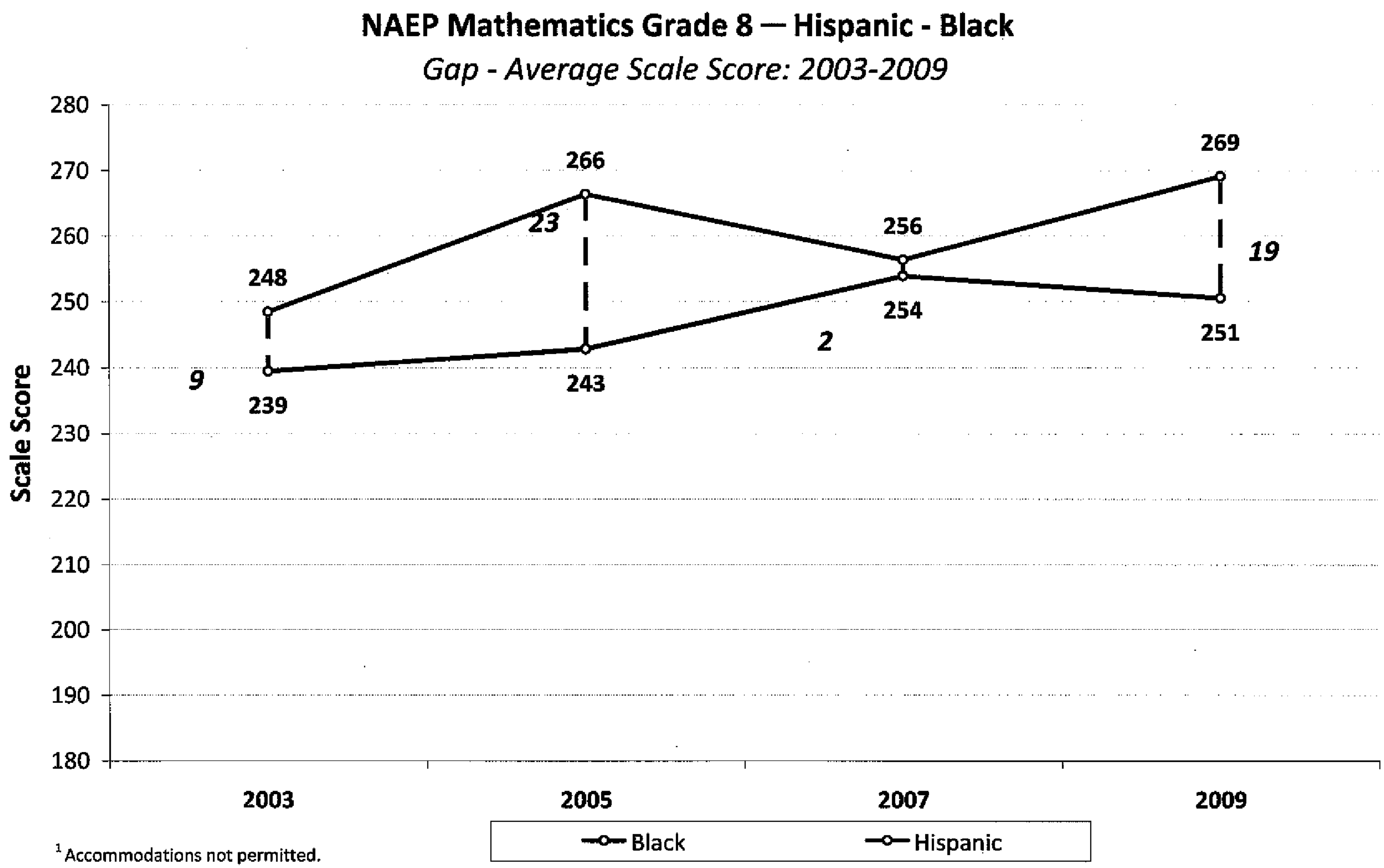
Gap - Average Scale Score: 2003-2009



[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).



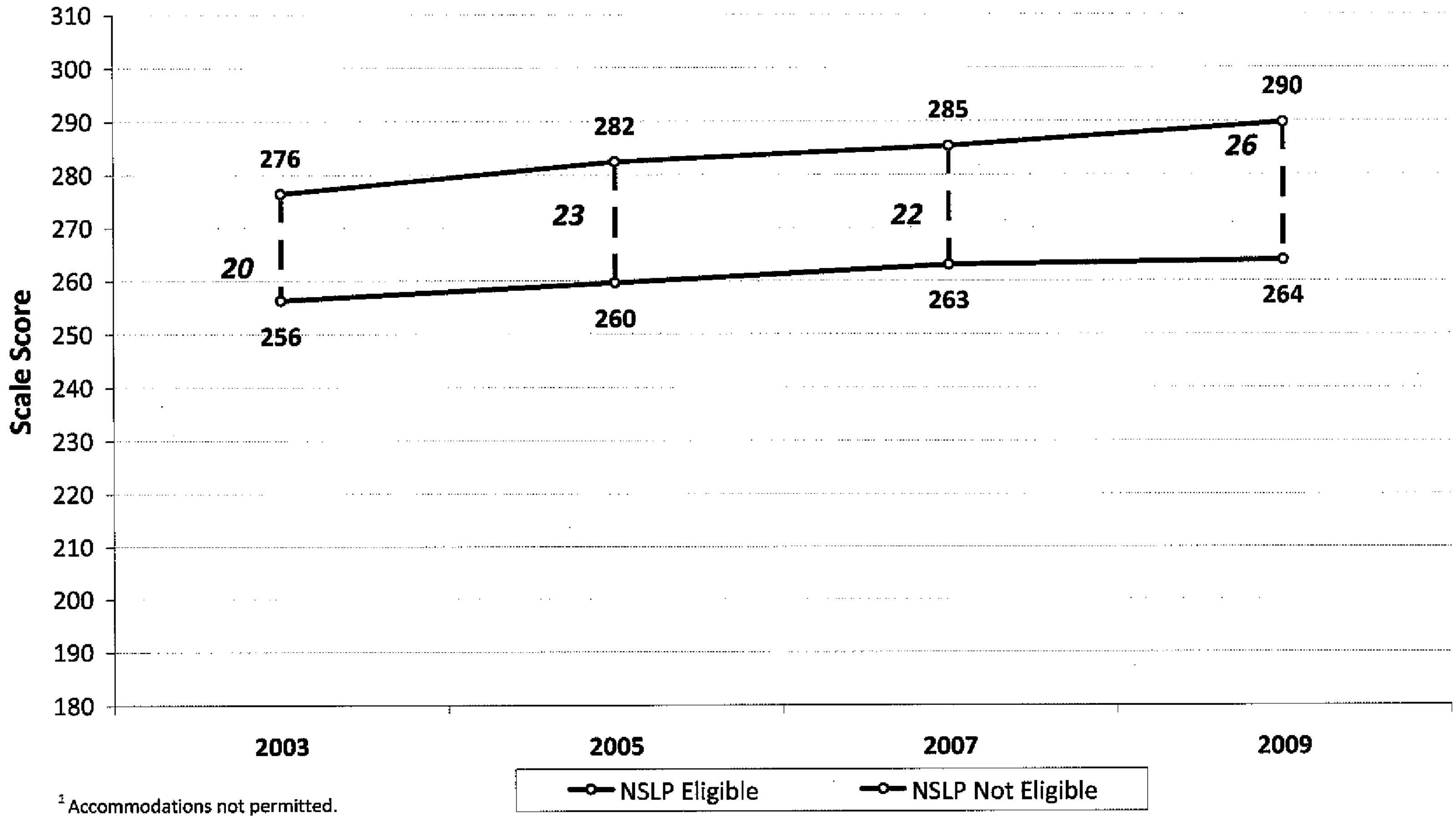
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 8 — National School Lunch Program

Gap - Average Scale Score: 2003-2009



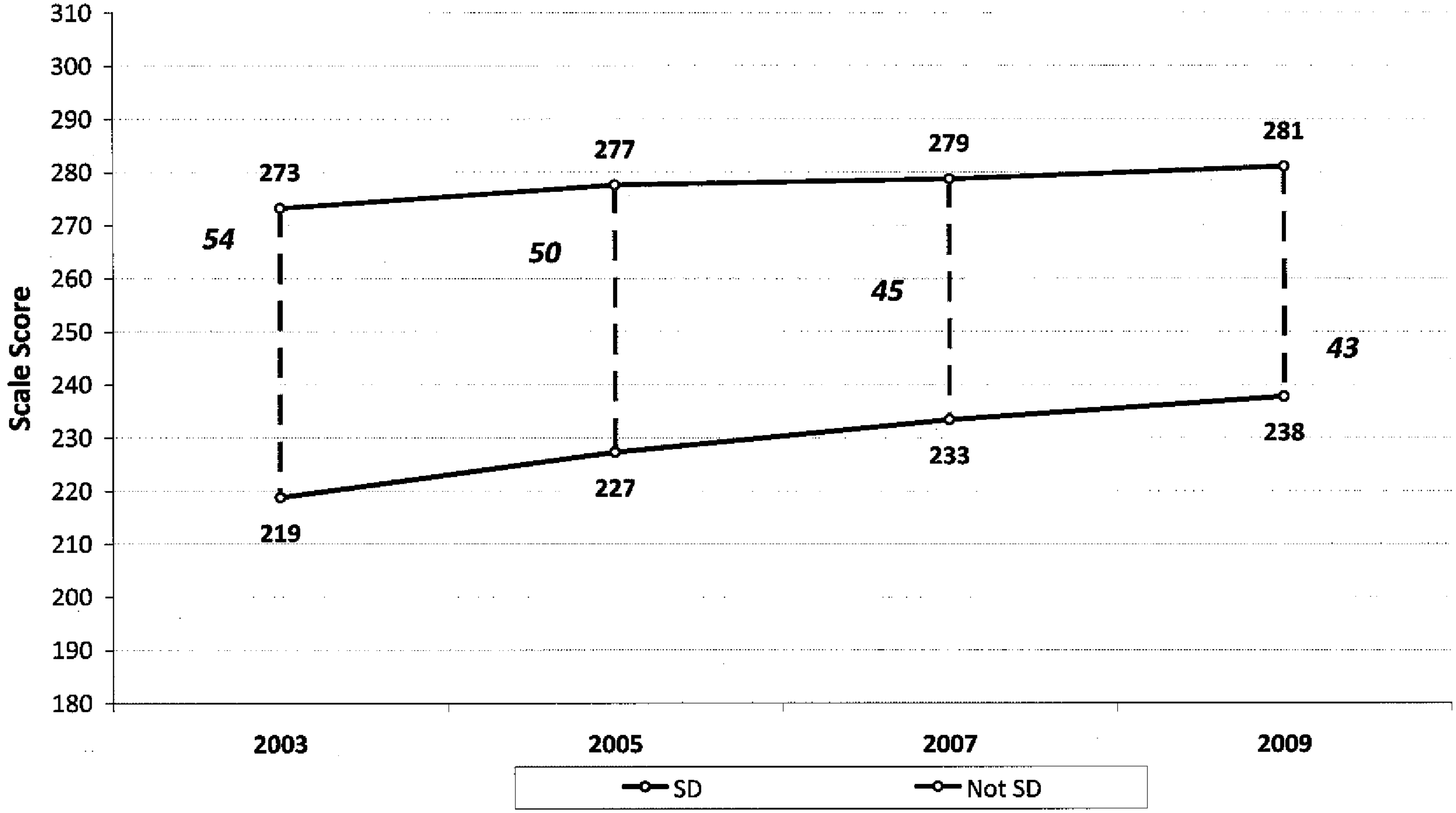
[1] Accommodations not permitted.

NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Mathematics Grade 8 — Students with Disabilities

Gap - Average Scale Score: 2003-2009



NOTE: The NAEP Mathematics scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

Arkansas NAEP 2003-2007 — Grade 4 Reading

Gap - Average Scale Scores

Year	Statistic	Overall	White	Black	Hispanic	Asian	American Indian	NSLP Eligible	NSLP Not Eligible	SD	Not SD	ELL	Not ELL	Neither SD nor ELL	Male	Female
2003	Average Scale Score	214	223	190	204			204	227	164	218	201	214	219	209	218
2005		217	225	194	212			206	230	176	220	205	217	221	213	221
2007		217	226	195	202			205	232	183	220	188	219	222	213	221

Reporting standards not met in blank cells.

NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) Reading Assessments.

Year	White/Black Gap	White/ Hispanic Gap	Black/ Hispanic Gap
2003	33	19	14
2005	32	13	19
2007	31	24	7

NSLP Not Eligible - Eligible Gap
23
24
26

Not SD-SD Gap
54
44
37

Not ELL-ELL Gap
13
13
31

Male - Female Gap
-10
-8
-9

NCES 2007-497AR4

The Nation's Report Card

Reading 2007

State Snapshot Report

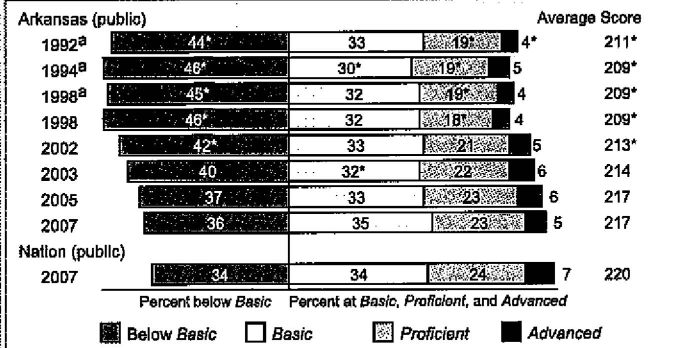
Arkansas
Grade 4
Public Schools

The National Assessment of Educational Progress (NAEP) assesses reading in two content areas in grade 4: reading for literary experience and to gain information. The NAEP reading scale ranges from 0 to 500.

Overall Reading Results for Arkansas

- In 2007, the average scale score for fourth-grade students in Arkansas was 217. This was not significantly different from their average score in 2005 (217) and was higher than their average score in 1992 (211).[1]
- Arkansas' average score (217) in 2007 was lower than that of the nation's public schools (220).
- Of the 52 states and other jurisdictions that participated in the 2007 fourth-grade assessment, students' average scale score in Arkansas was higher than those in 8 jurisdictions, not significantly different from those in 13 jurisdictions, and lower than those in 30 jurisdictions.[2]
- The percentage of students in Arkansas who performed at or above the NAEP *Proficient* level was 29 percent in 2007. This percentage was not significantly different from that in 2005 (30 percent) and was greater than that in 1992 (23 percent).
- The percentage of students in Arkansas who performed at or above the NAEP *Basic* level was 64 percent in 2007. This percentage was not significantly different from that in 2005 (63 percent) and was greater than that in 1992 (56 percent).

Percentages at NAEP Achievement Levels and Average Score



a Accommodations were not permitted for this assessment.

NOTE: The NAEP grade 4 reading achievement levels correspond to the following scale points: Below *Basic*, 207 or lower; *Basic*, 208–237; *Proficient*, 238–267; *Advanced*, 268 or above.

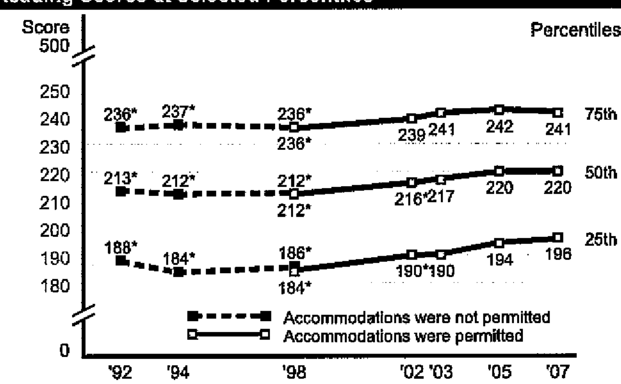
Performance of NAEP Reporting Groups in Arkansas: 2007

Reporting groups	Percent of students	Average score	Percent below *Basic*	Percent of students at or above *Basic*	Percent of students at or above *Proficient*	Percent *Advanced*
Male	50	213	41	59	25	4
Female	50	221	32	68	32	6
White	70	226	26	74	36	7
Black	20	195	65	35	9	1
Hispanic	8	202	52	48	16	2
Asian/Pacific Islander	1	‡	‡	‡	‡	‡
American Indian/Alaska Native	1	‡	‡	‡	‡	‡
Eligible for National School Lunch Program	56	205	50	50	17	2
Not eligible for National School Lunch Program	44	232	20	80	44	10

Average Score Gaps Between Selected Groups

- In 2007, male students in Arkansas had an average score that was lower than that of female students by 9 points. In 1992, the average score for male students was lower than that of female students by 6 points.
- In 2007, Black students had an average score that was lower than that of White students by 31 points. In 1992, the average score for Black students was lower than that of White students by 29 points.
- In 2007, Hispanic students had an average score that was lower than that of White students by 24 points. Data are not reported for Hispanic students in 1992, because reporting standards were not met.
- In 2007, students who were eligible for free/reduced-price school lunch, a proxy for poverty, had an average score that was lower than that of students who were not eligible for free/reduced-price school lunch by 26 points. In 1998, the average score for students who were eligible for free/reduced-price school lunch was lower than the score of those not eligible by 25 points.
- In 2007, the score gap between students at the 75th percentile and students at the 25th percentile was 46 points. In 1992, the score gap between students at the 75th percentile and students at the 25th percentile was 48 points.

Reading Scores at Selected Percentiles



NOTE: Scores at selected percentiles on the NAEP reading scale indicate how well students at lower, middle, and higher levels performed.

\# Rounds to zero.
‡ Reporting standards not met.
* Significantly different from 2007.
↑ Significantly higher than 2005. ↓ Significantly lower than 2005.

[1] Comparisons (higher/lower/narrower/wider/not different) are based on statistical tests. The .05 level was used for testing statistical significance. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages. Comparisons across jurisdictions and comparisons with the nation or within a jurisdiction across years may be affected by differences in exclusion rates for students with disabilities (SD) and English language learners (ELL). The exclusion rates for SD and ELL in Arkansas were 6 percent and 2 percent in 2007, respectively.For more information on NAEP significance testing see http://nces.ed.gov/nationsreportcard/reading/interpret-results.asp#statistical.

[2] "Jurisdictions" refers to states and the District of Columbia and the Department of Defense Education Activity schools.

NOTE: Detail may not sum to totals because of rounding and because the "Information not available" category for the National School Lunch Program, which provides free and reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed. Visit http://nces.ed.gov/nationsreportcard/states/ for additional results and detailed information.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1992–2007 Reading Assessments.

ies NATIONAL CENTER FOR EDUCATION STATISTICS, Institute of Education Sciences

NCES 2007-497AR8

The Nation's Report Card

Reading 2007

State Snapshot Report

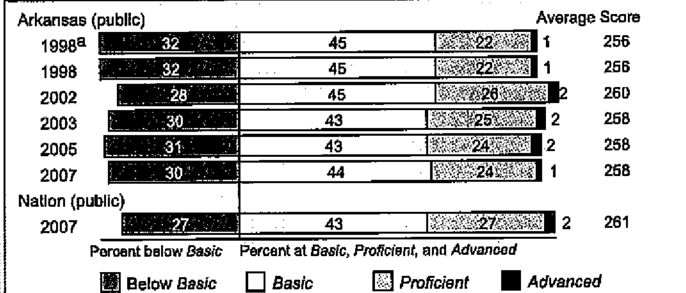
Arkansas
Grade 8
Public Schools

The National Assessment of Educational Progress (NAEP) assesses reading in three content areas in grade 8: reading for literary experience, to gain information, and to perform a task. The NAEP reading scale ranges from 0 to 500.

Overall Reading Results for Arkansas

- In 2007, the average scale score for eighth-grade students in Arkansas was 258. This was not significantly different from their average score in 2005 (258) and was not significantly different from their average score in 1998 (256).[1]
- Arkansas' average score (258) in 2007 was lower than that of the nation's public schools (261).
- Of the 52 states and other jurisdictions that participated in the 2007 eighth-grade assessment, students' average scale score in Arkansas was higher than those in 8 jurisdictions, not significantly different from those in 12 jurisdictions, and lower than those in 31 jurisdictions.[2]
- The percentage of students in Arkansas who performed at or above the NAEP *Proficient* level was 25 percent in 2007. This percentage was not significantly different from that in 2005 (26 percent) and was not significantly different from that in 1998 (23 percent).
- The percentage of students in Arkansas who performed at or above the NAEP *Basic* level was 70 percent in 2007. This percentage was not significantly different from that in 2005 (69 percent) and was not significantly different from that in 1998 (68 percent).

Percentages at NAEP Achievement Levels and Average Score



[a] Accommodations were not permitted for this assessment.

NOTE: The NAEP grade 8 reading achievement levels correspond to the following scale points: Below *Basic*, 242 or lower; *Basic*, 243–280; *Proficient*, 281–322; *Advanced*, 323 or above.

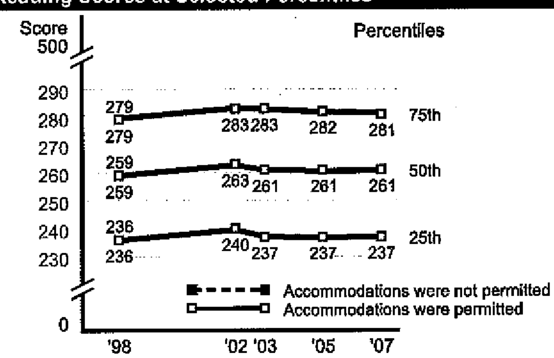
Performance of NAEP Reporting Groups in Arkansas: 2007

Reporting groups	Percent of students	Average score	Percent below *Basic*	Percent of students at or above *Basic*	Percent of students at or above *Proficient*	Percent *Advanced*
Male	49	253	36	64	21	1
Female	51	263	25	75	30	2
White	68	266	21	79	32	2
Black	24	236	57	43	8	#
Hispanic	6	249	40	60	15	#
Asian/Pacific Islander	1	‡	‡	‡	‡	‡
American Indian/Alaska Native	1	‡	‡	‡	‡	‡
Eligible for National School Lunch Program	51	247	42	58	16	1
Not eligible for National School Lunch Program	49	269	18	82	35	2

Average Score Gaps Between Selected Groups

- In 2007, male students in Arkansas had an average score that was lower than that of female students by 11 points. In 1998, the average score for male students was lower than that of female students by 11 points.
- In 2007, Black students had an average score that was lower than that of White students by 31 points. In 1998, the average score for Black students was lower than that of White students by 29 points.
- In 2007, Hispanic students had an average score that was lower than that of White students by 18 points. Data are not reported for Hispanic students in 1998, because reporting standards were not met.
- In 2007, students who were eligible for free/reduced-price school lunch, a proxy for poverty, had an average score that was lower than that of students who were not eligible for free/reduced-price school lunch by 22 points. In 1998, the average score for students who were eligible for free/reduced-price school lunch was lower than the score of those not eligible by 21 points.
- In 2007, the score gap between students at the 75th percentile and students at the 25th percentile was 44 points. In 1998, the score gap between students at the 75th percentile and students at the 25th percentile was 44 points.

Reading Scores at Selected Percentiles



NOTE: Scores at selected percentiles on the NAEP reading scale indicate how well students at lower, middle, and higher levels performed.

\# Rounds to zero.
‡ Reporting standards not met.
* Significantly different from 2007.
↑ Significantly higher than 2005. ↓ Significantly lower than 2005.

[1] Comparisons (higher/lower/narrower/wider/not different) are based on statistical tests. The .05 level was used for testing statistical significance. Statistical comparisons are calculated on the basis of unrounded scale scores or percentages. Comparisons across jurisdictions and comparisons with the nation or within a jurisdiction across years may be affected by differences in exclusion rates for students with disabilities (SD) and English language learners (ELL). The exclusion rates for SD and ELL in Arkansas were 5 percent and 1 percent in 2007, respectively.For more information on NAEP significance testing see http://nces.ed.gov/nationsreportcard/reading/interpret-results.asp#statistical.

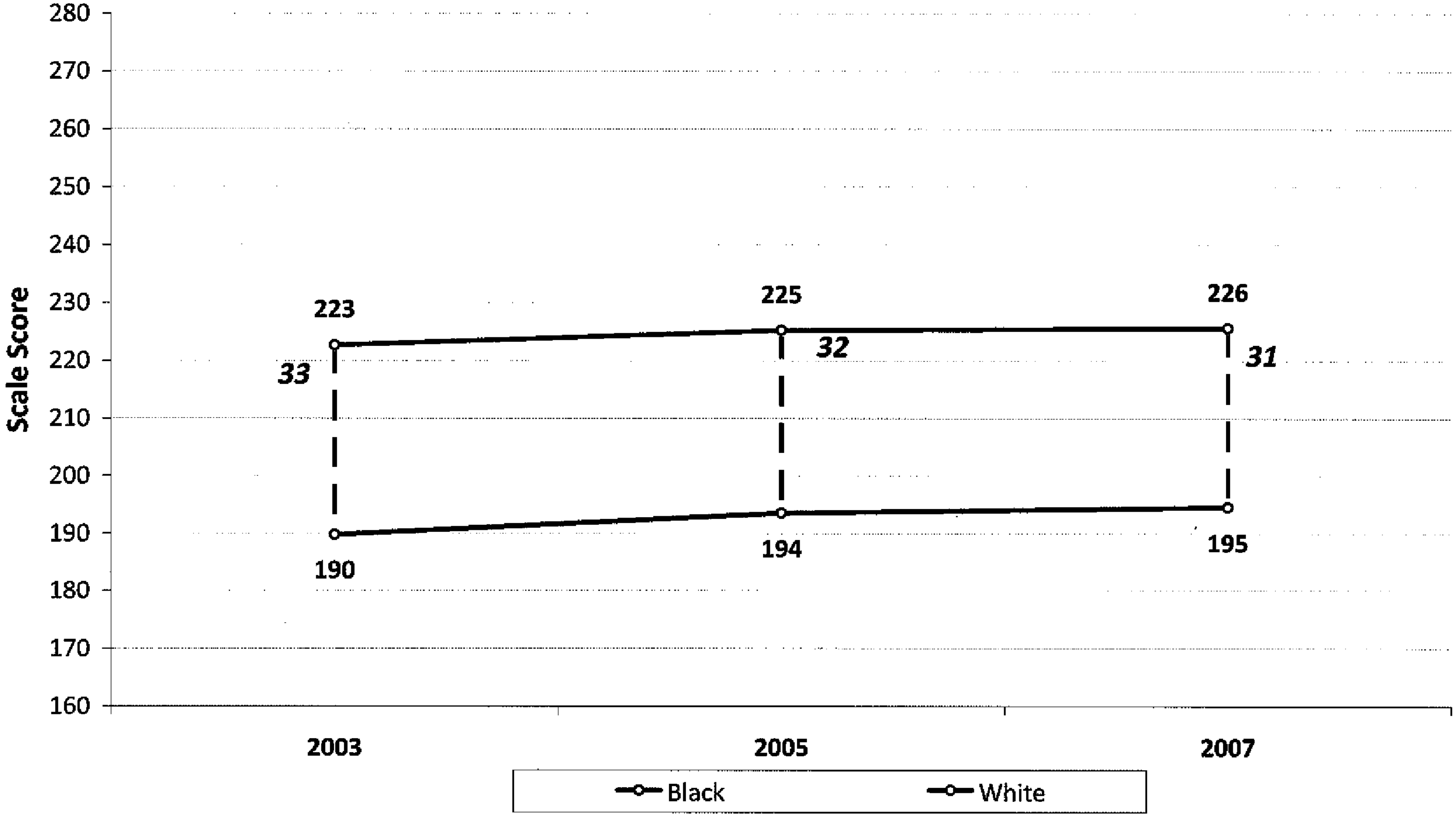
[2] "Jurisdictions" refers to states and the District of Columbia and the Department of Defense Education Activity schools.

NOTE: Detail may not sum to totals because of rounding and because the "Information not available" category for the National School Lunch Program, which provides free and reduced-price lunches, and the "Unclassified" category for race/ethnicity are not displayed. Visit http://nces.ed.gov/nationsreportcard/states/ for additional results and detailed information.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), various years, 1998–2007 Reading Assessments.

NAEP Reading Grade 4 — White - Black

Gap - Average Scale Score: 2003-2007

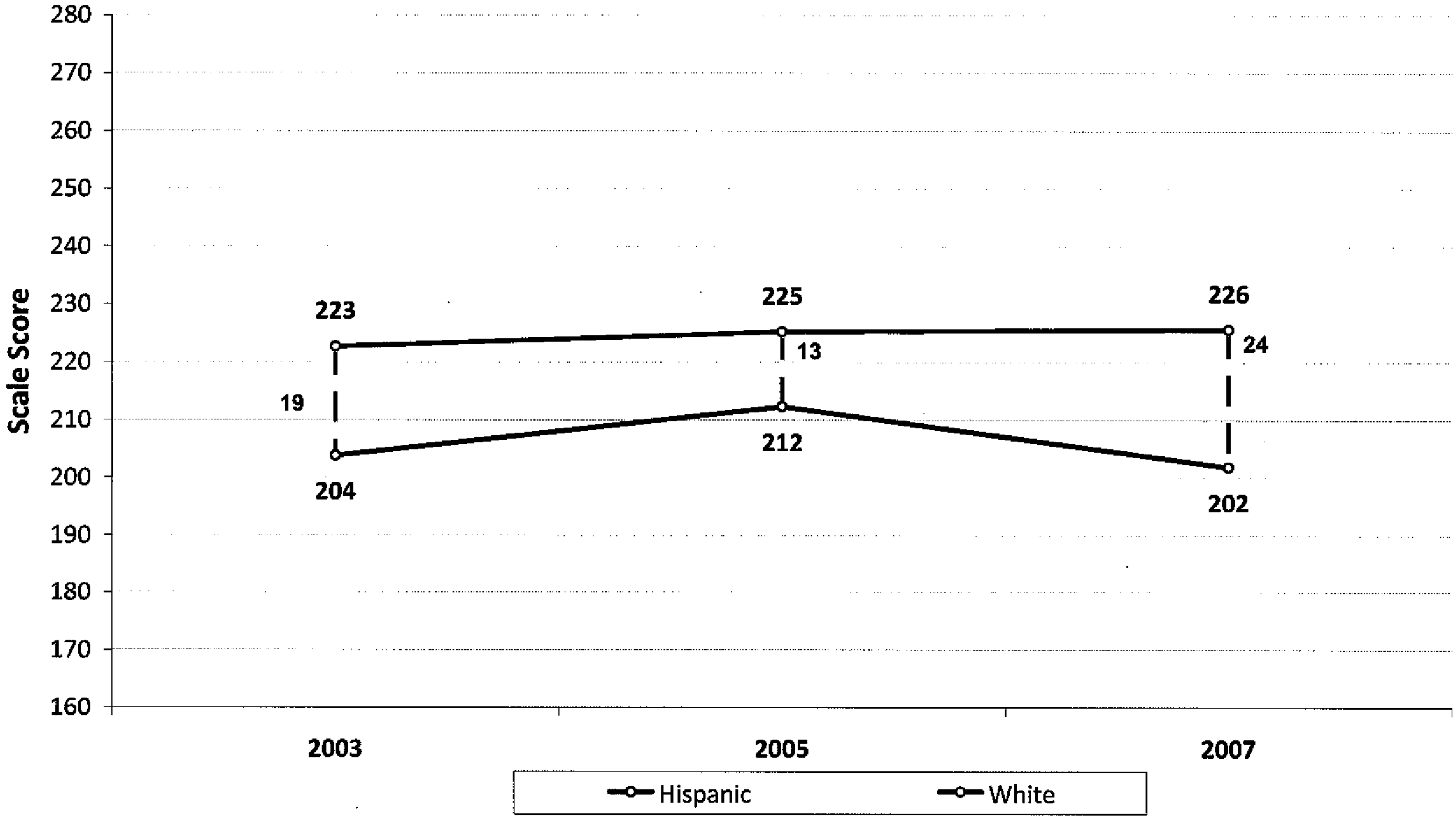


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 4 — White - Hispanic

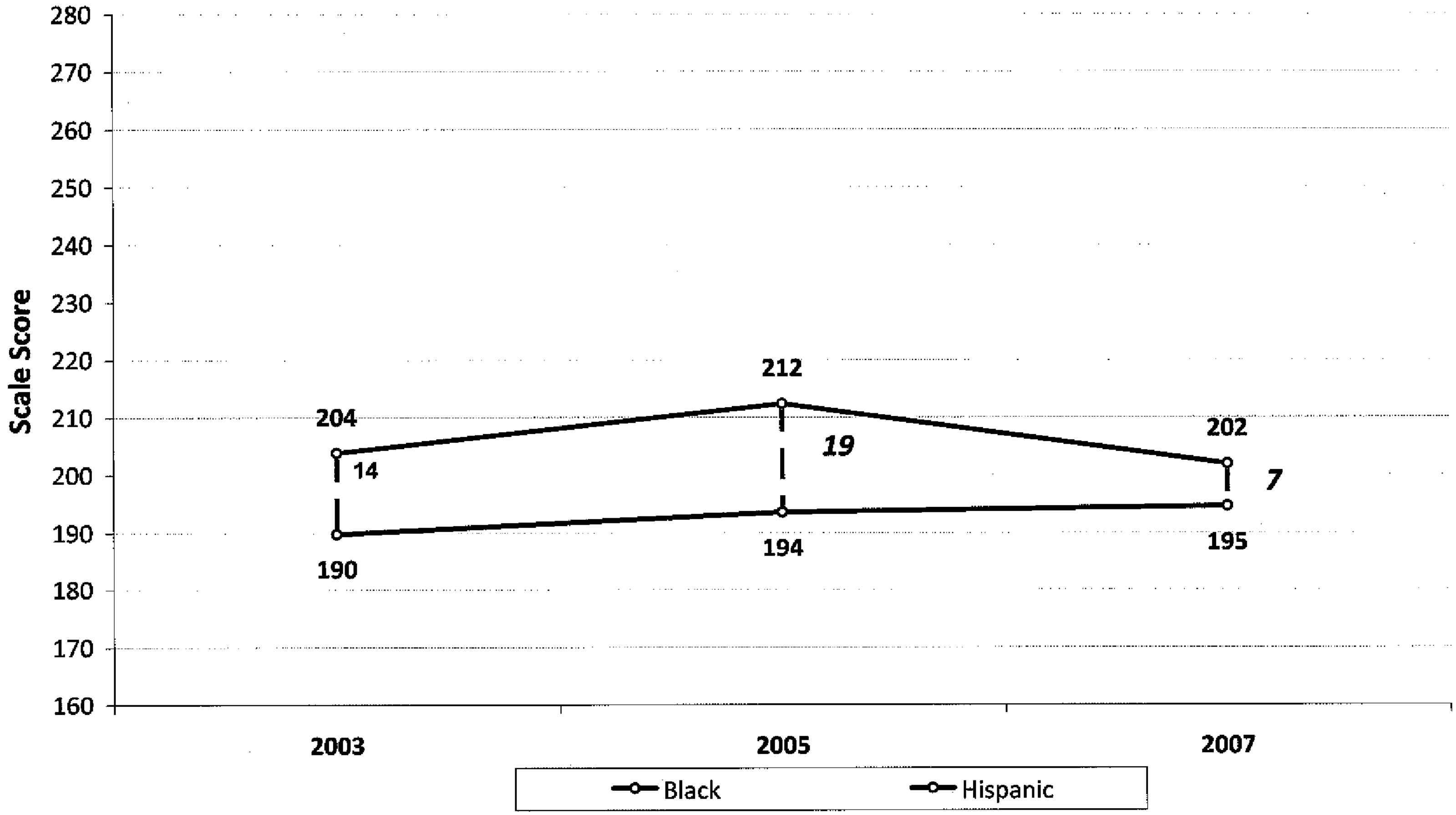
Gap - Average Scale Score: 2003-2007



NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 4 — Hispanic - Black

Gap - Average Scale Score: 2003-2007

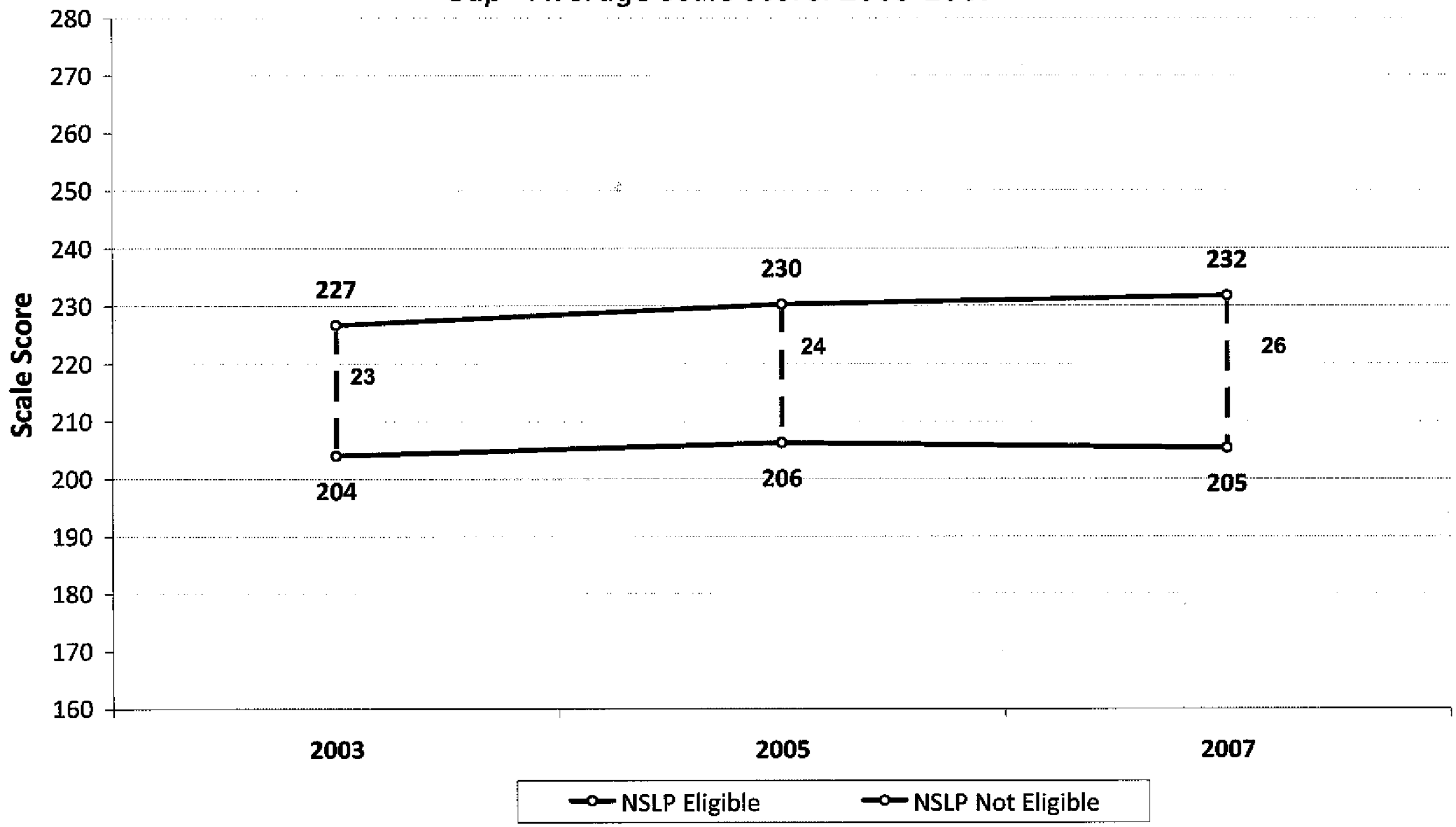


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 4 — National School Lunch Program

Gap - Average Scale Score: 2003-2007

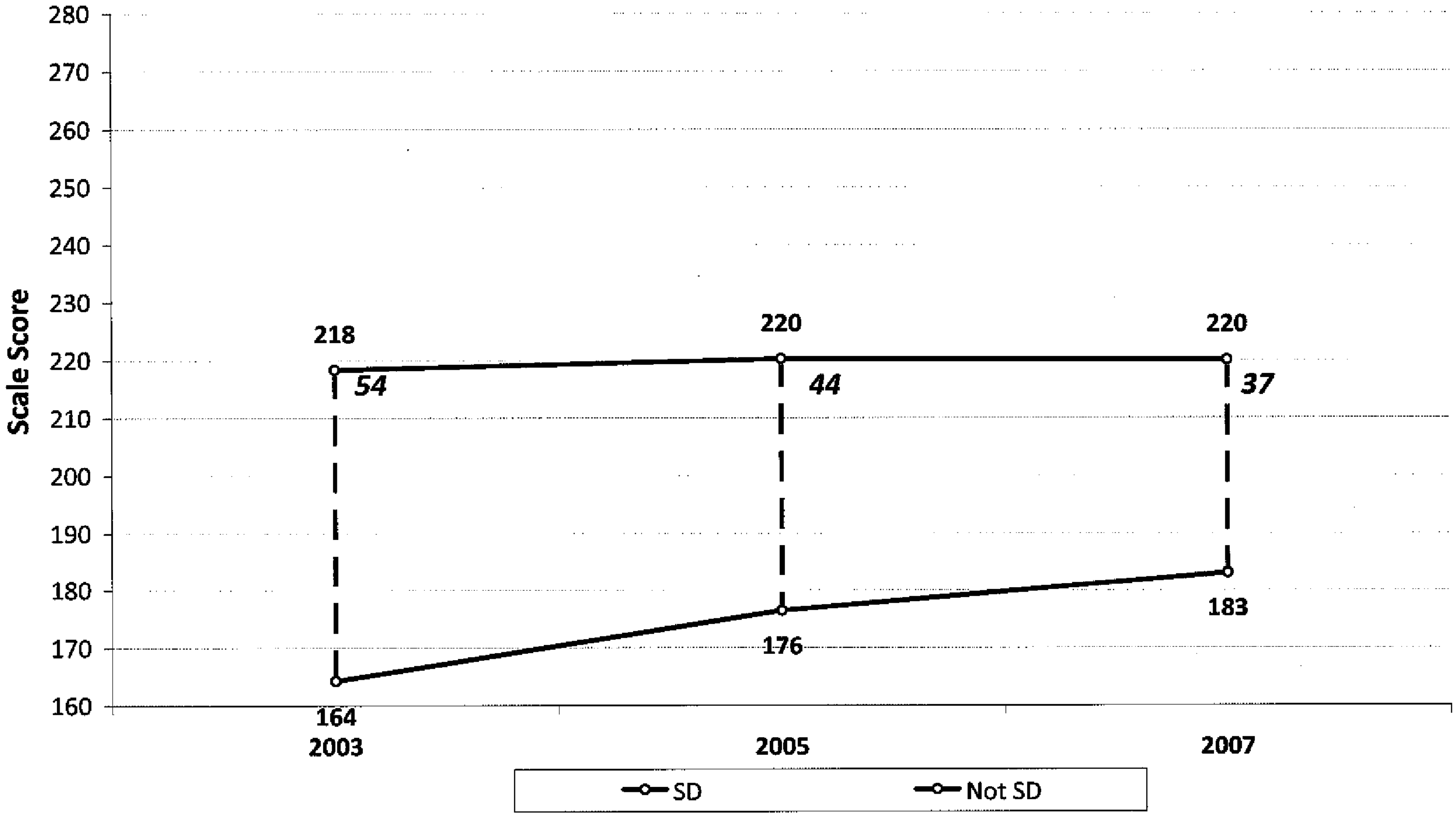


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 4 — Students with Disabilities

Gap - Average Scale Score: 2003-2007

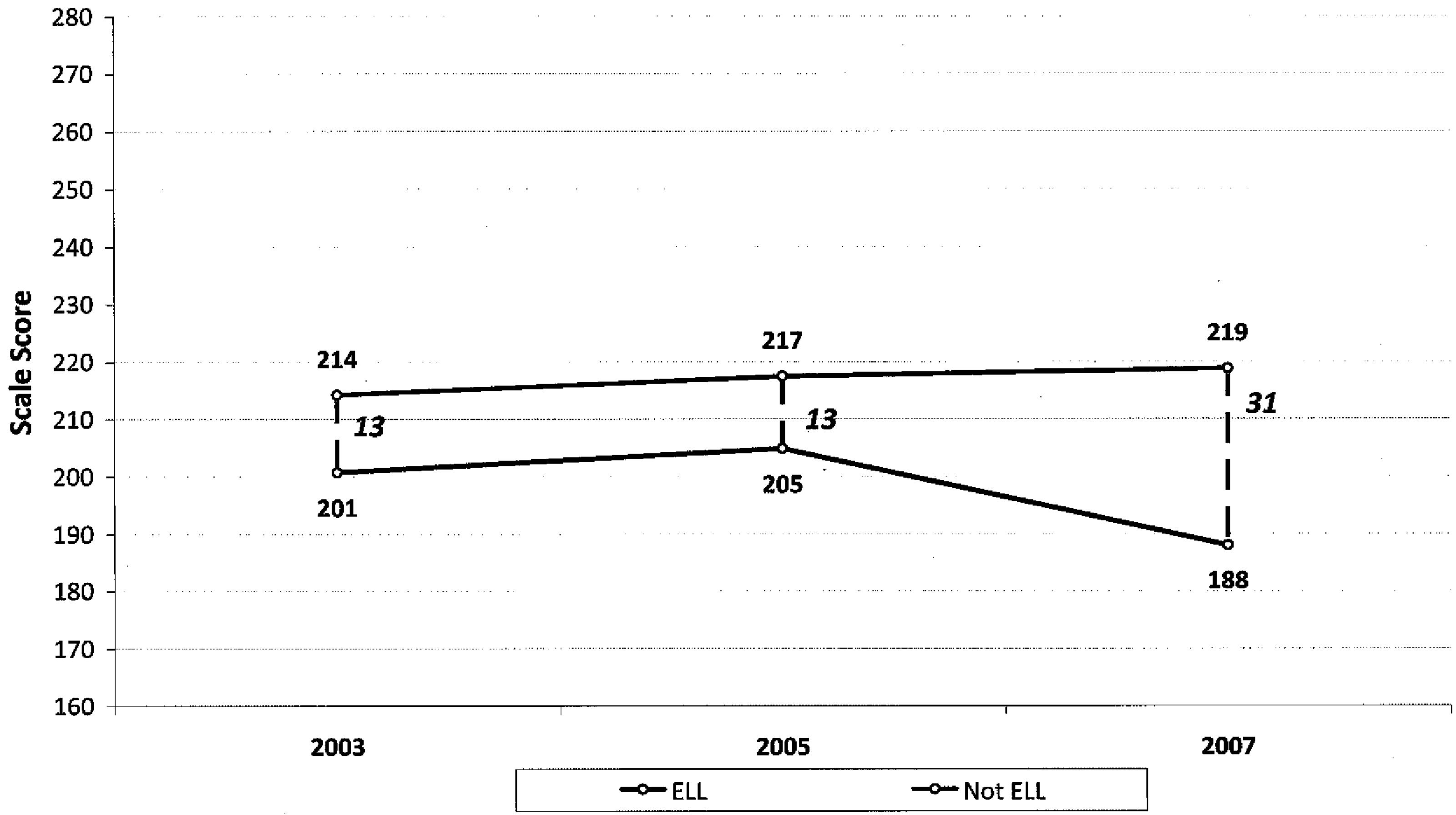


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

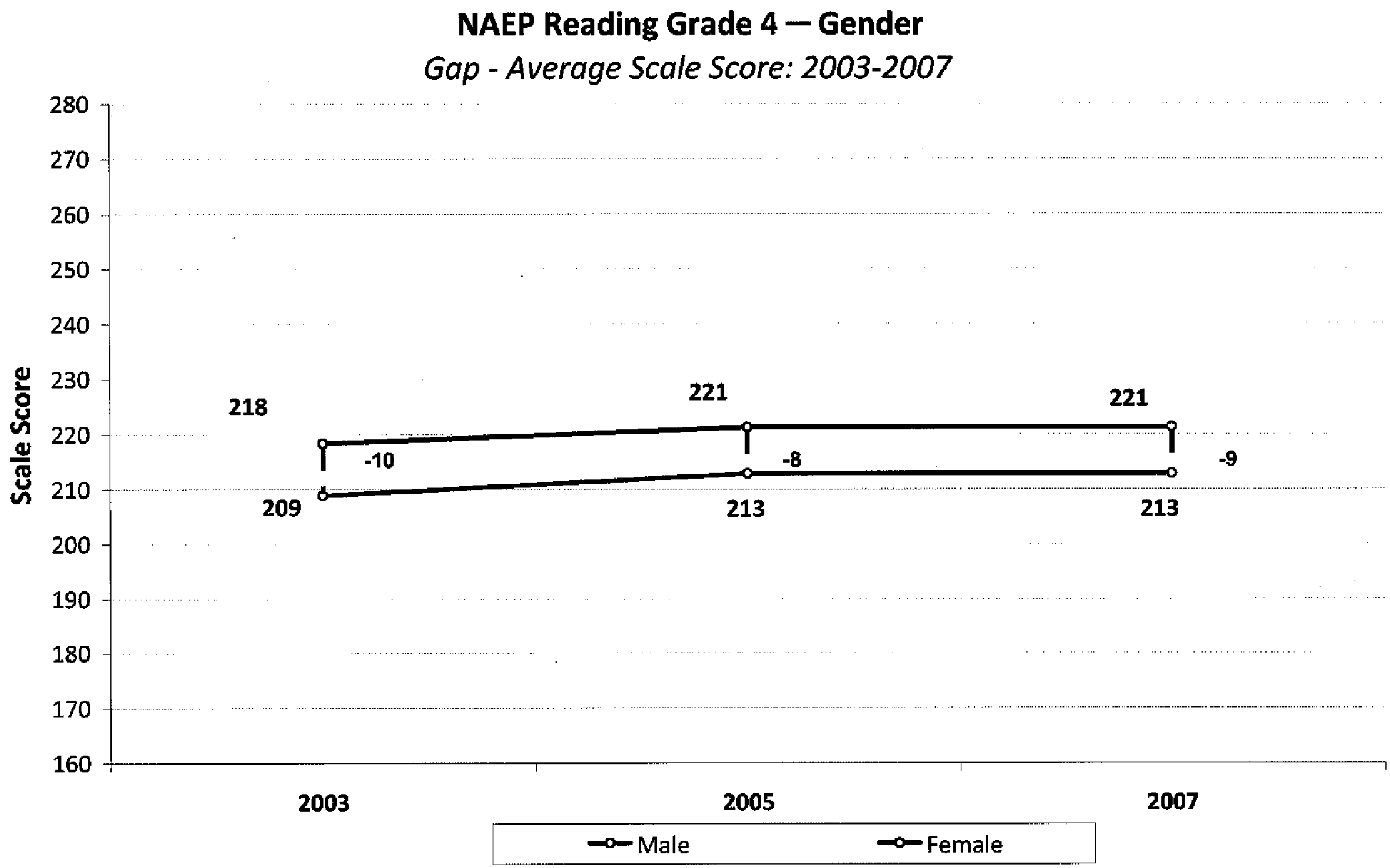
NAEP Reading Grade 4 — English Language Learners

Gap - Average Scale Score: 2003-2007



NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).



NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

Arkansas NAEP 2003-2007 – Grade 8 Reading

Gap - Average Scale Scores

Year	Statistic	Overall	White	Black	Hispanic	Asian	American Indian	NSLP Eligible	NSLP Not Eligible	SD	Not SD	ELL	Not ELL	Neither SD nor ELL	Male	Female
2003	Average Scale Score	258	266	232	257			250	267	214	263		258	263	254	263
2005		258	266	236	250			247	268	211	262		258	262	252	263
2007		258	266	236	249			247	269	218	261	234	259	262	253	263

Reporting standards not met in blank cells.

NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP) Reading Assessments.

Year	White/Black Gap	White/ Hispanic Gap	Black/ Hispanic Gap
2003	33	9	25
2005	29	16	14
2007	31	18	13

NSLP Not Eligible - Eligible Gap
17
21
22

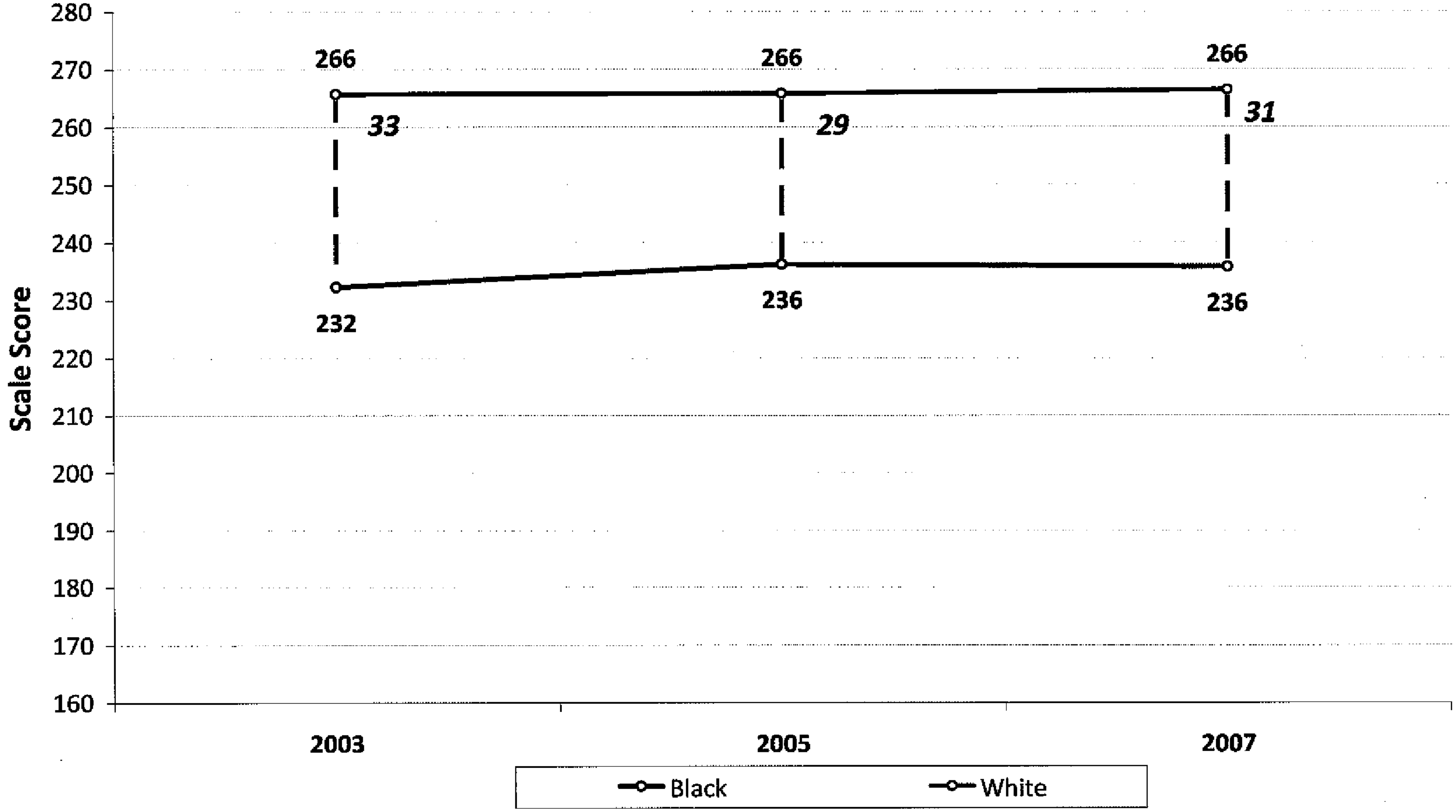
Not SD-SD Gap
49
51
43

Not ELL-ELL Gap
24

Male - Female Gap
-9
-11
-11

NAEP Reading Grade 8 — White - Black

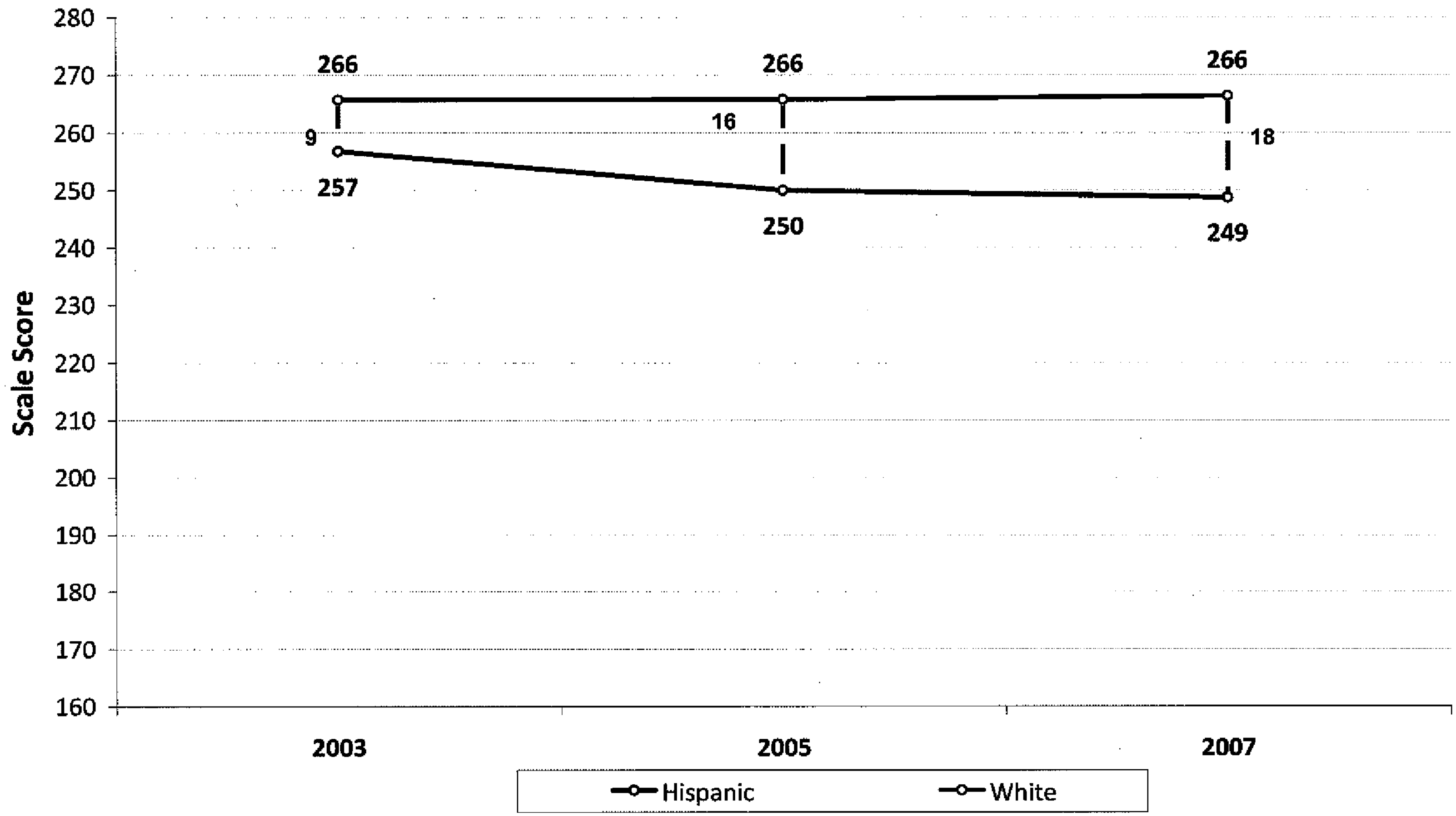
Gap - Average Scale Score: 2003-2007



NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 8 — White - Hispanic

Gap - Average Scale Score: 2003-2007

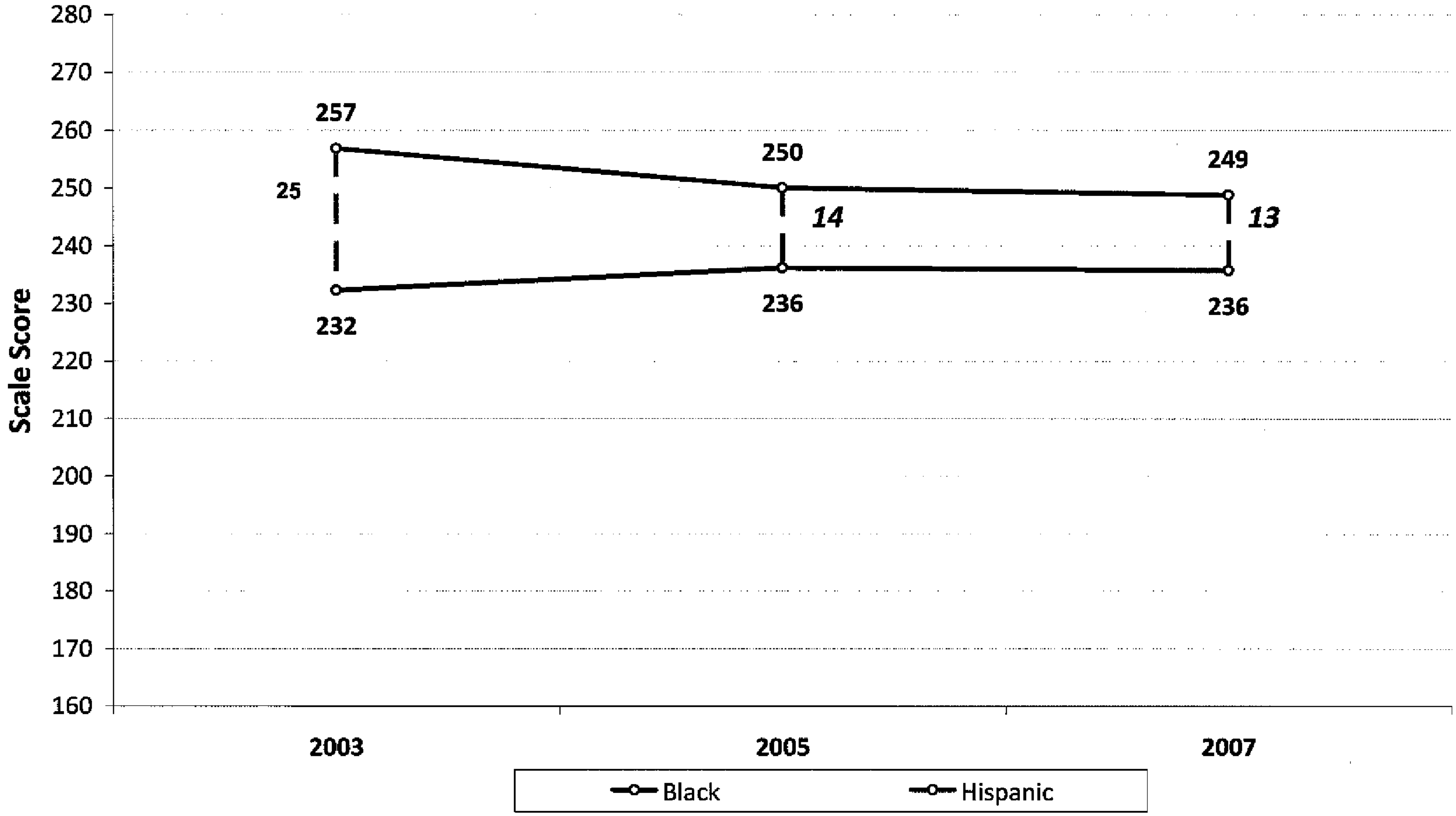


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 8 — Hispanic - Black

Gap - Average Scale Score: 2003-2007

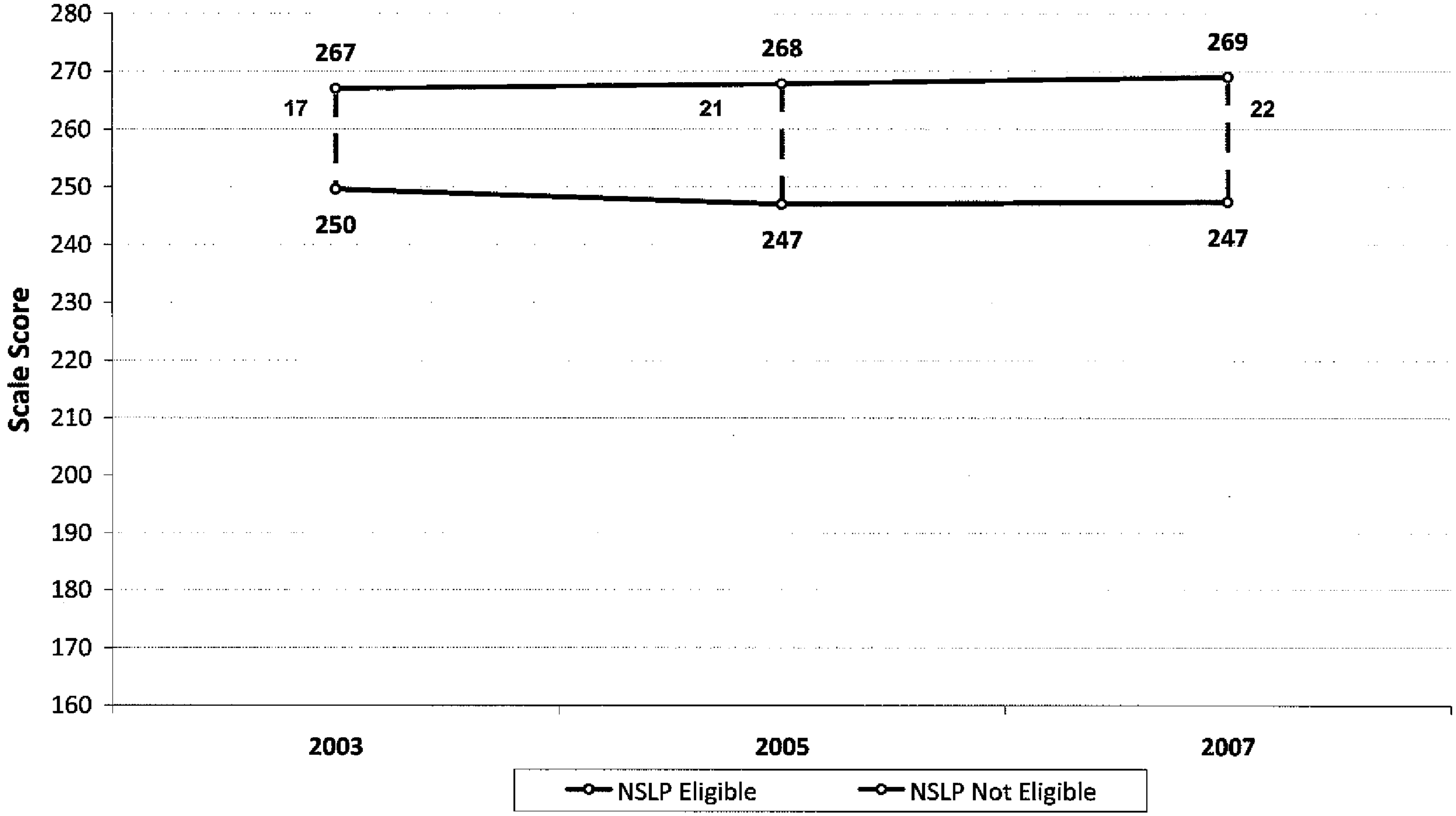


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 8 — National School Lunch Program

Gap - Average Scale Score: 2003-2007

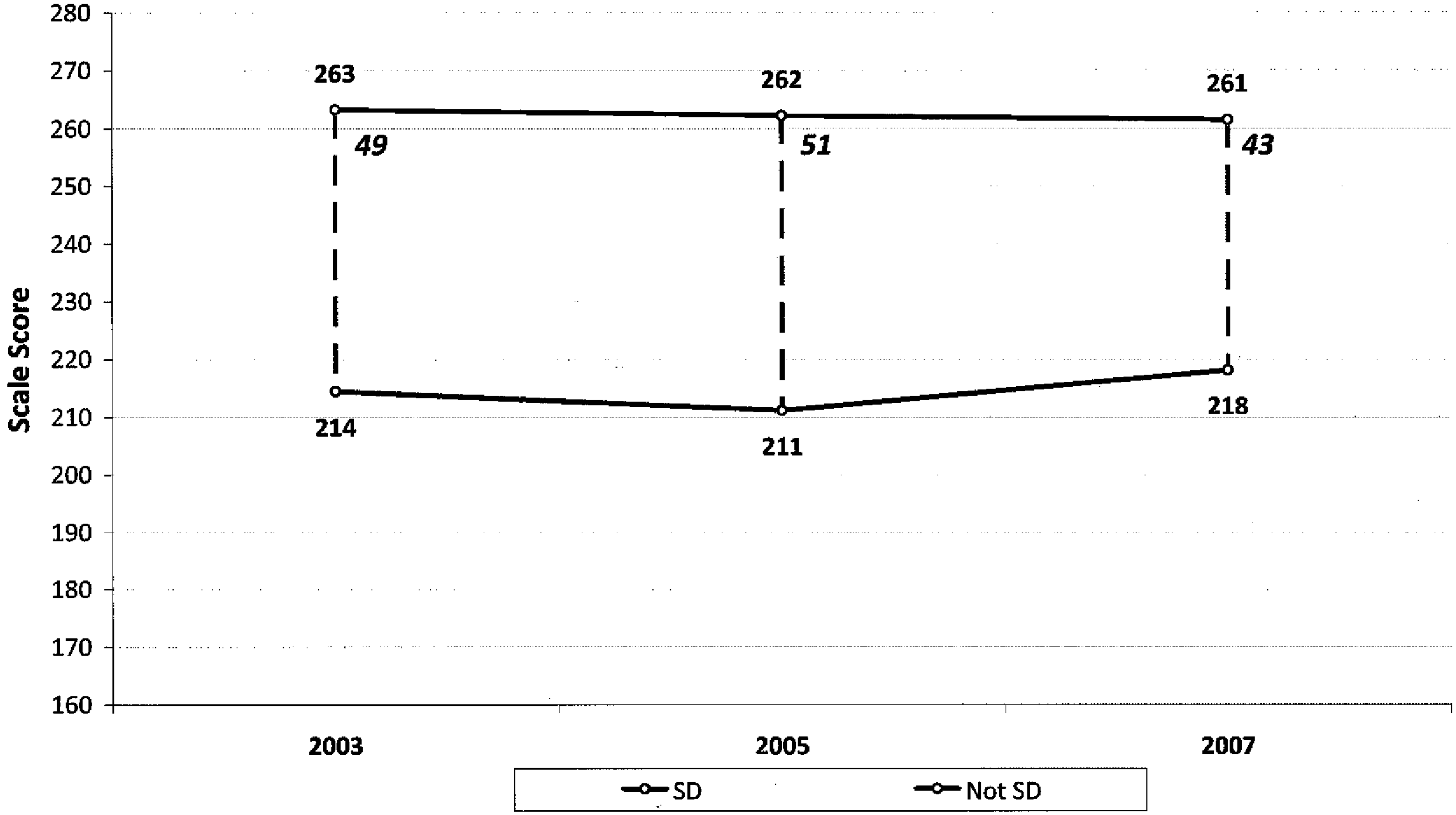


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 8 — Students with Disabilities

Gap - Average Scale Score: 2003-2007

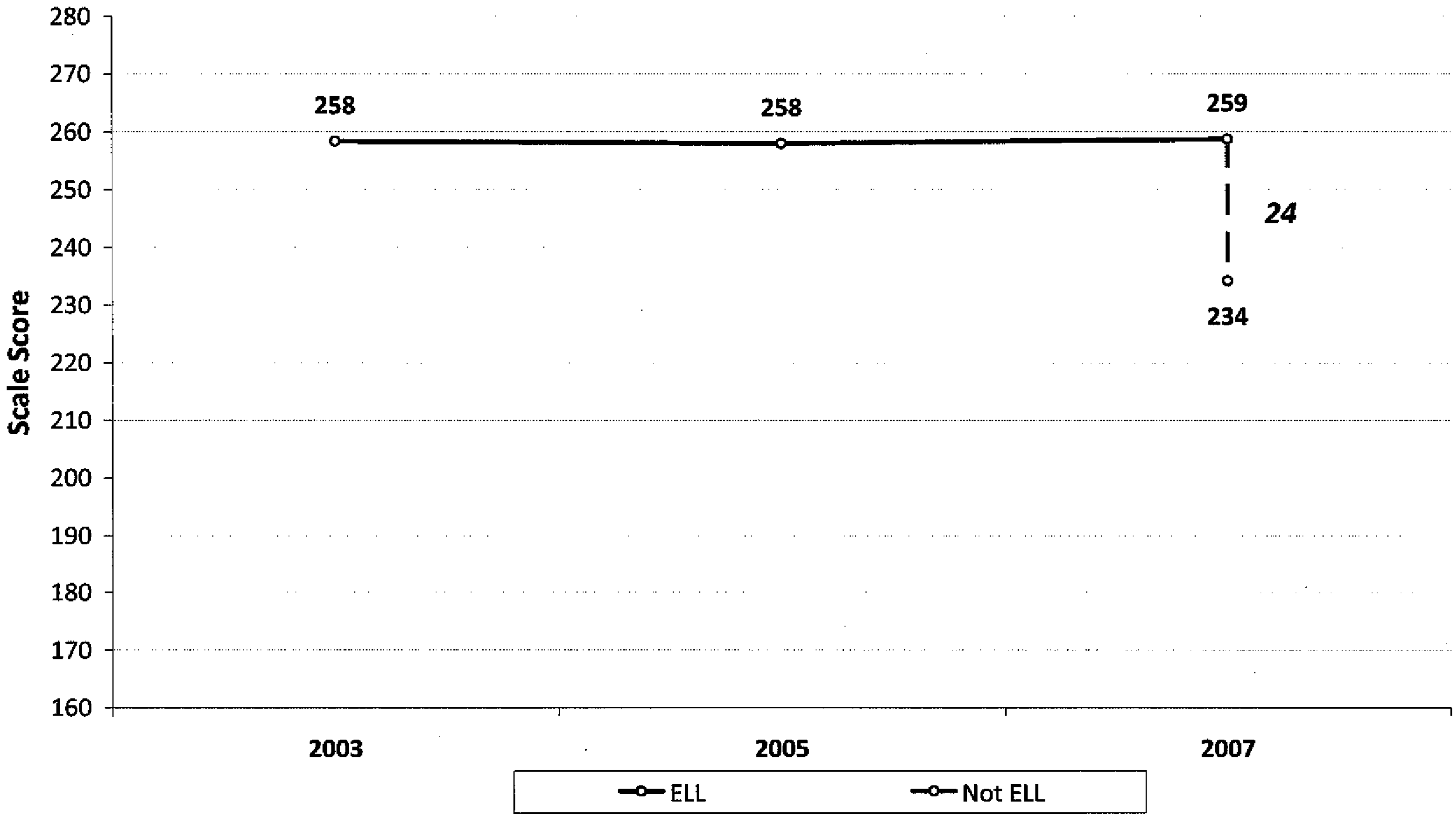


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

NAEP Reading Grade 8 — English Language Learners

Gap - Average Scale Score: 2003-2007

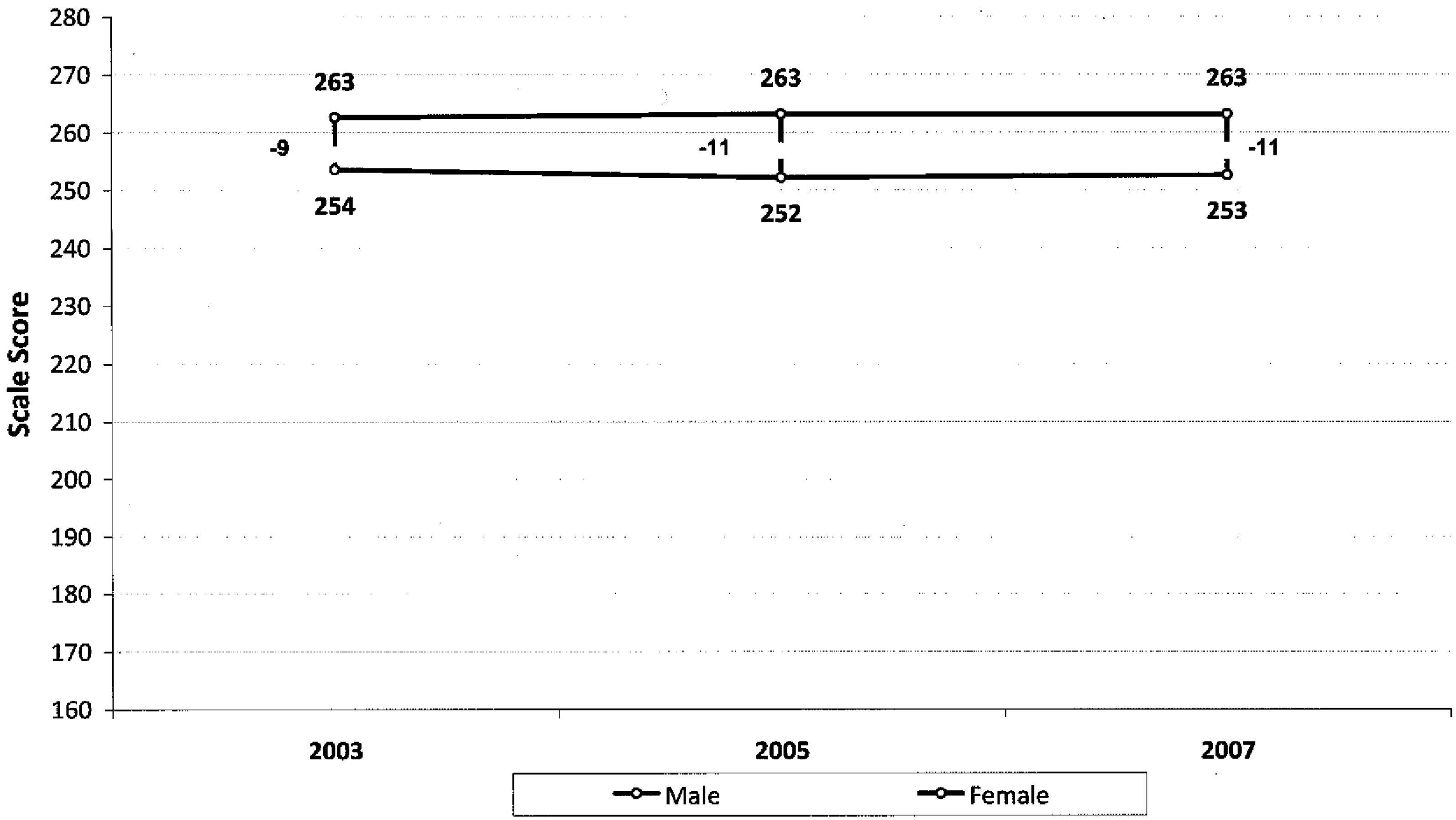


NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

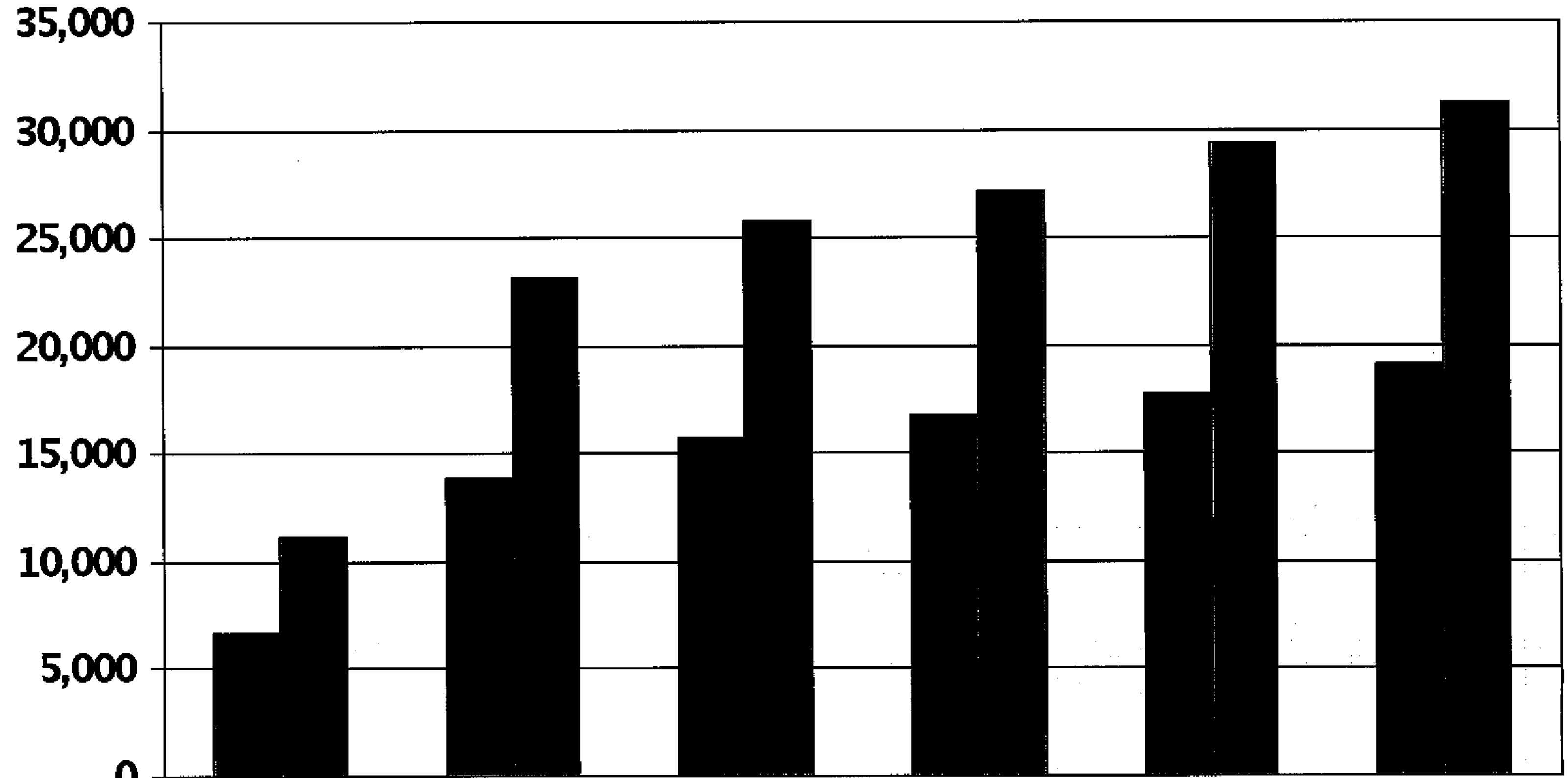
NAEP Reading Grade 8 — Gender

Gap - Average Scale Score: 2003-2007



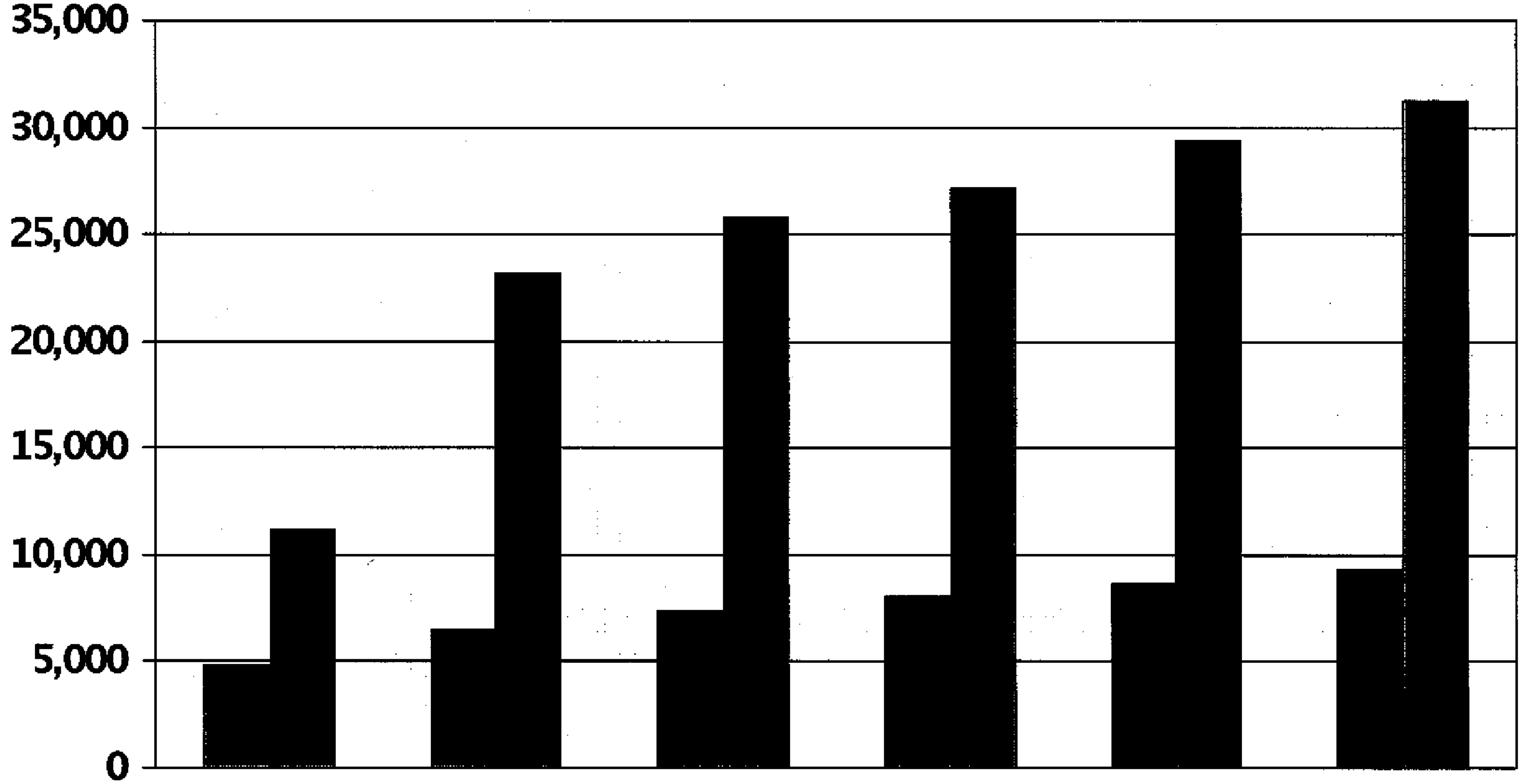
NOTE: The NAEP Reading scale ranges from 0 to 500. Observed differences are not necessarily statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP).

Arkansas AP® Participation 2004-2009



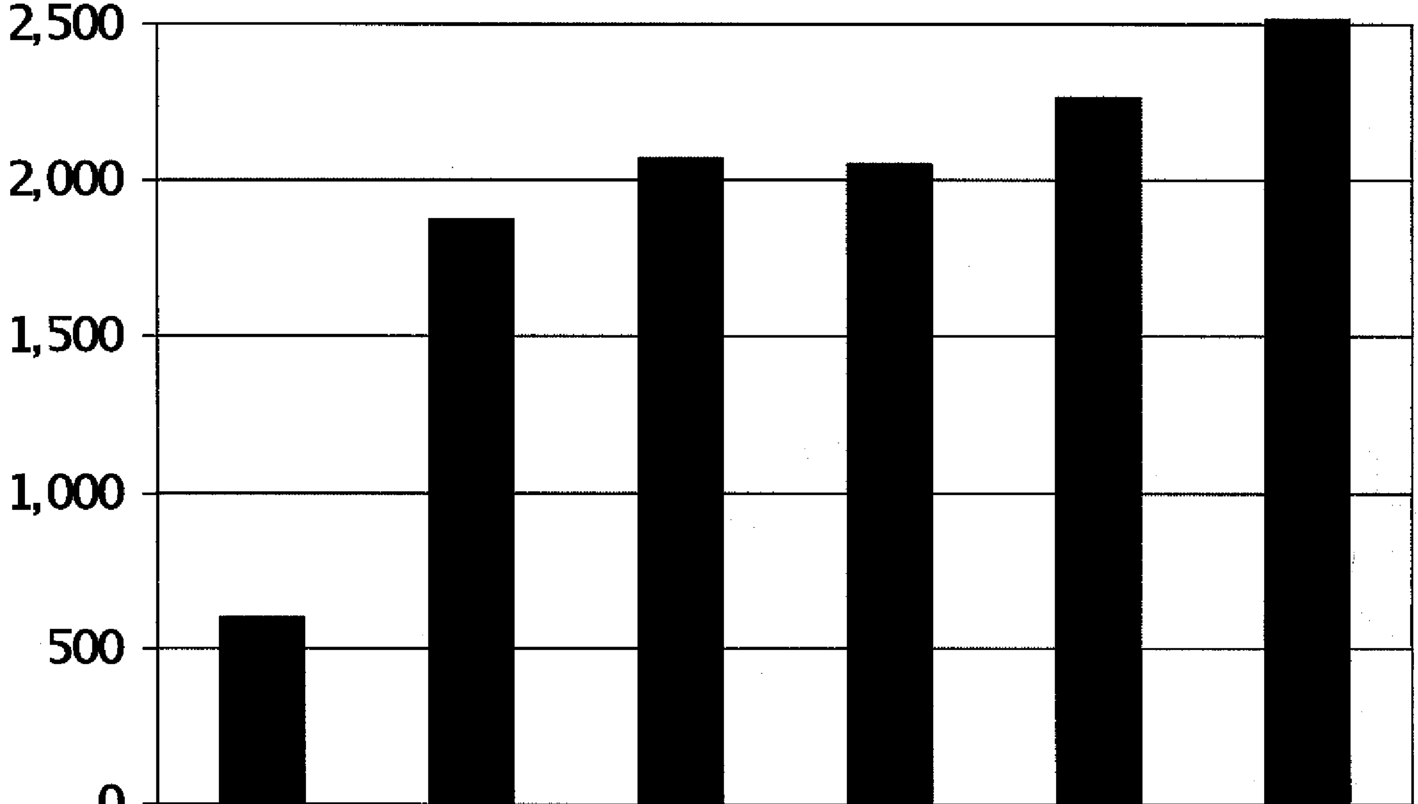
	2004	2005	2006	2007	2008	2009
Test Takers	6,674	13,883	15,705	16,804	17,729	19,115
Exams	11,112	23,140	25,780	27,170	29,339	31,232

2004-2009 Arkansas Total Examinations and Examinations receiving a 3 or higher



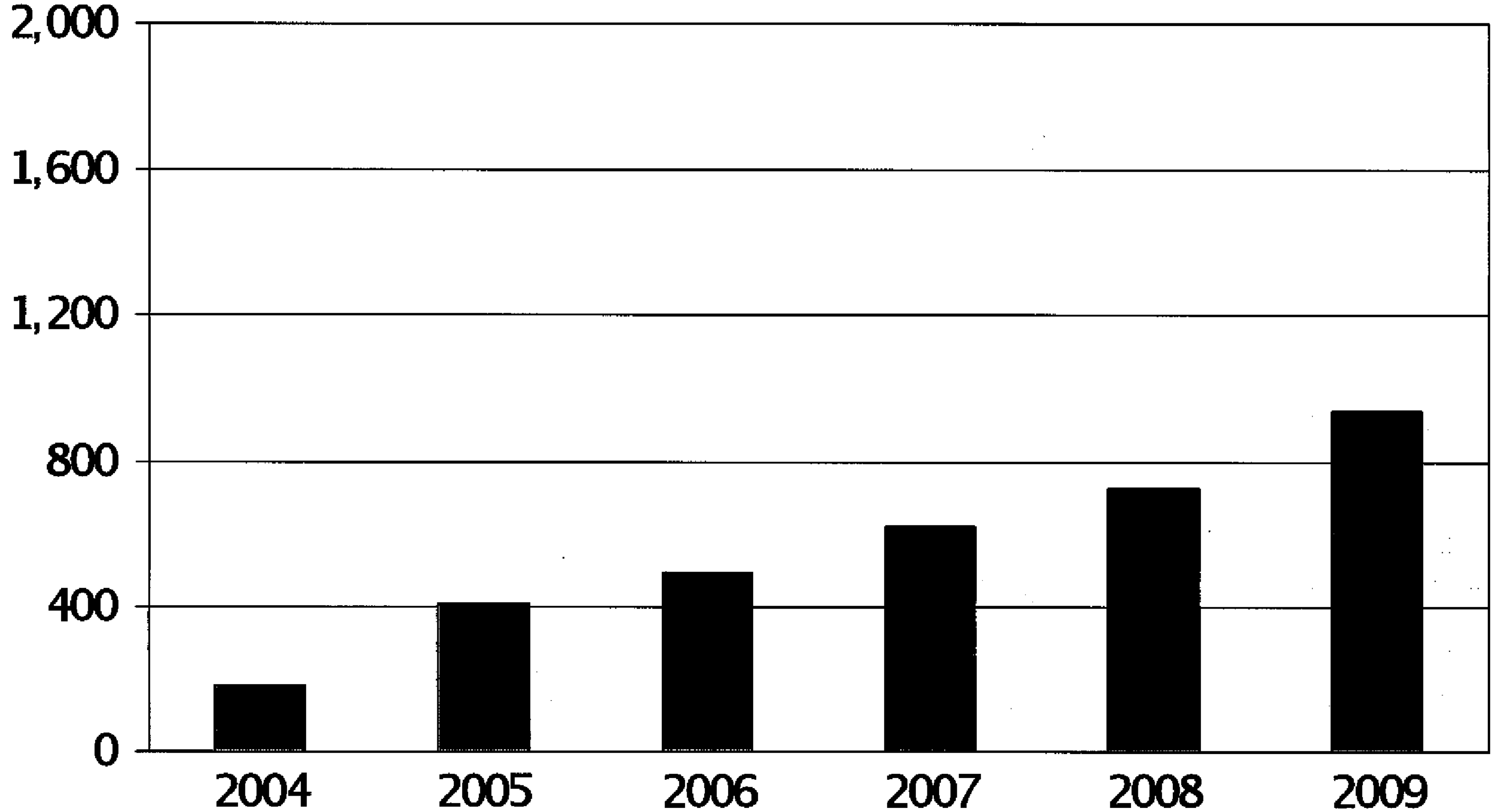
	2004	2005	2006	2007	2008	2009
# of 3, 4, & 5	4,881	6,524	7,368	8,084	8,588	9,281
Exams	11,112	23,140	25,780	27,170	29,339	31,232

2004 – 2009 Arkansas African-American AP® Participation



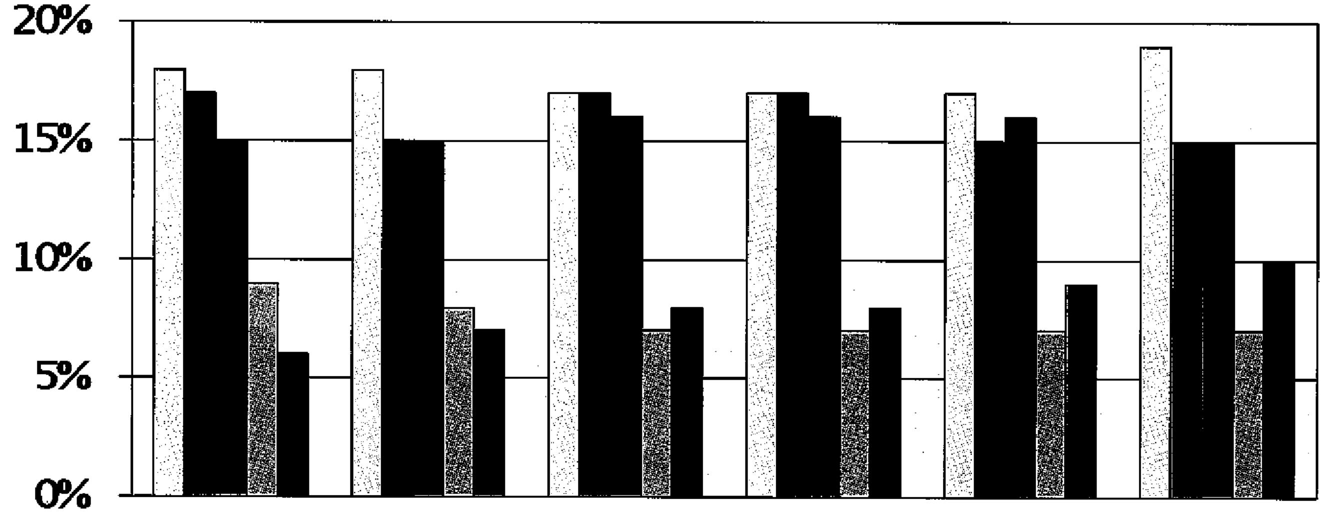
	2004	2005	2006	2007	2008	2009
■ African American	602	1,878	2,069	2,053	2,265	2,567

2004 – 2009 Arkansas Hispanic AP® Participation



	2004	2005	2006	2007	2008	2009
Hispanic	184	411	494	623	728	939

Top 5 AP® Subject Exams taken in Arkansas in 2009



	2004	2005	2006	2007	2008	2009
English Language	18%	18%	17%	17%	17%	19%
US History	17%	15%	17%	17%	15%	15%
English Literature	15%	15%	16%	16%	16%	15%
Calculus AB	9%	8%	7%	7%	7%	7%
World History	6%	7%	8%	8%	9%	10%

Agency # 005.16

ARKANSAS DEPARTMENT OF EDUCATION
RULES GOVERNING THE ADDITION OF AREAS OF LICENSURE OR ENDORSEMENT
September 2009

1.00 REGULATORY AUTHORITY

1.01 These rules shall be known as the Arkansas Department of Education Rules Governing the Addition of Areas of Licensure or Endorsement.

1.02 These rules are enacted pursuant to the authority of the State Board of Education under Ark. Code Ann. §§ 6-11-105, 6-17-402 and 25-15-201 et seq.

2.00 PURPOSE

2.01 The purpose of these rules is to identify the policies governing licensure that deal with adding an area of licensure/endorsement to an existing Arkansas teaching license.

3.00 DEFINITIONS – For the purpose of these rules, the following definitions shall apply:

3.01 **Additional Licensure Plan (ALP)** shall be the recognized process for allowing a licensed teacher to be employed in an out-of-field teaching position while meeting the program of study competency and assessment requirements for said position.

3.02 **Approved Performance Based Program of Study** refers to a program approved by the Arkansas Department of Education and based upon Arkansas licensure standards. The program requires a candidate to demonstrate and document competency in the specific knowledge, skills and dispositions for a particular licensure area.

3.03 **Endorsement** refers to teaching or administrative licensure areas, which require an initial or standard/professional teaching license, prior to the endorsement being added.

3.04 **Exception Area** refers to the specific areas of licensure, which cannot be issued either as an initial license or by testing only. The exception areas include, but are not limited to, the following: Special Education, Counselor, All Other Added Endorsement Areas, Administrative Licenses, Non-Instructional Student Services, and Professional & Technical Permits. Special Education may be issued as an initial license.

3.05 **Initial Teaching License** refers to a three-year teaching license, issued by the state, which allows one to teach in Arkansas public schools.

3.06 **Level and Area of Licensure** – **Level** refers to the grade/age level parameters of the teaching license, such as P-4, 4-8, P-8, P-12, 7-12 and PS (post-secondary). **Area** refers to the particular content field, including but not limited to, Early Childhood, Middle Childhood Science/Mathematics, Social Studies, and Family and Consumer Sciences.

3.07 **Standard Teaching License** refers to a five- year renewable license, issued by the state, which allows one to teach in Arkansas public schools.

3.08 **State Board Required Assessments** refer to specific performance-based assessments approved by the State Board of Education.

3.09 **Content/Standard Teaching Area** refer to the specific subject areas listed under Integrated Curriculum Humanities, Integrated Science Curriculum, Integrated Visual and Performance Arts, Integrated Vocational Education, Integrated Physical Education and Health and Special Education as listed in the State Board Approved Levels and Areas of Licensure.

3.10 **Provisional License by Reciprocity** a one-year teaching license that may or may not be renewed. This license allows a teacher coming from out of state or out of country to be employed as a teacher while completing assessed deficiencies for the Initial or Standard/Professional teaching license.

3.11 **Professional Teaching License** a standard Arkansas teaching license that is issued upon the request of a teacher who has documented the completion of a Master's Degree and three years of teaching experience or who has documented current National Board Certification.

4.00 REQUIREMENTS FOR ADDING AN AREA OF LICENSURE OR ENDORSEMENT

4.01 Teachers/administrators shall have a valid Arkansas initial or standard/professional content area teaching license or provisional licensure through reciprocity in order to add an area of licensure or endorsement.

4.02 Teachers adding an additional licensure/endorsement area(s) to their Arkansas teaching license by meeting the program of study requirements of an Arkansas college/university or when adding a licensure/endorsement area by reciprocity, shall meet the following requirements regarding degrees and coursework.

4.02.1 The coursework/degree required for the area(s) that are being added shall have been completed through a college/university that holds regional/national accreditation that is recognized by the U.S. Department of Education or Council for Higher Education Accreditation.

AND

4.02.2 All teacher education coursework shall have been completed through a college/university teacher education program that holds national accreditation that is recognized by the U.S. Department of Education, Council for Higher Education Accreditation or that is state approved.

4.03 The Additional Licensure Plan (ALP) shall be the recognized process for allowing a licensed teacher to be employed in an out-of-area teaching position while completing the competency and assessment requirements for the new employment position.

4.03.1 Teachers who hold an initial or standard/professional license are eligible to file an ALP in order to be employed in an out-of-area assignment.

4.03.2 Teachers who hold a provisional Arkansas teaching license, which was granted through reciprocity as a result of holding an initial/standard out-of-state license, are also eligible to file an ALP in order to be employed in an out-of-area assignment.

4.04 Teachers working in an out-of-area teaching assignment shall file a completed ALP with their school district and with the Office of Professional Licensure within thirty (30) days of beginning the out-of-field assignment.

4.04.1 Teachers working under an ALP_shall have three (3) years from the beginning of the out-of-area assignment to complete all competency and assessment requirements for the new employment position.

4.04.2 When a school district requests a waiver to employ a teacher out-of-area and a program of study is required:

4.04.2.1 The teacher shall successfully complete a minimum of three (3) hours of coursework toward the program of study requirements during the first year employed out-of-area, and a minimum of six (6) hours of coursework each of the following two years, when employed out-of-area, in order for the waiver to be approved for the following year.

4.04.2.2 The Specialty Area Assessment(s) required to be designated as a highly qualified teacher in the core academic area shall be successfully completed the first year the teacher is employed out-of-area on an approved waiver.

4.04.2.3 A waiver will not be approved for the following year at such time that the teacher fails to successfully complete the required coursework or testing within the timelines specified above.

4.04.3 When a school district has requested a waiver for a teacher being employed out-of-area and the additional area can be added by testing out:

4.04.3.1 The teacher shall have successfully completed the content knowledge portion(s) of the required specialty area assessment (s) required to be highly qualified during the first year employed out-of --area on an approved waiver.

4.04.3.2 The remaining part(s) of the specialty area assessment required for licensure in the out-of-area assignment shall be successfully completed by the end of the third year working under an approved waiver.

4.04.3.3 Teachers failing to successfully complete the content knowledge portion of the specialty area assessment required to be highly qualified during the first year employed out-of-area under an approved waiver, shall document a minimum of six (6) hours of coursework in the content area.

4.04.3.4 Teachers failing to successfully complete either the required assessment to be highly qualified or the six (6) hours of coursework in the content area during the first year working under an approved waiver shall not be approved to be employed out-of-area under the same ALP the following year.

4.05 The requirements contained in an individual's ALP are subject to any changes made by the State Board of Education which would necessitate a change in the licensure requirements for that ALP.

4.06 The Office of Professional Licensure shall add a licensure/endorsement area(s) to a valid Arkansas Initial or Standard/Professional teaching license upon receiving the following:

4.06.1 An application requesting the licensure/endorsement area(s);

4.06.2 Documentation that all program of study requirements (including Arkansas History when required); and

4.06.3 Evidence that all State Board required assessments have been successfully completed.

4.07 Teachers or administrators may add an additional licensure area (s) by testing out, only when they hold a content/standard/professional licensure area at the same level as the area being added.

4.07.1 Added endorsements such as reading, library media, counselor, journalism, grade 5-6 endorsements, English as a Second Language, educational examiner, coaching, gifted and talented and administrative areas may not be used as a platform for adding other licensure areas by testing out.

4.08 Teachers or administrators seeking to add exception areas shall complete an approved performance-based program of study and pass the State Board required assessment(s).

4.09 Teachers or administrators seeking to add additional areas of licensure outside their level of licensure shall complete an approved performance-based program of study and pass the State Board required assessment(s).

4.10 To add an area of licensure or endorsement for which there is not a State Board required specialty area assessment, a candidate shall successfully complete an approved performance-based program of study and the State Board required pedagogical assessment.

4.11 In order to add an area of licensure/endorsement to a license in School Psychology Specialist, Speech Pathology, Adult Education or a Professional Technical Permit area only, the teacher shall complete a teacher preparation program of study to include a practicum/internship and the State Board required specialty area assessment(s), pedagogical assessment and basic skill assessments.

4.12 Teachers or administrators adding Early Childhood P-4, Middle Childhood Math/Science and Language Arts/Social Studies 4-8 or Secondary Social Studies 7-12 to their valid Arkansas initial or standard teaching license shall have completed a three-credit-hour course in Arkansas History in addition to the required testing and program of study when applicable.

4.13 The Office of Professional Licensure reserves the right to amend and/or rescind an additional area of licensure that is issued in error.

4.14 Additional areas/levels of licensure or endorsement shall be added to a valid Arkansas initial or standard/professional teaching license upon receiving documentation that all requirements have been met and upon receiving an application requesting the additional licensure area or endorsement.

4.15 A content/standard area teaching license, as identified in the areas and levels of licensure and approved by the State Board of Education, shall be required in order to add licensure areas, endorsements or areas of educational administration.

4.16 The Office of Professional Licensure has the authority to assist individual teachers seeking additional licensure areas for which there are no approved programs of study at any of Arkansas' Institute of Higher Education. Examples of such licensure areas to be include but not limited to are: Visual Specialist and Hearing Specialist.

4.17 Beginning May 1, 2007, teachers that are adding P.E./Wellness/Leisure to a current Arkansas teaching license, shall receive the new licensure code numbers 235 for (P-8) and 236 for (7-12).

4.17.1 Teachers holding the new licensure code numbers 235 and/or 236 shall not be automatically approved to be employed as a coach in the public schools of Arkansas.

4.17.2 Teachers holding the new licensure code numbers 235 and/or 236 shall work under the ALP (Additional Licensure Plan) for the coaching endorsement (7-12) when employed as a coach.

4.18 Teachers adding the endorsement areas of Guidance and Counseling or School Library Media shall document two years of classroom teaching experience in order to add these areas to a current Arkansas teaching license.

Arkansas Department of Education
Rules Governing Professional Development

October 2009

1.0 Regulatory Authority

1.01 These Rules shall be known as the Arkansas Department of Education (ADE) Rules Governing Professional Development.

1.02 The State Board of Education (SBE) promulgated these Rules pursuant to Act 1185 of 2009, Act 2095 of 2005, Act 2318 of 2005, Act 2007 of 2005, Act 1183 of 2005, §28 of Act 2131 of 2005, Act 496 of 2009, Act 605 of 2009, Act 1309 of 2009, Ark. Code Ann. § 6-17-704, and Ark. Code Ann. § 6-15-201 et seq.

2.0 Purposes

2.01 To develop a high quality professional development system for all administrators, teachers, and certified instructional support personnel.

2.02 Professional development is to improve knowledge and skills in order to facilitate individual, school-wide, and district-wide improvements for the purpose of increasing student achievement.

3.0 Definitions

3.01 Professional Development—a coordinated set of planned learning activities that are based on research, are standards-based, and continuous.

3.02 Certified Instructional Support Personnel—individuals other than classroom teachers or administrators who support teaching and learning through direct contact with students, such as media specialists and counselors.

3.03 Arkansas On-line Professional Development Initiative—is a partnership between the ADE and the Arkansas Educational Television Network to provide on-line programs, courses, and workshops through the AETN.

3.04 Arkansas Comprehensive School Improvement Plan (ACSIP)—a plan developed by a local school team based on an analysis of student performance data and other relevant data that provides a plan of action to address deficiencies in student performance as evidenced on the grade level benchmark assessments, end-of-course exams, high school literacy exam, and other appropriate assessment data.

3.05 Learning Teams—a group of educators who meet regularly as a team to identify essential and valued student learning, develop common formative assessments, analyze current levels of achievement, set achievement goals, share strategies, and then create lessons to improve upon those levels.

3.06 Study Groups - a group of educators who meet to learn, implement, and reflect on research-based techniques in a focus area(s). Members read and discuss current research, examine and reflect on effective instruction, or examine student work.

3.07 Professional Development Plan - outlines the professional development program of activities for a district, school, or individual that is based on student data and is aligned to the ACSIP.

3.08 Approved Professional Development Provider - means any organization which provides content for professional development credit, whether delivered in a face-to-face, televised or internet mode of delivery, whose content has been approved by the ADE to meet the annual professional development credit requirements imposed upon licensed teachers and administrators by Arkansas Statutes and ADE Rules. The term "Approved Professional Development Provider" does not apply to an Arkansas public school district which provides a professional development program solely to its own personnel or to an Education Cooperative which provides professional development to districts/schools. The term "Approved Professional Development Provider" does not apply to professional development programs provided by employees of the Arkansas Department of Education, Arkansas Department of Workforce Education and the Arkansas Department of Early Childhood which provide professional development statewide.

3.09 Mentoring/coaching – means increasing capacity for coaching and mentoring others to assist in growth of instructional skills and effectiveness of colleagues.

3.10 One professional development day is equal to six (6) hours of professional development credit.

3.11 Professional Development Program ("Program") means a course of instruction intended to provide content which fulfills the requirement for professional development credit for teachers and administrators licensed by the ADE.

3.12 Illness – means disorder of health of an educator or an educator's immediate family (Ark. Code Ann. § 6-17-1202).

4.0 Time Requirements

4.01 Beginning with the 2005-2006 school year and each school year thereafter, all certified employees of Arkansas public schools shall complete sixty (60) hours of approved professional development each year.

4.02 The 60-hours professional development requirement must be fulfilled between July 1 and June 30 or June 1 and May 31 as approved by the local district. The local district shall document the district's option.

4.03 The sixty (60) hours of required professional development shall include:

4.03.1 Technology
At least six (6) hours shall be in the area of educational technology.

4.03.2 Arkansas History
Pursuant to Act 2095 of 2005 each teacher who provides instruction in Arkansas history, the sixty (60) hour professional development requirement shall include two (2) hours of training in Arkansas history. It is the responsibility of the school district to provide this training or make it available through other providers.

4.03.3 Parent Involvement
Pursuant to Ark. Code Ann. §6-15-1703 each teacher shall be required to have no less than two (2) hours of professional development designed to enhance understanding of effective parental involvement strategies.
Pursuant to §6-15-1703 each administrator shall be required to have no less than three (3) hours of professional development designed to enhance understanding of effective parent involvement strategies and the importance of administrative leadership in setting expectations and creating a climate conducive to parent participation.

4.03.4 Administrator
For each administrator, the sixty (60) hour professional development requirement shall include training in data disaggregation, instructional leadership, and fiscal management.

4.03.5 Arkansas Scholarship Lottery Act
Pursuant to Act 605 of 2009 each superintendent, assistant superintendent, grades 7-12 principal, grades 7-12 assistant principal and grades 7-12 guidance counselor shall be required to participate in professional development on the availability of, eligibility requirements for, and the process of applying for state-supported student financial assistance. These educators shall:

4.03.05.1 Participate in a three-hour course during the calendar year 2009, or within the first year of employment.

4.03.05.2 Complete a one-hour course annually.

4.04 College Courses
Pursuant to Act 1183 of 2005 a three-hour undergraduate or graduate-level college credit course from an accredited college or university counts as fifteen (15) hours of professional development, if the college credit:

4.04.1 is related to and enhances the teacher's knowledge of the subject area in which the teacher is currently teaching;

4.04.2 is part of the requirement for the teacher to obtain additional certification in a subject matter that has been designated by the ADE as having a critical shortage of teachers; or

4.04.3 is otherwise approved by the ADE as a graduate level course eligible for professional development credit. No more that half of the required 60-hours of professional development time may be met through college credit hours.

4.04.4 Graduate level courses in educational leadership are eligible for professional development credit based on approval by the ADE. The focus of the course must specifically relate to the job assignment as approved by the district.

4.05 Advanced Placement
Pursuant to Act 2131 of 2005, each hour of approved training received by certified personnel related to teaching an advance placement class for a subject covered by the College Board and Educational Testing Service shall count as professional development up to a maximum of thirty (30) hours.

4.06 Approved professional development activities, which occur during the instructional day or outside the employee's annual contract days may apply toward the 60-hour minimum professional development requirement.

4.07 Certified employees in positions not directly related to instructional activities shall be responsible for completing sixty (60) hours of professional development each year. However, the focus of their professional development may be prorated among those areas specifically related to their job assignment as approved by the district.

4.08 Any employee who misses any part of regularly scheduled professional development activities for any reason (such as sickness) must make up that time in other approved professional development activities so that the

60 required hours of professional development are earned during the approved timeframe required under Section 4.02 of these Rules

4.08.1 Pursuant to Act 1309 of 2009 if the educator is absent because of illness of the educator or the educator's immediate family, the educator shall be allowed to make up the hours missed during the remainder of the current school year or succeeding school year. The educator may earn the professional development hours through Arkansas IDEAS, on-line professional development.

4.09 Any certified person who provides approved professional development may count two (2) hours professional development credit for each one (1) hour of time spent in presenting professional development content.

4.10 Beginning in the 2005-2006 school year, sixty (60) approved professional development hours annually will be required to renew a teacher or administrator license in order to maintain a valid teaching license.

4.11 Beginning in the 2005-2006 school year, those teachers who have not maintained a teaching license but who wish to renew their license shall be required to meet the conditions of the Rules Governing the Requirements and Procedures for Renewing a Standard Arkansas Teaching License.

4.12 Adult Education
Pursuant to Act 2007 of 2005 certified personnel working solely part time in one of the following settings shall be required to obtain thirty (30) hours of professional development.

4.12.01 Adult basic education;
4.12.02 General adult education;
4.12.03 English as a second language for adults; and
4.12.04 General Educational Development Test examiners

4.13 Beginning in the 2005-2006 school year, thirty (30) approved professional development hours annually will be required to renew a teacher license for those certified personnel working solely part time in a setting described in Section 4.12 of these rules.

4.14 Beginning with the 2005-2006 school year, a teacher meeting the criteria of Section 4.12 of these rules who has not maintained a current teaching license but who wishes to renew his or her license shall be required to meet the conditions of the Rules Governing the Requirements and Procedures for Renewing a Standard Arkansas Teaching License.

4.15 All Institutions of Higher Education will be required to maintain documentation for its employees who wish to meet the professional development hours to maintain a teaching and/or administrative license according to, and in compliance with this Rule.

5.0 Professional Development Criteria

5.01 Professional development is the means by which educators acquire or enhance the knowledge, skills, and expectations necessary to increase student learning and must meet the following criteria. All approved professional development shall be aligned to the following Standards developed by the National Staff Development Council:

5.01.1 Context Standards

Requires skillful school and school district leaders who guide continuous instructional improvement;
Organizes educators into learning communities whose goals are aligned with those of the school and school district; and
Requires resources to support educator learning and collaboration.

5.01.2 Process Standards

Uses disaggregated student data to determine educator learning priorities, monitors progress, and help sustain continuous improvements;
Uses multiple sources of information to guide educator improvement and demonstrate its impact;
Prepares educators to apply research to decision making;
Uses learning strategies appropriate to the intended goal;
Applies knowledge about human learning and change; and
Provides educators with the knowledge and skills to collaborate.

5.01.3 Content Standards

Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments and hold high expectations for their academic achievement;
Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately; and
Provides educators with knowledge and skill to involve families and other stakeholders appropriately.

5.02 Approved professional development activities shall relate to the following focus areas:

5.02.01 Content (K-12);
5.02.02 Instructional strategies;
5.02.03 Assessment;

5.02.04 Advocacy/leadership;
5.02.05 Systemic change process;
5.02.06 Standards, frameworks, and curriculum alignment;
5.02.07 Supervision;
5.02.08 Mentoring/coaching;
5.02.09 Education technology;
5.02.10 Principles of learning/developmental stages;
5.02.11 Cognitive research;
5.02.12 Parent involvement;
5.02.13 Building a collaborative learning community; and
5.02.14 Student health and wellness, which may include but not limited to appropriate training for anticipated rescuers in the use of
5.02.14.1 automated external defibrillator; or
5.02.14.2 cardiopulmonary resuscitation.

5.03 All approved professional development, whether designed for the individual, school or district, shall be based on the improvement of student achievement on State assessments and increasing student achievement and academic performance.

5.04 Approved professional development takes on many forms and may be earned in the following ways:

5.04.01 Conferences/workshops/institutes
5.04.02 Mentoring/peer coaching;
5.04.03 Study groups/learning teams;
5.04.04 National Board for Professional Teaching Standards Certification;
5.04.05 Distance learning/on-line opportunities;
5.04.06 Internships;
5.04.07 State/district/school programs;
5.04.08 College/university course work;
5.04.09 Action research; or
5.04.10 Individually-guided as noted in the individual professional development plan.

5.05 Pursuant to Act 1185 of 2005 and Act 1309 of 2009 an individual may be entitled to up to twelve (12) hours of professional development credit approved by the district/school which may be applied toward the sixty (60) hour professional development requirement for that time period at the beginning of each school year which is used to plan and prepare curriculum or develop other instructional material provided:

5.05.01 The time is spent in his/her instructional classroom, office or media center at the public school;

5.05.02 The time is prior to the first student teacher interaction day of the school year; and

5.05.03 The time is spent in the focus areas listed in Section 5.02 of these Rules, and may include but are not limited to the following:

5.05.03.1 Grade level and/or vertical team planning to integrate subject areas;
5.05.03.2 Team work to analyze student data;
5.05.03.3 Team work to develop academic improvement plans (AIP) or individual educational programs (IEP);
5.05.03.4 Developing assessments for learning (formative assessments);
5.05.03.5 Professional book studies;
5.05.03.6 Developing student-centered units tied to the State academic standards and student learning expectations;
5.05.03.7 Developing intervention strategies to support remediation;
5.05.03.8 Developing and/or revising the Arkansas Comprehensive School Improvement Plan (ACSIP);
5.05.03.9 Developing and/or revising curricula maps and/or pacing guides;
5.05.03.10 Pursuing study as noted in individual professional development plan and
5.05.03.11 Arkansas IDEAS, on-line professional development, related to ACSIP or the educator's professional growth plan.

5.05.04 No professional development credit shall be given for activities under Section 5.05 of these Rules unless those activities meet the criteria and standard requirements set out in Sections 5.02 of these Rules. Specific activities which do not qualify include but are not limited to:

5.05.04.1 Making and putting up bulletin boards;
5.05.04.2 Clerical work associated with documents such as ACSIP, AIP and IEPs; and
5.05.04.3 Administrative faculty or team administrative meetings.
5.05.04.4 Certified public school personnel who meet the requirements of Sections 5.02 and 5.05 of these Rules shall be entitled to earn one (1) hour of professional development for each hour of approved preparation, not to exceed twelve (12) hours.

5.06 Pursuant to Act 2318 of 2005 there is created the Arkansas Online Professional Development Initiative. Requirements for the initiative include:

5.06.1 All professional development delivered by technology shall be aligned to the required focus areas listed in Section 5.02 of these Rules.

5.06.2 The ADE shall determine the content and approve all professional development delivered through the Arkansas On-line Professional Development Initiative that counts toward the required sixty (60) hours.

5.06.3 The ADE shall select courses/products, which are research-based and are available from sources, with expertise in technology delivered professional development courses.

5.06.4 Courses shall align with the Southern Regional Education Board Multi-State Online Professional Development Standards.

5.06.5 Online professional development courses shall include online registration, course evaluation, and attendance and completion documents.

6.0 Professional Development Plan

All school districts, schools and certified personnel shall develop and implement a professional development plan.

6.01 The district and school plan shall be included in the ACSIP.

6.02 Individual plans (certified personnel) shall support the district and/or school plans.

6.03 Teachers, administrators, and classified school employees shall be involved in the design, implementation and evaluation of their respective professional development offerings under the plan.

6.04 School Improvement

6.04.1 Beginning with the 2006-2007 school year, the ADE may require specific professional development programs for the district or the school designated in school improvement or academic distress.

6.04.2 These requirements may become part of the district or school school improvement plan.

6.04.3 In order to receive professional development credit, the district or school certified personnel shall participate in, complete, and pass the assessment for the professional development requirements included in the district or school improvement plan.

7.0 Approval Process

7.01 Beginning with the 2006-2007 school year, all professional development programs must be approved by the Arkansas Department of Education in order to receive credit toward the 60-hour requirement.

7.02 At least thirty (30) days before a program is offered to teachers and/or administrators, the professional development provider shall provide a detailed description of the entire program including staff qualifications to the ADE.

7.03 The ADE shall promptly review the content of the program for compliance with all applicable statutes and department rules to determine if any or all of the program content shall be deemed to provide professional development credit and shall establish the time period the professional development provider is approved to offer the program.

7.04 Upon notification by the ADE of approval of the program (or a part or parts thereof) for professional development credit, the professional development provider may enroll participants in the program and offer the program for professional development credit for the set time period.

7.05 The program provider shall be responsible for the preparation and dissemination of proof of completion of the program (or parts thereof) to all attendees. All such proofs, or copies thereof, shall be submitted by the attendees who are employed by an Arkansas school district to the superintendent of the district.

7.06 Each school district shall maintain all documents for its employees which reflect completion of professional development programs, whether such programs were provided by an outside organization or by the district itself.

7.07 Each school district shall report the amount of all professional development programs completed by its employees to the ADE at the time and in the matter specified by the ADE.

7.08 The ADE shall monitor all school districts, and all licensed teachers and administrators to whom these Rules apply, for compliance with these requirements, and shall administer appropriate sanctions specified in statute and Rule to any district, teacher and/or administrator whom it finds to be in noncompliance.

7.09 District and School Providers
School and district professional development plans shall be included in the ACSIP and shall be reviewed annually by the school/district and the ADE.

7.09.1 The ACSIP will include an assurance statement that each faculty/administrator in the school/district shall have an individual professional development plan that has been developed in cooperation and collaboration with the employee and the school and/or district.
These individual plans shall include:

7.09.1.1 Six (6) hours of technology, two (2) hours of parent involvement and two (2) hours of Arkansas History as defined in Act 2095 of 2005 may be selected at the discretion of the employee with approval of the district.

7.09.1.2 Up to twelve (12) hours may be selected at the discretion of the employee with the approval of the district in keeping with the identified needs of student data as defined in the ACSIP plan or the employees' individual professional development plan.

8.00 Funding
Professional Development Funding provided under Act 59 of the Second Extraordinary Session of 2003 must be directed to activities that meet The conditions described in these Rules and shall not be used for any other purpose unless otherwise allowed by law or rule.

9.00 Monitoring/Evaluation

9.01 Regular monitoring activities of the professional development requirements within these Rules shall occur when the superintendent of the school district provides written assurance to the Commissioner of Education as required by law. However, the ADE may directly monitor the professional development activities of any school or school district to determine compliance with the professional development requirements.

9.02 The criteria for evaluating the impact of professional development shall be the improvement of student achievement on State criterion-referenced assessments, State norm-referenced assessments, other related indicators as defined by ACTAAP and the evaluations of the professional development offerings. These data shall be used to revise ACSIP and the district, school and individual professional development plans associated with the local improvement plan.

ARKANSAS DEPARTMENT OF EDUCATION
RULES GOVERNING STANDARDS FOR ACCREDITATION OF ARKANSAS PUBLIC SCHOOLS AND SCHOOL DISTRICTS
July 2009

1.0 REGULATORY AUTHORITY

1.01 These rules shall be known as the Arkansas Department of Education Rules Governing the Standards for Accreditation of Arkansas Public Schools and School Districts.

1.02 These rules are promulgated pursuant to Ark. Code Ann. §§ 6-11-105, 6-15-207, 25-15-201 et seq., and Acts 219, 829 and 1015 of 2007.

1.03 These rules replace previously adopted Rules Governing Standards for Accreditation of Arkansas Public Schools revised June 2008.

2.0 PURPOSE

2.01 These rules are to set forth the Standards for Accreditation of Arkansas public schools and school districts.

2.02 The purpose of these rules is to describe the process whereby Arkansas public schools or school districts will be cited or placed in probationary status for failure to meet Standards for Accreditation.

2.03 The purpose of these rules is to set forth the enforcement actions that may be applied to Arkansas public schools or school districts that fail to meet Standards for Accreditation.

3.0 DEFINITIONS – For purpose of these Rules, the following terms mean:

3.01 "Cited" - Accredited-cited status assigned to a school or school district that fails to meet any standard identified as a cited violation in these rules.

3.02 "Core academic course" means a course taught in any of the following subject areas defined by NCLB: English, Reading or Language Arts, Mathematics, Science, Foreign Language, Social Studies, Arts.

3.03 "Department" - Arkansas Department of Education.

3.04 "Enforcement action" - intervention by the State to require compliance of a school or a school district that fails to meet Standards for Accreditation of Arkansas Public Schools and School Districts.

3.05 "Highly qualified teacher" means a teacher who holds at least a Bachelor's Degree, holds full state license, and has demonstrated subject area competence in each of the core academic subjects in which the teacher teaches, and who meets such other necessary requirements as set forth in the Arkansas Department of Education Rules Governing Highly Qualified Teachers Pursuant to the No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq.

3.06 "Probationary" - Accredited-probationary status assigned to a school or school district that fails to meet any standard identified as a probationary violation in these rules or fails to correct by the specified deadline a violation for which it acquired cited status.

3.07 "Public School District/Public School" - those school districts and schools (including open-enrollment charter schools) created pursuant to Title 6 of Arkansas Code and subject to the Arkansas Comprehensive Testing, Assessment and Accountability Program except specifically excluding those schools or educational programs created by or receiving authority to exist pursuant to Ark. Code Ann. §§ 6-15-501, 9-28-205, and 12-29-301, et seq., or other provisions of Arkansas law.

3.08 "Standards for Accreditation" - a series of requirements that specify what a school or school district shall meet in order to be fully accredited by the Arkansas Department of Education.

3.09 "State Board of Education" - Arkansas State Board of Education.

4.0 CITED STATUS

4.01 A school district, which is deemed to have failed to meet any standard defined with a cited status in these rules and is referenced as applicable to a school district, shall be assigned cited status.

4.02 A school, which is deemed to have failed to meet any standard defined with a cited status in these rules and is referenced as applicable to a school, shall be assigned cited status.

4.03 No school or school district shall maintain a cited status for violation of any particular standard for a time period greater than two (2) consecutive school years including the year the cited status is assigned, unless provided otherwise in these rules.

4.04 Any school or school district that fails to remedy itself from cited status for violation of a particular standard after a two (2) year time period shall be assigned accredited-probationary status.

4.05 For the purpose of these Rules, D means district, S means school, C means cite, P means probation, and Policy means a policy is required.

5.0 PROBATIONARY STATUS

5.01 A school district shall be assigned a probationary status which is deemed to have failed to meet any standard defined with a probationary status in these rules or was in cited status for the same violation the previous two (2) consecutive years and is referenced as applicable to a school district.

5.02 A school shall be assigned a probationary status which is deemed to have failed to meet any standard defined with a probationary status in these rules or was in cited status for the same violation the previous two (2) consecutive years and is referenced as applicable to a school.

5.03 No school or school district shall maintain a probationary status for violation of any standard for more than two (2) consecutive school years including the year the probationary status is declared.

5.04 Any school or school district that fails to remedy itself from probationary status after the two (2) year time period will be subject to mandates of Ark. Code Ann. § 6-15-207 (Act 1467 of 2003).

STANDARDS FOR ACCREDITATION OF ARKANSAS PUBLIC SCHOOLS AND SCHOOL DISTRICTS

D/P 6.0 STANDARD I EQUAL EDUCATIONAL OPPORTUNITIES

6.01 All school districts' policies and actions shall be nondiscriminatory and shall be in compliance with state and federal laws.

6.02 Pursuant to Ark. Code Ann. § 6-15-202(a) and Act 829 of 2007, all school districts which have not obtained full and complete unitary status and have been released from court supervision over desegregation obligations are strongly encouraged to seek unitary status and obtain an appropriate court order proclaiming such unitary status from the respective federal courts in which their cases have been filed.

6.03 By September 15 of each school year, any school district that has not been declared by court order to have reached complete and full unitary status shall file a report with the Arkansas Department of Education stating whether in the district's opinion the school district is unitary in status or not. Any school district that has not reached complete and full unitary status and has not been released from court supervision over desegregation obligations but which believes the district is in complete and full unitary status shall provide a written quarterly report to the Arkansas Department of Education by September 15 and the report shall provide a detailed plan with proposed time lines of how the district has complied with any desegregation plan or obligations and shall state how the district will seek to obtain a determination of full unitary status and release from court supervision and a release of any and all court ordered desegregation obligations.

6.04 If by July 1, 2009 and each school year thereafter, the Arkansas Department of Education is unable to verify the district's attempts to comply with their submitted detailed plan for obtaining a determination of full unitary status and release from court supervision as required in §6.03 of these Rules, then the Department of Education shall report to the State Board of Education:

1) Whether the failure of the school district to obtain full and complete unitary status is having a negative impact on the state's overall obligation to provide a general, suitable and efficient school system; and

2) Whether the school district should be placed on probationary status and subject to the provisions of Ark. Code Ann. § 6-15-201 et seq.

6.05 The SBE shall consider the report issued by the ADE under § 6.04 of this Rule and may designate or classify a school district in probationary status and take any necessary intervention allowed under § 6-15-201 et seq. if the SBE determines the district's inability to obtain unitary status is having a negative impact on the obligation to provide a general, suitable and efficient education.

7.0 STANDARD II GOALS AND ADMINISTRATION OF ARKANSAS PUBLIC SCHOOLS AND SCHOOL DISTRICTS

Policy 7.01 STATE AND NATIONAL GOALS

It is well established by history and law that education is a state responsibility. As a framework for school district planning, a set of statewide and national goals for education and a long-term plan to meet these goals have been developed.

D/C As one of these goals, pursuant to No Child Left Behind, teachers of core academic classes shall hold a designation as a Highly Qualified Teacher (HQT).

7.02 SCHOOL DISTRICT GOALS

D/P 7.02.1 Each school district in Arkansas shall be required to develop, with appropriate staff and community participation, a comprehensive plan. School district goals shall be compatible with state and national educational goals and shall address local needs. The plan shall be filed with and reviewed by the Department annually.

D/C 7.02.2 Each school district shall provide and publish, in a newspaper with general circulation in the district before November 15 of each school year, a report to the public detailing progress toward accomplishing program goals, accreditation standards, and proposals to correct deficiencies. If there is no paper media with general circulation, notification shall be mailed to parents.

S/C 7.02.3 Each school shall systematically and, at least annually, explain its policies, programs, and goals to the community in a public meeting that provides opportunities for parents and other members of the community to ask questions and make suggestions concerning the school program.

7.03 SCHOOL DISTRICT ADMINISTRATION

D/P 7.03.1 OPERATING POLICIES AND PROCEDURES

Each school board shall adopt written policies for the operation of the school district in accordance with guidelines established by the Department.

7.03.2 RECORDS AND REPORTS

S/P 7.03.2.1 Each school shall maintain all reports and records necessary for effective planning, operation, and education.

Policy 7.03.2.2 Each school district shall annually submit an accurate and timely report to the Department appraising its students' performance. The report shall be prepared in accordance with guidelines developed by the Department.

7.03.3 SCHOOL BOARDS

D/C 7.03.3.1 Each school board, prior to November 15 of each year, shall hold a public meeting, at a time and place convenient for a majority of the school patrons and employees, to review and discuss its annual report detailing progress toward accomplishing its district's program objectives, accreditation standards, and proposals to correct deficiencies.

D/C 7.03.3.2 All accreditation and evaluation studies and reports shall be reported and discussed in a public meeting at a time and place convenient for a majority of the school patrons and employees.

7.04 SCHOOL GOALS

S/P 7.04.1 The administrators, teachers, other school staff, and parents of each school shall develop the annual comprehensive school improvement plan to monitor that school's progress and to project its continuing needs. The annual school improvement plan shall be filed with and reviewed by the Department.

S/P 7.04.2 Schools shall review each curriculum area annually to ensure alignment with state standards.

8.0 STANDARD III ACTIVE COMMUNITY INVOLVEMENT

D/P 8.01 Each school district shall form a coalition of parents, and representatives of agencies and institutions, and of business and industry to develop and implement a comprehensive plan for effective and efficient community involvement in the delivery of comprehensive youth services and support.

S/C 8.02 Each individual school shall investigate and, where feasible, utilize community resources in the instructional program of the school.

9.0 STANDARD IV CURRICULUM

9.01 COURSE CONTENT FRAMEWORKS

Policy 9.01.1 The Department shall appoint committees to write curriculum frameworks based on the adopted Arkansas Student Learning Expectations. Each committee shall consist of teachers and instructional supervisory personnel from public schools assisted by teachers from institutions of higher education. Committees will meet periodically to review, revise, and update the curriculum frameworks.

S/P 9.01.2 Each accredited school shall use these curriculum frameworks to plan instruction leading to student demonstration of proficiency in the Arkansas content standards.

Policy 9.01.3 The Department, with advice from public schools and institutions of higher education, shall devise an assessment system that will measure progress toward meeting the content standards expressed in the Arkansas Curriculum Frameworks. These evaluations shall serve as a major factor in determining the accreditation status of public schools.

Policy 9.02 EARLY CHILDHOOD EDUCATION CURRICULUM

The early childhood education curriculum shall be developmentally appropriate for the age span of the children within the groups and implemented with attention to the different needs, interests, and developmental levels of those individual children. This curriculum shall be aligned to Arkansas Better Chance standards.

S/P 9.03 CURRICULUM

S/P 9.03.1 SMART CORE AND CORE

9.03.1.1 Guidelines for the development of Smart Core curriculum policies and informed consent document shall be established by the Department. Each school district shall adopt written Smart Core curriculum policies consistent with those guidelines.

9.03.1.2 The Smart Core curriculum is contained within the 38 units that must be taught each year (See 14.03.1 for a listing of Smart Core requirements).

9.03.1.3 In order to ensure that every child has access to a rigorous curriculum, beginning with the seventh grade class of 2004-2005, the Smart Core curriculum and core curriculum will be a standard component of the required course of study to graduate from Arkansas public schools.

9.03.1.4 All students will participate in the Smart Core curriculum unless the parent or guardian waives the student's right to participate. In such case of a waiver, the student will be required to participate in the core.

9.03.1.5 Each school district shall adopt written policies that inform parents about the Smart Core curriculum and the required course of study for graduation.

9.03.1.6 Each district's written policies regarding Smart Core curriculum and the required course of study for graduation shall be included in the student handbook and filed with the Department.

9.03.1.7 Local districts and individual schools shall involve parents, staff, and students in the formulation and review of the Smart Core curriculum and the course of study for the graduation policy.

9.03.1.8 Students and parents shall acknowledge that they have received the school's policy regarding Smart Core curriculum and the required course of study for graduation by a signed statement. The school shall document procedures and methods used to inform parents and students of this policy. Parents shall sign an Informed Consent document provided by the Department. Teachers, administrators, and counselors shall be provided with appropriate training in this policy.

9.03.1.9 The core curriculum for grades K-8 shall encompass all types of developmentally appropriate learning experiences and provide for differences in rates of learning among children. It shall emphasize overarching processes of reasoning and problem solving, communicating, connecting (linking knowledge, skills, and other understandings within and across disciplines to real-life situations), and internalizing (acting on the learning to make it meaningful, useful, and worthwhile). English Language Acquisition Standards shall also be used for all English Language Learners (ELL) students at all grade levels.

S/P 9.03.2 GRADES K-4

Reading, writing, and mathematics shall be incorporated into all curriculum areas. All students shall receive instruction in each content area annually.

9.03.2.1 Language Arts

Reading
Writing
Listening, Speaking, Viewing

9.03.2.2 Mathematics

Number sense, properties, and operations
Measurement
Geometry and spatial sense
Data analysis and statistics
Patterns, algebra, and functions

9.03.2.3 Social Studies

History and culture of Arkansas (a unit at each grade level with emphasis at grade 4), the nation, and the world (including foreign language experiences)
Geography
Economics
Civic education
Social sciences processes and skills

9.03.2.4 Science

Life science systems
Earth/space systems
Physical systems
Environmental education

9.03.2.5 Tools for Learning

Technical skills: research and information skills, use of computers and calculators
Data gathering: use of data banks, atlases, dictionaries, almanacs, networks, news sources, and interviews

9.03.2.6 Fine Arts

Visual arts instruction, appreciation, and application
Performing arts instruction, appreciation, and application

9.03.2.7 Practical Living Skills/Career Exploration

9.03.2.8 Health and Safety Education and Physical Education

S/P 9.03.3 GRADES 5-8
Reading, writing, and mathematics shall be incorporated into all curriculum areas. All students shall receive instruction in each content area annually.

9.03.3.1 Language Arts

Reading
Writing
Listening, Speaking, Viewing

9.03.3.2 Mathematics

Number sense, properties, and operations
Measurement
Geometry and spatial sense
Data analysis and statistics
Patterns, algebra, and functions

9.03.3.3 Science

Life science systems
Earth/space systems
Physical systems
Environmental education

9.03.3.4 Social Studies

History and culture of Arkansas (a unit at grades 5 and 6, with emphasis at grade 5), the nation, and the world (including foreign language experiences)
Geography
Economics
Civic education
Social science process skills

9.03.3.5 Physical Education

9.03.3.6 Fine Arts

Visual arts instruction, appreciation, and application
Performing arts instruction, appreciation, and application

9.03.3.7 Health and Safety

9.03.3.8 Tools for Learning

Technical skills: research and information skills, use of computers and calculators
Data gathering: use of data banks, atlases, dictionaries, almanacs, networks, news sources, and interviews

9.03.3.9 Career and Technical Education

9.03.3.10 Each school shall teach annually reading and mathematics skills to assist those students who need such additional instruction to make satisfactory progress in their required courses.

9.03.3.11 A unit of Arkansas history shall be taught as a social studies subject at each elementary grade level in every public elementary school in this state with greater emphasis at the fourth (4th) and fifth (5th) grade levels, and at least one (1) full semester of Arkansas history shall be taught to all students at the 7th, 8th, 9th, 10th, 11th, or 12th grade level in every public secondary school in this state.

9.03.3.12 Upon approval by the Department, courses taught in grades 5-8 may be offered for high school graduation credit. Courses shall have the same rigor as those taught in high school, but content for a single course may be taught over a two-year period. Teachers shall be certified in the subject area taught with students participating in appropriate End-of-Course examinations. Schools shall have appropriate follow-up curriculum in place for students adopting an accelerated schedule.

S/P 9.03.4 GRADES 9-12

Reading, writing, and mathematics shall be incorporated into all curriculum areas. The following courses shall be taught annually for a total of 38 units, except as otherwise allowed in Ark. Code Ann. §§ 6-15-213 and 6-15-214, as articulated in these rules.

9.03.4.1 Language Arts - 6 units

4 units English
1 unit oral communications or ½ unit oral communications and ½ unit drama
1 unit journalism
(Other options as approved by the Department)

9.03.4.2 Science - 5 units (Active student participation in laboratory experience is required for a minimum of 20% of instructional time.)

1 unit biology
1 unit chemistry
1 unit physics
(Other options as approved by the Department)

9.03.4.3 Mathematics - 6 units

1 unit Algebra I
1 unit geometry
1 unit Algebra II
1 unit pre-calculus mathematics to include trigonometry
(Other options as approved by the Department)

9.03.4.4 Foreign Languages - 2 units of the same language

9.03.4.5 Fine Arts - 3 ½ units

1 unit art
1 unit instrumental music
1 unit vocal music
½ unit survey of fine arts or an advanced art or an advanced music course

9.03.4.6 Computer Applications with emphasis on current applications-1 unit

9.03.4.7 Social Studies - 4 units

1 unit American history with emphasis on 20th Century America
1 unit world history
½ unit civics
½ unit of Arkansas history if not taught in grade 7 or 8
(Other options as approved by the Department)

9.03.4.8 Economics - ½ unit

The Economics course must be taught by a teacher appropriately licensed in either Social Studies or Business Education.
The appropriate licensure code must be used to differentiate between the area of social studies and the area of career focus elective credit to meet the requirements of the 38 units.

9.03.4.9 Health and Safety Education and Physical Education - 1½ units

1 unit physical education
½ unit health and safety education

9.03.4.10 Career and Technical Education - 9 units of sequenced career and technical education courses (programs of study) representing three (3) occupational areas.
In addition to the currently approved programs, districts may develop and request approval for innovative programs of study based on community and student needs.

9.03.4.11 The course offerings should include appropriate Advanced Placement (AP) courses. Weighted credit/additional quality points for designated AP courses will be contingent upon the teacher completing training as required by the Department and the student taking the applicable AP examinations.

9.03.4.11.1 Any school district meeting the following conditions may petition the Department to count an appropriate approved AP course in the place of a specified required 38 unit course in the subject areas of mathematics, English, science and social studies under the following conditions:

9.03.4.11.2 The public school district has a qualified teacher for the required 38 unit course;

9.03.4.11.3 No students enrolled in the required 38 unit course;

9.03.4.11.4 An AP course in the same subject area as the required course has students enrolled in the course;

9.03.4.11.5 The public school district teaches all other 38 unit courses required by the Standards for Accreditation; and

9.03.4.11.6 The public school district teaches the required 38 unit course to any student who enrolls in the public school district after the school year begins.

9.03.4.11.7 The public school district may teach the required course to a new student:

i. In a traditional classroom setting;

ii. Through distance learning with a qualified teacher, or

iii. By making individual modifications for the required course from the AP course syllabus to accommodate the new student.

9.03.4.11.8 The public school district shall notify the Department in writing after registration in the spring prior to the beginning of the new school year and immediately after the school year begins if no students enrolled in the required course and the public school district will seek to meet the Standards for Accreditation using the AP course.

9.03.4.11.9 Upon receiving the public school district's written notification and after spring registration and after verifying the information, the Department shall permit the public school district to meet the Standards for Accreditation by teaching the AP course in place of the required course.

9.03.4.11.10 If a new student enrolls in the required course, the public school district shall immediately notify the Department in writing.

9.03.4.12 Additional foreign language courses such as the Level III and IV of the same foreign language and other foreign language should be included.

9.03.4.13 If a course required to be taught by a school district under the State Board of Education's Standards for Accreditation has an enrollment of one (1) or more students and all students enrolled in the course leave the school district after the course has commenced but before the completion of the course in each given school year or school semester the course is to be taught, and no other students that are eligible to take the course enroll to attend the school district campus where the course is required to be taught, the course shall be considered as taught by the school district in compliance with the Standards for Accreditation under the folllowing conditions:

9.03.4.13.1 The school district superintendent certifies in writing that no student was enrolled in the district and was eligible to take the required course enrolled to attend the school district campus where the course was required to be taught after the initial student or students left the school district;

9.03.4.13.2 The school district provides written proof, as required by the Department, that the school district had the course scheduled to be taught on the school district's master course schedule during the entire time the course was required to be taught;

9.03.4.13.3 The school district provides written proof, as required by the Department, that the school district had a properly certified teacher employed and able to teach the required course during the entire time the course was required to be taught and the course was listed on the school district's master course schedule;

9.03.4.13.4 The Department, upon review of proper records of the district and information certified by the school district superintendent, confirms that the school district satisfied the requirements of Sections 9.03.4.12 - 9.03.4.12.3 of these rules and verifies that the information submitted pursuant to Sections 9.03.4.12 - 9.03.4.12.3 of these rules is correct; and

9.03.4.13.5 At the end of the school semester in which the course was required to be taught, the school district petitions the State Board of Education, in writing, for a waiver of the Standards for Accreditation requirement that the particular course be taught for that school semester.

9.03.4.13.6 The State Board of Education shall waive the requirement for only the semester in which the student or students left the school district.

9.03.4.13.7 The superintendent and the school board president of the school district seeking the waiver shall appear before the State Board of Education to present their request for a waiver.

9.03.4.13.8 Representatives of the Department shall appear before the State Board of Education to confirm and verify the information required to be filed with the Department under this section.

9.03.4.13.9 Upon satisfaction of the requirements of Sections

9.03.4.12 - 9.03.4.12.8 of these rules, the State Board of Education shall waive the requirement that the course be taught on a semester basis.

10.0 STANDARD V INSTRUCTION

10.01 REQUIRED TIME FOR INSTRUCTION AND SCHOOL CALENDAR

D/P 10.01.1 Student-teacher interaction time shall be for a minimum of 178 days, except as waived by the Department for professional development.

D/P 10.01.2 All public school teacher/administrator contracts (elementary, secondary, vocational - exception vocational agriculture) shall be a minimum of 190 days.

D/P 10.01.3 At least ten (10) days or sixty (60) hours shall be used for professional development and in-service training and at least two (2) days shall be used for parent/teacher conferences.

D/S/P 10.01.4 The planned instructional time in each school day shall not average less than six (6) hours per day or thirty (30) hours per week.

10.02 CLASS SIZE AND TEACHING LOAD

Policy 10.02.1 Early childhood education programs shall be no more than ten (10) students to one (1) teacher in a classroom or no more than twenty (20) students to one (1) teacher and a qualified adult aide.

S/P 10.02.2 Kindergarten shall be no more than twenty (20) students to one (1) teacher in a classroom. However, kindergarten class maximum may be no more than twenty-two (22) with a one half time instructional aide being employed for those classes.

S/P 10.02.3 The average student/teacher ratio for grades one through three in a school district shall be no more than twenty-three (23) students per teacher in a classroom. There shall be no more than twenty-five (25) students per teacher in any classroom.

S/P 10.02.4 The average student/teacher ratio for grades four through six in a school district shall be no more than twenty-five (25) students per teacher in a classroom. There shall be no more than twenty-eight (28) students per teacher in any classroom.

S/P 10.02.5 In grades seven through twelve, a teacher shall not be assigned more than one hundred fifty (150) students; an individual academic class shall not exceed thirty (30) students, provided that, in exceptional cases or for courses that lend themselves to large group instruction, these ratios may be increased.

D/C 10.03 INSTRUCTIONAL MATERIALS

School districts shall adopt instructional materials which provide complete coverage of a subject as described in that subject's curriculum frameworks and which fit the achievement levels of the students assigned to each teacher.

10.04 DISCIPLINE

D/P 10.04.1 Guidelines for the development of student discipline policies shall be established by the Department. Each school district shall adopt written discipline policies consistent with those guidelines that include a code of student behavior.

D/P 10.04.2 Each district's written policies shall be filed with the Department.

D/S/P 10.04.3 Local districts and individual schools shall involve parents, staff, and students in the formulation and review of their student discipline policies, rules, and procedures.

S/P 10.04.4 Schools shall inform students and parents of the rules and procedures by which the school is governed. Schools shall make the students aware of the behavior that will call for disciplinary action, as well as the types of corrective actions that may be imposed.

S/P 10.04.5 Students and parents shall acknowledge that they have received the school's discipline policies by a signed statement. The school shall document procedures and methods used to inform parents and students of the policy.

D/S/P 10.04.6 Teachers and administrators, classified school employees, and volunteers shall be provided with appropriate student discipline training as required by Ark. Code Ann. § 6-18-502.

D/C 10.05 EXTRACURRICULAR ACTIVITIES

Each school district shall adopt a written policy on extracurricular and non-instructional activities and their appropriate place in the school program. The policy shall limit and control interruptions of instructional time in the classroom and the number of absences for such activities.

D/C 10.06 REQUIREMENTS FOR PARTICIPATION IN EXTRACURRICULAR ACTIVITIES

Each school district shall adopt a written policy specifying the requirements students must meet to be eligible to participate in extracurricular activities.

D/C 10.07 HOMEWORK AND INDEPENDENT STUDY SKILLS

Each school district shall adopt a written policy for appropriate and meaningful homework. The policy shall promote the development of students' independent study skills and work to be done outside the classroom which will reinforce and strengthen academic skills, broaden the educational experiences of students, and relate those experiences to the real life of the community. Parents shall be notified of the policy at the beginning of each school year.

D/C 11.0 STANDARD VI ATTENDANCE AND ENROLLMENT

11.01 MANDATORY ATTENDANCE

All children who are ages five (5) through seventeen (17) on or before September 15 are required to be in school that school year with the exception of five-year-old children for whom kindergarten has been waived by the parent, guardian, or person having custody or charge; students who have received a high school diploma or its equivalent; or students who are enrolled in a postsecondary vocational-technical institution, a community college, or a two-year or four-year institution of higher education.

S/C 11.02 INITIAL ENROLLMENT

A birth certificate, Social Security Number, or other documentation, as provided by law, shall be required to enroll in school.

Policy 11.03 EARLY CHILDHOOD EDUCATION PROGRAMS

It is recommended that school districts provide the opportunity for each child age three (3) on or before September 15 to enroll in an approved early childhood education program. No parent or guardian shall be required to enroll a child in an early childhood education program at age three (3).

D/P 11.04 KINDERGARTEN

Each school district must provide a full-day kindergarten for each child age five (5) on or before September 15. A parent or guardian shall sign a waiver if they elect not to enroll a child in kindergarten at age five (5). Any six-year-old child who has not completed a state accredited kindergarten program prior to public school enrollment shall be evaluated by the school district to determine whether placement for the child shall be in kindergarten or the first grade.

D/S/P 11.05 IMMUNIZATION REQUIREMENTS

All schools and school districts shall meet immunization requirements established by state and federal laws.
All enrolling kindergarten students shall furnish evidence of a comprehensive and developmental preschool examination.

12.0 STANDARD VII STUDENT PERFORMANCE

D/S/P 12.01 PERFORMANCE OF ALL STUDENTS

Schools shall be responsible for assessing each student's progress at each grade level in acquiring mastery of the competencies, skills, and other subjects required by law and Arkansas Comprehensive Testing, Assessment and Accountability Program (ACTAAP) regulations. Assessment data may include performance assessments, competency test scores, standardized test scores, subject matter mastery test scores, and observations of teachers and parent(s) or guardian(s).

S/P 12.02 GRADING

Grades assigned to students for performance in a course shall reflect only the extent to which a student has achieved the expressed academic objectives of the course. Grades that are aligned with other educational objectives such as the student learning expectations contained in the curriculum frameworks may also be given.

S/P 12.03 SPECIAL EDUCATION STUDENTS

Students with special needs shall have equal access to programs that meet the criteria for their identified Individualized Education Program and shall receive services in the least restrictive environment that meets their needs.

12.04 SCHOOL REPORTING OF STUDENTS' PERFORMANCE

D/C 12.04.1 Each local district shall adopt a written policy requiring teachers to communicate with the parent(s) or guardian(s) of each student during the school year to discuss the student's academic progress and requiring more frequent communication with the parent(s) or guardian(s) of students not performing at the level expected for their grade.

S/C 12.04.2 Each school shall schedule no fewer than two (2) parent-teachers conferences per school year to encourage communication with parents.

S/C 12.04.3 All grade level conferences with parent(s) and or guardian(s) shall be scheduled at a time and place to best accommodate those participating in the conference. The school shall document participation or nonparticipation in required conferences. If a student is to be retained at any grade level, notice of retention and the reasons for retention shall be communicated promptly in a personal conference.

12.05 TRANSFER BETWEEN SCHOOLS

D/C 12.05.1 Any student transferring from a school accredited by the Department to another school accredited by the Department shall be placed into the same grade the student would have been in had the student remained at the former school.

D/C 12.05.2 Any student transferring from home school or a school that is not accredited by the Department to a school that is accredited by the Department shall be evaluated by the staff of that accredited school to determine that student's proper placement in the accredited school.

13.0 STANDARD VIII SCHOOL PERFORMANCE

Data from the performance indicators shall be used by the Department and schools in establishing goals and objectives for school improvement.

14.0 STANDARD IX GRADUATION REQUIREMENTS

D/S/P 14.01 Specifically, for the graduating classes of 2009-2010, 2010-2011, 2011-2012, 2012-2013, the required twenty-two (22) units, at a minimum, shall be taken from the "Smart Core" curriculum or from the "Core" curriculum. Only one (1) of the required units may be in a physical education course. All students will participate in the Smart Core curriculum unless the parent or guardian waives the student's right to participate. In such case of a waiver, the student will be required to participate in Core. The required twenty-two (22) units, at a minimum, are to be taken from the Smart Core or Core as follows:

SMART CORE - Sixteen (16) units

English - four (4) units - 9th, 10th, 11th, 12th
Mathematics - four (4) units [All students must take a mathematics course in grade 11 or grade 12 and complete Algebra II.]

Comparable concurrent credit college courses may be substituted where applicable.

Algebra I or Algebra A & B (Grades 7-8 or 8-9)

Geometry or Investigating Geometry or Geometry A & B (Grades 8-9 or 9-10)

Algebra II

Fourth math unit range of options: (choice of: Transitions to College Math, Pre-Calculus, Calculus, Trigonometry, Statistics, Computer Math, Algebra III, or an Advanced Placement math)

Natural Science - three (3) units with lab experience chosen from Physical Science, Biology or Applied Biology/Chemistry, Chemistry, Physics or Principles of Technology I & II or PIC Physics

Social Studies - three (3) units

Civics or Civics/American Government

World History

American History

Oral Communications - one half (½) unit

Physical Education - one half (½) unit

Health and Safety - one half (½) unit

Fine Arts - one half (½) unit

D/C

CAREER FOCUS - Six (6) units

All units in the career focus requirement shall be established through guidance and counseling at the local school district based on the students' contemplated work aspirations. Career focus courses shall conform to local district policy and reflect state frameworks through course sequencing and career course concentrations where appropriate.

Local school districts may require additional units for graduation beyond the sixteen (16) Smart Core and the six (6) career focus units. These may be in academic and/or technical areas. All the Smart Core and career focus units must total at least twenty-two (22) units to graduate.

D/S/P

CORE - Sixteen (16) units

English - four (4) units

Oral Communications - one half (½) unit

Social Studies - three (3) units [one (1) unit of world history, one (1) unit of U. S. history, one half (½) unit of civics or government]

Mathematics - four (4) units [one (1) unit of algebra or its equivalent* and one (1) unit of geometry or its equivalent.* All math units must build on the base of algebra and geometry knowledge and skills.] Comparable concurrent credit college courses may be substituted where applicable.

Science - three (3) units [at least one (1) unit of biology or its equivalent and one (1) unit of a physical science]

Physical Education - one half (½) unit

Health and Safety - one half (½) unit

Fine Arts - one half (½) unit

* A two-year algebra equivalent or a two-year geometry equivalent may each be

counted as two units of the four (4) unit requirement.

D/C CAREER FOCUS - Six (6) units

All units in the career focus requirement shall be established through guidance and counseling at the local school district based on the students' contemplated work aspirations. Career focus courses shall conform to local district policy and reflect state frameworks through course sequencing and career course concentrations where appropriate.

Local school districts may require additional units for graduation beyond the sixteen (16) Core and the six (6) career focus units. These may be in academic and/or technical areas. All the Core and career focus units must total at least twenty-two (22) units to graduate.

D/S/P 14.02 Specifically, for the graduating class of 2013-2014, and all graduating classes thereafter, the required twenty-two (22) units, at a minimum, shall be taken from the "Smart Core" curriculum or from the "Core" curriculum. Only one (1) of the required units may be in a physical education course. All students will participate in the Smart Core curriculum unless the parent or guardian waives the student's right to participate. In such case of a waiver, the student will be required to participate in Core. The required twenty-two (22) units, at a minimum, are to be taken from the Smart Core or Core as follows:

SMART CORE - Sixteen (16) units

English - four (4) units - 9th, 10th, 11th, 12th
Mathematics - four (4) units [All students must take a mathematics course in grade 11 or grade 12 and complete Algebra II.] Comparable concurrent credit college courses may be substituted where applicable.
- Algebra I or Algebra A & B (Grades 7-8 or 8-9)
- Geometry or Investigating Geometry or Geometry A & B (Grades 8-9 or 9-10)
- Algebra II
- Fourth math unit range of options: (choice of: Transitions to College Math, Pre-Calculus, Calculus, Trigonometry, Statistics, Computer Math, Algebra III, or an Advanced Placement math)

Natural Science - three (3) units with lab experience chosen from Physical Science, Biology or Applied Biology/Chemistry, Chemistry, Physics or Principles of Technology I & II or PIC Physics
Social Studies - three (3) units [one (1) unit of world history, one (1) unit of U. S. history, one half (½) unit of civics]
Oral Communications - one half (½) unit
Physical Education - one half (½) unit
Health and Safety - one half (½) unit
Economics - one half (½) unit
A one-half (½) unit of Economics is required for graduation and may be counted toward the required three (3) social studies credits or toward the six (6) required career focus elective credits.
If the course is taught by an appropriately licensed social studies teacher, credit may be applied to meet graduation requirements in social studies or toward the career focus electives. If the course is

taught by an appropriately licensed business education teacher, graduation credit can only be applied toward career focus requirements.
The appropriate course code must be used to differentiate the application of credit for graduation to either the area of social studies or the area of career focus elective credit.

Fine Arts - one half (½) unit

D/C

CAREER FOCUS - Six (6) units

All units in the career focus requirement shall be established through guidance and counseling at the local school district based on the students' contemplated work aspirations. Career focus courses shall conform to local district policy and reflect state frameworks through course sequencing and career course concentrations where appropriate.

Local school districts may require additional units for graduation beyond the sixteen (16) Smart Core and the six (6) career focus units. These may be in academic and/or technical areas. All the Smart Core and career focus units must total at least twenty-two (22) units to graduate.

D/S/P

CORE - Sixteen (16) units

English - four (4) units

Oral Communications - one half (½) unit

Social Studies - three (3) units [one (1) unit of world history, one (1) unit of U. S. history, one half (½) unit of civics]

Mathematics - four (4) units [one (1) unit of algebra or its equivalent* and one (1) unit of geometry or its equivalent.* All math units must build on the base of algebra and geometry knowledge and skills.]
Comparable concurrent credit college courses may be substituted where applicable.

Science - three (3) units [at least one (1) unit of biology or its equivalent and one (1) unit of a physical science]

Physical Education - one half (½) unit

Health and Safety - one half (½) unit

Economics - one half (½) unit

A one-half (½) unit of Economics is required for graduation and may be counted toward the required three (3) social studies credits or toward the six (6) required career focus elective credits.
If the course is taught by an appropriately licensed social studies teacher, credit may be applied to meet graduation requirements in social studies or toward the career focus electives. If the course is taught by an appropriately licensed business education teacher, graduation credit can only be applied toward career focus requirements.
The appropriate course code must be used to differentiate the application of credit for graduation to either the area of social studies or the area of career focus elective credit.

Fine Arts - one half (½) unit

* A two-year algebra equivalent or a two-year geometry equivalent may each be

counted as two units of the four (4) unit requirement.

D/C CAREER FOCUS - Six (6) units

All units in the career focus requirement shall be established through guidance and counseling at the local school district based on the students' contemplated work aspirations. Career focus courses shall conform to local district policy and reflect state frameworks through course sequencing and career course concentrations where appropriate.

Local school districts may require additional units for graduation beyond the sixteen (16) Core and the six (6) career focus units. These may be in academic and/or technical areas. All the Core and career focus units must total at least twenty-two (22) units to graduate.

S/P 14.03 A unit of credit shall be defined as the credit given for a course which meets for a minimum of 120 clock hours. A minimum average six-hour day or minimum thirty (30) hour week is required.

S/P 14.04 SPECIAL EDUCATION

14.04.1 For a student with disabilities, the Individualized Education Program (IEP) serves as the student's "graduation plan."

14.04.2 Beginning not later than the first IEP to be in effect when the child turns 16,or younger if determined appropriate by a student's IEP Team, transition planning must be initiated to prepare a student for exit from a secondary education program to post-secondary life. This includes planning for the student's exit from school due to graduation. For a student with disabilities, fulfillment of the requirements set forth in the student's IEP constitutes the basis for graduation from high school.

15.0 STANDARD X PERSONNEL

D/P 15.01 SCHOOL DISTRICT SUPERINTENDENT

Each school district shall employ a full-time superintendent when enrollment exceeds three hundred (300). A full-time superintendent may, at the discretion of the local school district, teach no more than two (2) classes per day.

S/P 15.02 PRINCIPALS

Each school shall employ at least a half-time principal. A full-time principal shall be employed when a school's enrollment reaches three hundred (300). A school district superintendent may be permitted to serve as a half-time principal when district enrollment is less than 300 providing the superintendent is appropriately certified and is not already teaching classes. Schools with an enrollment exceeding five hundred (500) shall employ at least one full-time principal and a half-time assistant principal, instructional supervisor, or curriculum specialist.

15.03 LICENSURE AND RENEWAL

D/S/P 15.03.1 All administrative, teaching, and other personnel shall hold a current, valid

Arkansas license as required by law.

D/S/C 15.03.2 All administrative, teaching, and other personnel shall meet appropriate State licensure and renewal requirements for the position to which they are assigned.

D/S/C 15.03.3 A person not fully qualified for a position may be used in emergencies only and may not be replaced by a person not fully qualified for the position, unless appropriate documentation is provided to the Department describing efforts to hire a qualified individual.

Policy 15.03.4 Licensure renewal in a subject area shall require intervening educational experience related to that subject area.

Policy 15.03.5 Licensure renewal for administrative and other personnel shall require appropriate intervening educational experience related to their responsibilities.

Policy 15.03.6 Issuance and revocation of a license shall be in accordance with Arkansas Code and State Board of Education regulations promulgated for such action.

Policy 15.03.7 The State licensure system shall include a process designed to provide qualified individuals applying for a license an alternative to completion of a traditional teacher education program.

15.04 PROFESSIONAL DEVELOPMENT AND IN-SERVICE TRAINING

D/P 15.04.1 Each school district shall have flexibility in establishing plans for professional development and in-service training, provided the plans meet standards and rules for professional development as established by the Department. Beginning with the 2004-2005 school year, and each year thereafter, a minimum of sixty (60) hours of professional development, to include six (6) hours of technology, is required for teachers and administrators annually.

D/P 15.04.1.1 Each teacher shall be required to have no less than two (2) hours of professional development designed to enhance understanding of effective parental involvement strategies. These two (2) hours may be included in the sixty (60) hours required for professional development.

D/P 15.04.1.2 Each administrator shall be required to have no less than three (3) hours of professional development designed to enhance understanding of effective parent involvement strategies, the importance of administrative leadership in setting expectations, and creating a climate conducive to parental participation. These three (3) hours may be included in the required sixty (60) hours of professional development.

15.04.2 For each administrator, the sixty (60) hour professional development requirement shall include training in data disaggregation, instructional leadership, and fiscal management.

15.05 HIGHLY QUALIFED TEACHERS REQUIREMENT FOR CORE ACADEMIC CLASSES

15.05.1 Every public school district shall ensure that the percentage of core academic classes taught by highly qualified teachers in the district's schools is no less than

10 percentage points below the state's total percentage of core academic classes taught by highly qualified teachers.

15.05.2 Any school district failing to meet the requirements of Section 15.05.1 shall receive a citation at the appropriate district and school level.

16.0 STANDARD XI SUPPORT SERVICES

Support services shall be designed to be comprehensive and integral to the process of schooling and the development of all students. Each school district for each school building site shall develop and implement a written plan, as set forth in current laws. The plans shall be based upon the needs identified by parents, teachers, principals, students, and other agencies with which the school district works.

16.01 GUIDANCE AND COUNSELING

S/P 16.01.1 Each school shall provide a developmentally appropriate guidance program to aid students in educational, personal/social, and career development.

16.01.2 Each school shall provide supportive personnel and appropriate facilities to ensure effective counseling to meet individual needs of students.

D/P 16.01.3 Each school shall assign appropriate certified counselor staff with the district being required to maintain an overall ratio of one (1) to four hundred fifty (450).

16.02 MEDIA SERVICES

D/C 16.02.1 Sufficient resources shall be budgeted and spent yearly for purchasing and maintaining an appropriate, current collection.

S/C 16.02.2 A process to provide for input from teachers, parents, and students in the acquisition of instructional materials shall be implemented. These materials shall enhance and support the goals of the school improvement plan.

S/P 16.02.3 The role of the library media center shall support technology as a tool for learning. Each school with fewer than three hundred (300) students enrolled shall employ at least a half-time, licensed library media specialist. A school with three hundred (300) or more students enrolled shall employ a full-time licensed library media specialist. Schools enrolling fifteen hundred (1,500) or more students shall employ two full-time, licensed library media specialists. The library media specialist(s) shall ensure that access to records and resource data bases shall be available to students. The media specialist(s) shall assist students in the development and use of research skills.

S/C 16.02.4 The school media collection shall consist of a balance of print, nonprint, and electronic media adequate in quality and quantity to meet the needs of the developmentally appropriate curricular program. The minimum book collection, exclusive of textbooks, shall be three thousand (3,000) volumes, or at least eight (8) books per student enrolled, whichever figure is larger. A minimum technology requirement will be one (1) computer per media center with multimedia/networking capacity for administrative purposes only.

16.03 HEALTH AND SAFETY SERVICES

D/P 16.03.1 Each school district shall have a health services program under the direction of a licensed nurse. The program shall include screening, referral, and follow-up procedures for all students.

S/C 16.03.2 Each school shall provide facilities, equipment, and materials necessary for operation of a school health services program.

S/C 16.03.3 The school health services program shall provide and maintain current health appraisal records for all students in accordance with guidelines developed by the Department.

S/C 16.03.4 Each school shall take proper measures to ensure the safety of its students and protect against injuries which may occur in or on the school facilities or site.

S/C 16.03.5 In accordance with Ark. Code Ann. § 6-18-1005, health services shall include but not be limited to: (1) Students with special health care needs, including the chronically ill, medically fragile, technology dependent, and students with other health impairments shall have an Individualized Healthcare Plan. (2) Invasive medical procedures required by students and provided at school shall be performed by trained, licensed personnel who are licensed to perform the task; the regular classroom teacher shall not perform these tasks. (3) Custodial Healthcare services required by students under an Individualized Healthcare Plan shall be provided by trained school employees other than the regular classroom teachers.

17.0 STANDARD XII SPECIAL EDUCATION

Special education programs and special schools shall be accredited in accordance with applicable laws and rules adopted by the State Board of Education.

18.0 STANDARD XIII GIFTED AND TALENTED EDUCATION

S/C 18.01 Each school district shall develop procedures to identify gifted and talented students in accordance with guidelines established by the Department.

D/P 18.02 Each school district shall provide educational opportunities for students identified as gifted and talented appropriate to their ability.

S/C 18.03 Each school shall use procedures to evaluate the effectiveness of the provisions of these educational opportunities.

19.0 STANDARD XIV SUPPLEMENTARY EDUCATIONAL OPPORTUNITIES

D/C 19.01 Each school district shall develop and implement programs which take advantage of educational opportunities outside the traditional classroom.

D/C 19.02 Each school district shall provide opportunities for qualified students to enroll in courses at institutions of higher education.

D/P 19.03 Each school district shall provide appropriate alternative program(s) for students who are identified as requiring such programs to continue their education.

Policy 19.04 Each school district should provide opportunities for summer school and adult education programs.

20.0 STANDARD XV FACILITIES AND EQUIPMENT

D/P 20.01 School facilities shall be planned and constructed in accordance with the laws of the State of Arkansas and the regulations of the Arkansas Department of Health, the office of the State Fire Marshall, and the Department.

D/C 20.02 Each room shall be furnished with equipment and instructional materials necessary to provide the environment and working conditions appropriate for subjects or activities assigned.

21.0 STANDARD XVI AUXILIARY SERVICES

Policy Auxiliary services, such as transportation and food services, shall be provided in accordance with applicable laws, regulations, and guidelines developed by the Department.

22.0 STANDARD XVII COOPERATION AMONG SCHOOL DISTRICTS

School districts may comply with these standards through cooperative efforts among themselves. All plans for cooperation among school districts and institutions of higher learning for the purpose of complying with these standards shall be submitted for approval to the Department.

23.0 STANDARD XVIII ACCREDITATION OF SCHOOLS

Policy 23.01 COMPLIANCE WITH STANDARDS

A school or district shall be accredited on the basis of its complying with these standards and state law related to these standards.

Policy 23.02 DEPARTMENT GUIDELINES

The Department shall prepare guidelines to be used in the evaluation of schools or districts to determine whether they are in compliance with these standards. The guidelines will provide for the design and format for reports required to be submitted to the Department to indicate the extent to which school districts and schools are in compliance. The guidelines will include criteria for measuring each standard and the documentation required to indicate compliance with the standard. Required reports will be submitted to the Department by October 15 of each year.

Policy 23.03 ACCREDITATION PROCESS

The Department shall annually review all reports and investigate any suspected deficiencies in meeting standards. All written complaints charging violations of standards received by the Department shall be investigated. Each year the Department shall make an on-site visit to a selected number of school districts and review the schools for compliance with the standards. The Department shall notify all school districts and schools not meeting the Standards for Accreditation of deficiencies by May 15 of each year.

23.04 ACCREDITATION

S/P 23.04.1 Any school or district, which falls below current Standards for Accreditation, as determined by the Department, shall be notified in writing as being classified in either cited or probationary status by May 15 of each year.

Policy 23.04.2 School districts shall be notified of a school's or school district's probationary status and advised that the school will be classified as probationary for no more than two (2) school years, after which time they shall be classified as not accredited. Schools classified as not accredited are subject to enforcement actions as described herein pursuant to Ark. Code Ann. § 6-15-207.

23.04.3 The Department shall review by May 15 annually, pertinent information from every school district to ensure that the district and schools are in compliance with current Standards for Accreditation, and shall make an on-site review of each school's compliance at least every two (2) years or more frequently if deemed necessary by the Department.

23.04.4 A comprehensive evaluation shall be conducted in accordance with guidelines established by the Department (i.e., with the Department prescribed procedures and school improvement planning processes). The Department shall use teams of evaluators that may include representatives from the Department, colleges and universities, and teachers and administrators from other districts. The Department shall report the conclusions of the evaluation team to the local school within thirty (30) days. (Conform to Standards Review and the Arkansas Consolidated School Improvement Plan [ACSIP])

23.04.5 The Department shall provide school improvement teams to local school districts needing assistance in meeting the standards or when it is determined a school has deficiencies. The school improvement team shall recommend action that the school should take to improve its program and eliminate deficiencies.

Policy 23.04.6 Any person who knowingly submits falsified information requested or required by the Department may be subject to licensure action pursuant to Ark. Code Ann. § 6-17-410 and other relevant state and federal law.

24.0 SPECIFIC TIME FRAME FOR CITATIONS OR PROBATIONS

CITATIONS:

24.01 A school or school district will be placed in cited status for licensure deficiencies for the second and third year of an individual's Additional Licensure Plan (ALP). This status will continue for the length of time prescribed by the individual's approved Additional Licensure Plan, not to exceed two (2) years. Any school employing a teacher not completing the ALP process after the two (2) year cited process shall be assigned accredited-probationary status.

24.02 A school or school district will be placed in cited status for improper ratios and class sizes caused by unexpected population shifts. Such status may extend to October 15 of the next school year. At the conclusion of the cited term, if the same violation exists, the school shall be assigned probationary status.

24.03 A school district will be placed in cited status for failing to hold the Annual Report to the

Public School Board meeting prior to November 15. Such status will extend to October 15 of the next school year. At the conclusion of the cited term, if the same violation exists, the school district shall be assigned probationary status.

24.04 A school district will be placed in cited status for providing a late Annual Accreditation Report to the Department. Such status will extend to October 15 of the next school year. At the conclusion of the cited term, if the same violation exists, the school district shall be assigned probationary status.

PROBATIONS: For the following violations, any school district or school that fails to meet the identified date of corrections will be recommended to the State Board of Education for loss of accreditation.

24.05 A school will be placed in probationary status for high school classes which meet less than 120 clock hours (to be corrected within thirty days).

24.06 A school will be placed in probationary status for an instructional day that is less than six (6) hours per day or thirty (30) hours each week (to be corrected within thirty days).

24.07 A school will be placed in probationary status for any staff member(s) not holding a valid Arkansas license. Such status will not extend beyond January 30 of the current school year.

24.08 A school or school district will be placed in probationary status for failing to employ a superintendent, principal, assistant principal (if required), nurse, or counselor. Such status will extend to the first day of the next academic semester.

24.09 A school will be placed in probationary status for lack of written policies mandated by law or the Standards for Accreditation (to be corrected in 60 days).

24.10 A school will be placed in probationary status for lack of a guidance program. Such status will extend to the first day of the next academic semester.

24.11 A school district will be placed in probationary status for lack of a health services program. Such status will extend to the first day of the next academic semester.

24.12 A school district will be placed in probationary status for lack of a gifted and talented program. Such status will extend to the first day of the next academic semester.

24.13 A school or school district will be placed in probationary status for lack of a media services program. Such status will extend to the first day of the next academic semester.

24.14 A school district will be placed in probationary status for lack of a special education program. Such status will extend to the first day of the next academic semester.

24.15 A school will be placed in probationary status for improper ratios/class sizes NOT CAUSED by unexpected population shifts (to be corrected in 30 days).

24.16 A school district will be placed in probationary status for failing to file an accurate or complete Equity Compliance Report. Such status will extend to the first day of the next academic semester, but cannot extend beyond October 15 of the next year.

24.17 A school or school district shall be placed in probationary status for failing to teach the required courses mandated by these Standards for Accreditation. Such status will extend to the first day of the next academic semester, but cannot extend beyond October 15 of the next school year.

24.18 A local school or school district shall be placed in probationary status for violations of the law (e.g., Ark. Code Ann. §§ 6-16-132, 6-16-130, 6-15-1101, 6-17-309, 6-18-223, or 6-15-1601 et seq.). Such status shall extend to the official review date issued by the Department.

25.0 ENFORCEMENT OF STANDARDS FOR ACCREDITATION

25.01 The State Board of Education may, on its own motion or upon petition from the Department, take any number of the following actions, listed in paragraph 25.03, to address a school or school district which has failed to meet all Standards for Accreditation any time after a school or school district has received notice of being placed in probationary status pursuant to paragraph 23.04.1. The Department shall petition the State Board of Education for enforcement action in the time period provided in these rules when a school or school district has failed to remedy all probationary violations when a specific time period for correction is required regarding a particular standard.

25.02 The State Board of Education shall take at least one of the following actions, listed in paragraph 25.03, to address any school or school district which has failed to meet all Standards for Accreditation for two (2) consecutive school years including the year the probationary status was issued to the school or school district, unless the State Board of Education, at its discretion, issues written findings supported by a majority of the board, that the school district could not meet current standards for the relevant time period due to impossibility caused by external forces beyond the school district's control.

25.03 The State Board of Education shall be allowed to take the following actions to address any school or school district on probationary status for failing to meet the Standards for Accreditation:

25.03.1 Require a school district to reorganize, or to reassign the administrative, instructional, or support staff of a public school;

25.03.2 Require a school or school district to institute and fully implement a curriculum that is based on State academic content and achievement standards, including providing appropriate professional development at the cost of the school district;

25.03.3 Remove a particular school from the jurisdiction of a school district and establish alternative public governance and supervision of such school or schools;

25.03.4 Require a school district to close down or dissolve a particular school or schools within a school district;

25.03.5 Annex a school district or districts or parts thereof with another receiving school district or districts pursuant to the authority of Ark. Code Ann. § 6-13-1401 et seq. and this subchapter;

25.03.6 Consolidate a school district or districts or parts thereof with another school district or districts or parts thereof to form a resulting district pursuant to the authority of Ark. Code Ann. § 6-13-1401 et seq. and this subchapter;

25.03.7 Reconstitute the leadership of a school district by removing permanently or suspending on a temporary basis the superintendent of the school district or any particular board members of a school district. The State Board of Education shall have the authority to appoint an administrator or to call for the election of new school board members to administer the affairs and provide governance of the school district, or both;

25.03.8 Take any other appropriate action allowed by law which is determined by the State Board of Education to assist and address a school or school district failing to meet the Standards for Accreditation.

25.03.9 LOSS OF ACCREDITATION

25.04 PUBLICATION AND DISSEMINATION

25.04.1 When any school of a school district or the school district is determined by the State Board of Education to be in probationary status for failure to meet the Standards for Accreditation, that school district, after exhausting its rights to appeal, shall:

25.04.1.1 Publish the probationary status determination and findings of the State Board of Education to the public and the parents or care giver of each student enrolled in the school or school district determined to have failed to meet the Standards for Accreditation;

25.04.1.2 The public notice shall be in an understandable and uniform format;

25.04.1.3 The public notice shall be published or disseminated, immediately after the State Board of Education's determination, on the web-site of the school district and published at least one (1) time a week for two (2) consecutive weeks in a local newspaper of general circulation in the affected school district.

26.0 RIGHT OF APPEAL

26.01 In the event a district or school believes the Department has improperly determined that any school or school district has failed to meet Standards for Accreditation, the school district shall have a right to file its written appeal with the office of the Director of the Department.

26.02 Any such appeal shall be held in an open hearing, and the decision of the Board shall be in open session. The appeal must be filed not later than May 30 following the May 15 written notification, and the State Board of Education hearing must be held prior to August 15 of the same calendar year.

26.03 The State Board of Education may confirm the classification of a school or school district accreditation status, as determined by the Department, or it may sustain the appeal of the district.

26.04 Pursuant to the Ark. Code Ann. § 6-15-203, an appeal from the ruling of the Board may be made by a school district to the Pulaski County Circuit Court provided such appeal is made pursuant to the Arkansas Administrative Procedures Act, Ark. Code Ann. § 25-15-201 et seq.

27.0 WAIVER AUTHORITY AND PROCESS

27.01 The State Board on its own motion, or on petition from the Department, or from a school district may, upon a showing of just cause in a public hearing of the State Board, grant a waiver of any accreditation standard for a time period of no longer than one (1) school year, except that no curricula, student performance, school performance, or any standard required by law may be waived for any time period.

27.02 Any petition for waiver of any accreditation standard by a school district shall be filed in the Office of the Director of the Department thirty (30) calendar days prior to the State Board of Education hearing the waiver petition. The State Board may waive the thirty (30) day time requirement, when in the State Board of Education's determination, circumstances prevent the petition from being filed within the thirty (30) day time frame.

27.03 Any hearing of the State Board of Education concerning a waiver of any accreditation standard shall be conducted in a public hearing of a properly announced regular or special meeting of the State Board of Education in accord with Arkansas law.

Appendix B

(b)(6)

Smart Course to Success: Arkansas's Race to the Top

The Council of Chief State School Officers and
The National Governors Association Center for Best Practices

Common Core Standards
Memorandum of Agreement

Purpose. This document commits states to a state-led process that will draw on evidence and lead to development and adoption of a common core of state standards (common core) in English language arts and mathematics for grades K-12. These standards will be aligned with college and work expectations, include rigorous content and skills, and be internationally benchmarked. The intent is that these standards will be aligned to state assessment and classroom practice. The second phase of this initiative will be the development of common assessments aligned to the core standards developed through this process.

Background. Our state education leaders are committed to ensuring all students graduate from high school ready for college, work, and success in the global economy and society. State standards provide a key foundation to drive this reform. Today, however, state standards differ significantly in terms of the incremental content and skills expected of students.

Over the last several years, many individual states have made great strides in developing high-quality standards and assessments. These efforts provide a strong foundation for further action. For example, a majority of states (35) have joined the American Diploma Project (ADP) and have worked individually to align their state standards with college and work expectations. Of the 15 states that have completed this work, studies show significant similarities in core standards across the states. States also have made progress through initiatives to upgrade standards and assessments, for example, the New England Common Assessment Program.

Benefits to States. The time is right for a state-led, nation-wide effort to establish a common core of standards that raises the bar for all students. This initiative presents a significant opportunity to accelerate and drive education reform toward the goal of ensuring that all children graduate from high school ready for college, work, and competing in the global economy and society. With the adoption of this common core, participating states will be able to:

- Articulate to parents, teachers, and the general public expectations for students;
- Align textbooks, digital media, and curricula to the internationally benchmarked standards;
- Ensure professional development to educators is based on identified need and best practices;
- Develop and implement an assessment system to measure student performance against the common core; and
- Evaluate policy changes needed to help students and educators meet the common core standards and "end-of-high-school" expectations.

An important tenet of this work will be to increase the rigor and relevance of state standards across all participating states; therefore, no state will see a decrease in the level of student expectations that exist in their current state standards.

Process and Structure

- ☐ **Common Core State-Based Leadership.** The Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) shall assume responsibility for coordinating the process that will lead to state adoption of a common core set of standards. These organizations represent governors and state commissioners of education who are charged with defining K-12 expectations at the state level. As such, these organizations will facilitate a state-led process to develop a set of common core standards in English language arts and math that are:

- Fewer, clearer, and higher, to best drive effective policy and practice;
- Aligned with college and work expectations, so that all students are prepared for success upon graduating from high school;
- Inclusive of rigorous content and application of knowledge through high-order skills, so that all students are prepared for the 21st century;
- Internationally benchmarked, so that all students are prepared for succeeding in our global economy and society; and
- Research and evidence-based.

☐ **National Validation Committee.** CCSSO and the NGA Center will create an expert validation group that will serve a several purposes, including validating end-of-course expectations, providing leadership for the development of K-12 standards, and certifying state adoption of the common core. The group will be comprised of national and international experts on standards. Participating states will have the opportunity to nominate individuals to the group. The national validation committee shall provide an independent review of the common core. The national validation committee will review the common core as it is developed and offer comments, suggestions, and validation of the process and products developed by the standards development group. The group will use evidence as the driving factor in validating the common core.

☐ **Develop End-of-High-School Expectations.** CCSSO and the NGA Center will convene Achieve, ACT and the College Board in an open, inclusive, and efficient process to develop a set of end-of–high-school expectations in English language arts and mathematics based on evidence. We will ask all participating states to review and provide input on these expectations. This work will be completed by July 2009.

☐ **Develop K-12 Standards in English Language Arts and Math.** CCSSO and the NGA Center will convene Achieve, ACT, and the College Board in an open, inclusive, and efficient process to develop K-12 standards that are grounded in empirical research and draw on best practices in standards development. We will ask participating states to provide input into the drafting of the common core and work as partners in the common core standards development process. This work will be completed by December 2009.

☐ **Adoption.** The goal of this effort is to develop a true common core of state standards that are internationally benchmarked. Each state adopting the common core either directly or by fully aligning its state standards may do so in accordance with current state timelines for standards adoption not to exceed three (3) years.

This effort is voluntary for states, and it is fully intended that states adopting the common core may choose to include additional state standards beyond the common core. States that choose to align their standards to the common core standards agree to ensure that the common core represents at least 85 percent of the state's standards in English language arts and mathematics.

Further, the goal is to establish an ongoing development process that can support continuous improvement of this first version of the common core based on research and evidence-based learning and can support the development of assessments that are aligned to the common core across the states, for accountability and other appropriate purposes.

- **National Policy Forum.** CCSSO and the NGA Center will convene a National Policy Forum (Forum) comprised of signatory national organizations (e.g., the Alliance for Excellent Education, Business Roundtable, National School Boards Association, Council of Great City Schools, Hunt Institute, National Association of State Boards of Education, National Education Association, and others) to share ideas, gather input, and inform the common core initiative. The forum is intended as a place for refining our shared understanding of the scope and elements of a common core; sharing and coordinating the various forms of implementation of a common core; providing a means to develop common messaging between and among participating organizations; and building public will and support.

- **Federal Role.** The parties support a state-led effort and not a federal effort to develop a common core of state standards; there is, however, an appropriate federal role in supporting this state-led effort. In particular, the federal government can provide key financial support for this effort in developing a common core of state standards and in moving toward common assessments, such as through the Race to the Top Fund authorized in the American Recovery and Reinvestment Act of 2009. Further, the federal government can incentivize this effort through a range of tiered incentives, such as providing states with greater flexibility in the use of existing federal funds, supporting a revised state accountability structure, and offering financial support for states to effectively implement the standards. Additionally, the federal government can provide additional long-term financial support for the development of common assessments, teacher and principal professional development, other related common core standards supports, and a research agenda that can help continually improve the common core over time. Finally, the federal government can revise and align existing federal education laws with the lessons learned from states' international benchmarking efforts and from federal research.

Agreement. The undersigned state leaders agree to the process and structure as described above and attest accordingly by our signature(s) below.

	Signatures
Governor:	
Chief State School Officer:	T. Kenneth James

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Benchmarking for Success:

Ensuring U.S. Students Receive a World-Class Education

A Report by the National Governors Association, the Council of Chief State School Officers, and Achieve, Inc.

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National Governors Association

Founded in 1908, the National Governors Association (NGA) is the collective voice of the nation's governors and one of Washington, D.C.'s most respected public policy organizations. Its members are the governors of the 50 states, three territories and two commonwealths. NGA provides governors and their senior staff members with services that range from representing states on Capitol Hill and before the Administration on key federal issues to developing and implementing innovative solutions to public policy challenges through the NGA Center for Best Practices. For more information, visit www.nga.org.

Council of Chief State School Officers

The Council of Chief State School Officers (CCSSO) is a nonpartisan, nationwide, nonprofit organization of public officials who head departments of elementary and secondary education in the states, the District of Columbia, the Department of Defense Education Activity, and five U.S. extra-state jurisdictions. CCSSO provides leadership, advocacy, and technical assistance on major educational issues. The Council seeks member consensus on major educational issues and expresses their views to civic and professional organizations, federal agencies, Congress, and the public.

Achieve, Inc.

Created by the nation's governors and business leaders, Achieve is a bipartisan, non-profit organization that helps states raise academic standards, improve assessments and strengthen accountability to prepare all young people for postsecondary success. At the 2005 National Education Summit, Achieve launched the American Diploma Project (ADP) Network, a coalition that has grown to 34 states educating nearly 85% of public school students in the United States. The ADP Network is committed to aligning high school expectations with the demands of college, careers and life. To learn more about Achieve, visit www.achieve.org.

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(b)(6)

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Foreword

We are living in a world without borders. To meet the realities of the 21st century global economy and maintain America's competitive edge into the future, we need students who are prepared to compete not only with their American peers, but with students from all across the globe for the jobs of tomorrow.

States have voluntarily taken the lead in developing standards-based education, but policymakers lack a critical tool for moving forward—international benchmarking. This report is intended to help states take the next steps toward ensuring that American students receive a world-class education that positions them to compete and innovate in the 21st century.

International benchmarking will help state policymakers identify the qualities and characteristics of education systems that best prepare students for success in the global marketplace. The stakes are high, and improving our educational system will require commitment and insight not just from state leaders but many other stakeholders as well. With this in mind, the National Governors Association, the Council of Chief State School Officers, and Achieve, Inc. have joined to provide to states a roadmap for benchmarking their K-12 education systems to those of top-performing nations.

The partners' recommendations were informed by an International Benchmarking Advisory Group consisting of education experts representing education institutions, the business community, researchers, former federal officials, and current state and local officials. The Advisory Group's expertise and experience helped the partners identify the need for international comparisons and provide guidance for benchmarking state education system practices in areas such as standards, accountability, educator workforce, and assessments. The partner organizations will work with states to develop and implement these recommendations.

Governors recognize that new economic realities mean it no longer matters how one U.S. state compares to another on a national test; what matters is how a state's students compare to those in countries around the globe. America must seize this moment to ensure that we have workers whose knowledge, skills, and talents are competitive with the best in the world.

Governor Janet Napolitano
Arizona

Governor Sonny Perdue
Georgia

Craig R. Barrett
Chairman of the Board
Intel Corporation

Co-Chairs, International Benchmarking Advisory Group

Acknowledgements

This report was researched and written by Craig D. Jerald, president of Break the Curve Consulting in Washington, D.C.

At the National Governors Association Center for Best Practices, Ilene Berman, program director in the education division, and Dane Linn, director of the education division, supervised the project. Leadership and staff of the National Governors Association (NGA), Council of Chief State School Officers (CCSSO), and Achieve, Inc. played instrumental roles in the project. The following individuals provided useful guidance and feedback in the development of the report: Achieve, Inc. President Mike Cohen and Vice President for Advocacy and Outreach Sandy Boyd; NGA Executive Director Ray Scheppach, NGA Center Director John Thomasian, NGA Communications Director Jodi Omear, Senior Communications Manager Christopher Cashman, and Education, Early Childhood and Workforce Committee Director Joan Wodiska; CCSSO Executive Director Gene Wilhoit, Deputy Executive Director Scott Montgomery, Legislative Director Scott Frein, and Communications Director Kara Schlosser. Within the NGA Office of Communications, Publications and Communications Manager Andrea Brachtesende provided editing and design assistance.

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The Bill & Melinda Gates Foundation and GE Foundation generously supported the preparation of this publication.

International Benchmarking Advisory Group

To develop this report, the National Governors Association (NGA), Council of Chief State School Officers (CCSSO), and Achieve, Inc. invited national, state, and local education and policy leaders to serve on an International Benchmarking Advisory Group. The Advisory Group provided the three partner organizations with valuable insights and helped frame this bipartisan Call to Action. They collectively support the recommendations herein for internationally benchmarking state K-12 education systems.

Co-Chairs:

Governor Janet Napolitano, Arizona
Governor Sonny Perdue, Georgia
Craig R. Barrett, Chairman of the Board, Intel Corporation

Members:

Steven A. Ballmer, Chief Executive Officer, Microsoft Corporation

Governor Donald L. Carcieri, Rhode Island

Mitchell Chester, Commissioner of Education, Massachusetts Department of Elementary and Secondary Education

Christopher Edley, Jr., Dean and Professor of Law, University of California–Berkeley

Chester E. Finn, Jr., President, Thomas B. Fordham Institute

Beverly L. Hall, Superintendent, Atlanta Public Schools

James B. Hunt, Jr., Chairman, the James B. Hunt, Jr. Institute for Educational Leadership and Policy at the University of North Carolina–Chapel Hill and former Governor of North Carolina

Kati Haycock, President, The Education Trust

Dwight Jones, Commissioner of Education, Colorado Department of Education

Governor Tim Kaine, Virginia

Janet Murguía, President and Chief Executive Officer, National Council of La Raza

Thomas Payzant, Professor of Practice, Harvard Graduate School of Education

Charles B. Reed, Chancellor, California State University

Richard W. Riley, Senior Partner with EducationCounsel LLC, former U.S. Secretary of Education, and former Governor of South Carolina

Andreas Schleicher, Head of the Indicators and Analysis Division, Directorate for Education, Organisation for Economic Co-Operation and Development

William H. Schmidt, University Distinguished Professor, Michigan State University

Vivien Stewart, Vice President for Education, Asia Society

Phillip Uri Treisman, Executive Director, The Charles A. Dana Center at the University of Texas at Austin

Bob Wise, President, Alliance for Excellent Education and former Governor of West Virginia

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I. Executive Summary

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Around the globe, governments are eagerly comparing their educational outcomes to the best in the world. The goal is not just to see how they rank, but rather to identify and learn from top performers and rapid improvers—from nations and states that offer ideas for boosting their own performance. This process, known as "international benchmarking," has become a critical tool for governments striving to create world-class education systems.

In American education, "benchmarking" often simply means comparing performance outcomes or setting performance targets (or "benchmarks"). But in business and among education leaders in other countries, it means much more. The American Productivity and Quality Center puts it this way: "Benchmarking is the practice of being humble enough to admit that someone else has a better process and wise enough to learn how to match or even surpass them."

Countries and states have good reason to make the effort. Technological, economic, and political trends have combined to increase demand for higher skills while heightening competition for quality jobs. Rule-bound jobs on factory floors and in offices are being automated and outsourced. The world's knowledge-and-innovation economy favors workers who have postsecondary education or training, strong fundamental skills in math and reading, and the ability to solve unfamiliar problems and communicate effectively.

At the same time, new technologies and corporate strategies have opened the global labor market to billions of people from places like Eastern Europe, India, China, and Brazil who had been left out. An increasing variety of work tasks can be digitized and performed nearly anywhere in the world. More jobs are going to the best educated no matter where they live, which means that Americans will face more competition than ever for work.

International trade agreements, such as China's membership in the World Trade Organization in 2001, have hastened this transformation. Since 1980, global trade has grown 2.5 times faster than the global gross domestic product (GDP). Recent estimates put today's world exports at $12.5 trillion, nearly 20 percent of world GDP.

The global economy is here to stay, with recent research suggesting that it is evolving and its impact intensifying at a stunning pace. "Globalization is happening faster than people think," says Vivek Wadhwa, Wertheim Fellow at Harvard Law School's Labor and Worklife program and Duke University Executive in Residence. His recent research shows that companies are no longer just outsourcing production but are farming out *innovation* as well. "Having India and China conduct such sophisticated research and participate in drug discovery was unimaginable even five years ago," he says.

Education is a tremendously important lever for ensuring competitiveness and prosperity in the age of globalization, albeit not the only one. Recent economic studies show that high skills lead to better wages, more equitable distributions of income, and substantial gains in economic productivity. Higher math performance at the end of high school translates into a 12 percent increase in future earnings. If the United States raised students' math and science skills to globally competitive levels over the next two decades, its GDP would be an additional 36 percent higher 75 years from now.

The race is on among nations to create knowledge-fueled innovation economies. In Singapore, Germany, China, Brazil, Korea, and other countries around the world, educational improvement is viewed as a critical part of that mission. Nations and states are therefore working hard to benchmark their education systems to establish a solid foundation for economic development in the 21st century. Some are finding innovative ways to measure their students' progress internationally. Others are examining high-performing and fast-improving nations to learn about best practices that they then adapt or adopt to improve their own systems.

American education has not adequately responded to these new challenges. The United States is falling behind other countries in the resource that matters most in the new global economy: human capital. American 15-year-olds ranked 25th in math and 21st in science achievement on the most recent international assessment conducted in 2006. At the same time, the U.S. ranked high in inequity, with the third largest gap in science scores between students from different socioeconomic groups.

The U.S. is rapidly losing its historic edge in educational attainment as well. As recently as 1995, America still tied for first in college and university graduation rates, but by 2006 had dropped to 14th. That same year it had the second-highest college dropout rate of 27 countries.

State leaders already are deeply engaged in efforts to raise standards, advance teaching quality, and improve low-performing schools. International benchmarking provides an additional tool for making that process more effective, offering insights and ideas that cannot be garnered solely from looking within and across state lines. To that end, the partner organizations and International Benchmarking Advisory Group call on state leaders to take the following actions:

State leaders also should tackle "the equity imperative" by creating strategies for closing the achievement gap between students from different racial and socioeconomic backgrounds in each of the action steps above. Reducing inequality in education is not only socially just, it's essential for ensuring that the United States retain a competitive edge.

Research shows that education systems in the United States tend to give disadvantaged and low-achieving students a watered down curriculum and place them in larger classes taught by less qualified teachers—exactly opposite of the educational practices of high-performing countries.

Action 1: Upgrade state standards by adopting a common core of internationally benchmarked standards in math and language arts for grades K-12 to ensure that students are equipped with the necessary knowledge and skills to be globally competitive.

Action 2: Leverage states' collective influence to ensure that textbooks, digital media, curricula, and assessments are aligned to internationally benchmarked standards and draw on lessons from high-performing nations and states.

Action 3: Revise state policies for recruiting, preparing, developing, and supporting teachers and school leaders to reflect the human capital practices of top-performing nations and states around the world.

Action 4: Hold schools and systems accountable through monitoring, interventions, and support to ensure consistently high performance, drawing upon international best practices.

Action 5: Measure state-level education performance globally by examining student achievement and attainment in an international context to ensure that, over time, students are receiving the education they need to compete in the 21st century economy.

The federal government can play an enabling role as states engage in the critical but challenging work of international benchmarking. First, federal policymakers should offer funds to help underwrite the cost for states to take the five action steps described above. At the same time, policymakers should boost federal research and development (R&D) investments to provide state leaders with more and better information about international best practices, and should help states develop streamlined assessment strategies that facilitate cost-effective international comparisons of student performance.

As states reach important milestones on the way toward building internationally competitive education systems, the federal government should offer a range of tiered incentives to make the next stage of the journey easier, including increased flexibility in the use of federal funds and in meeting federal educational requirements and providing more resources to implement world-class educational best practices. Over the long term, the federal government will need to update laws to align national education policies with lessons learned from state benchmarking efforts and from federally funded research.

Nations around the world are facing a new education imperative, and many are seizing the historical moment to provide their citizens with better opportunities and stronger economies.

America must seize this moment too, with states leading the way. Many states already are working hard to improve standards, teaching quality, and accountability, but policymakers lack a critical tool—international benchmarking.

The U.S. can take pride in many aspects of its education system, from the high performance of its teenagers on international civics tests to the strength of its higher education institutions.

But if state leaders want to ensure that their citizens and their economies remain competitive, they must look beyond America's borders and benchmark their education systems with the best in the world. The state mandate to educate all students remains, but the world that students will enter after school has changed.

For Andreas Schleicher, head of the Indicators and Analysis Division at the Organisation for Economic Co-Operation and Development's Directorate for Education, the case for adopting a global view to improving education is undeniable:

> It is only through such benchmarking that countries can understand relative strengths and weaknesses of their education system and identify best practices and ways forward. The world is indifferent to tradition and past reputations, unforgiving of frailty and ignorant of custom or practice. Success will go to those individuals and countries which are swift to adapt, slow to complain, and open to change.

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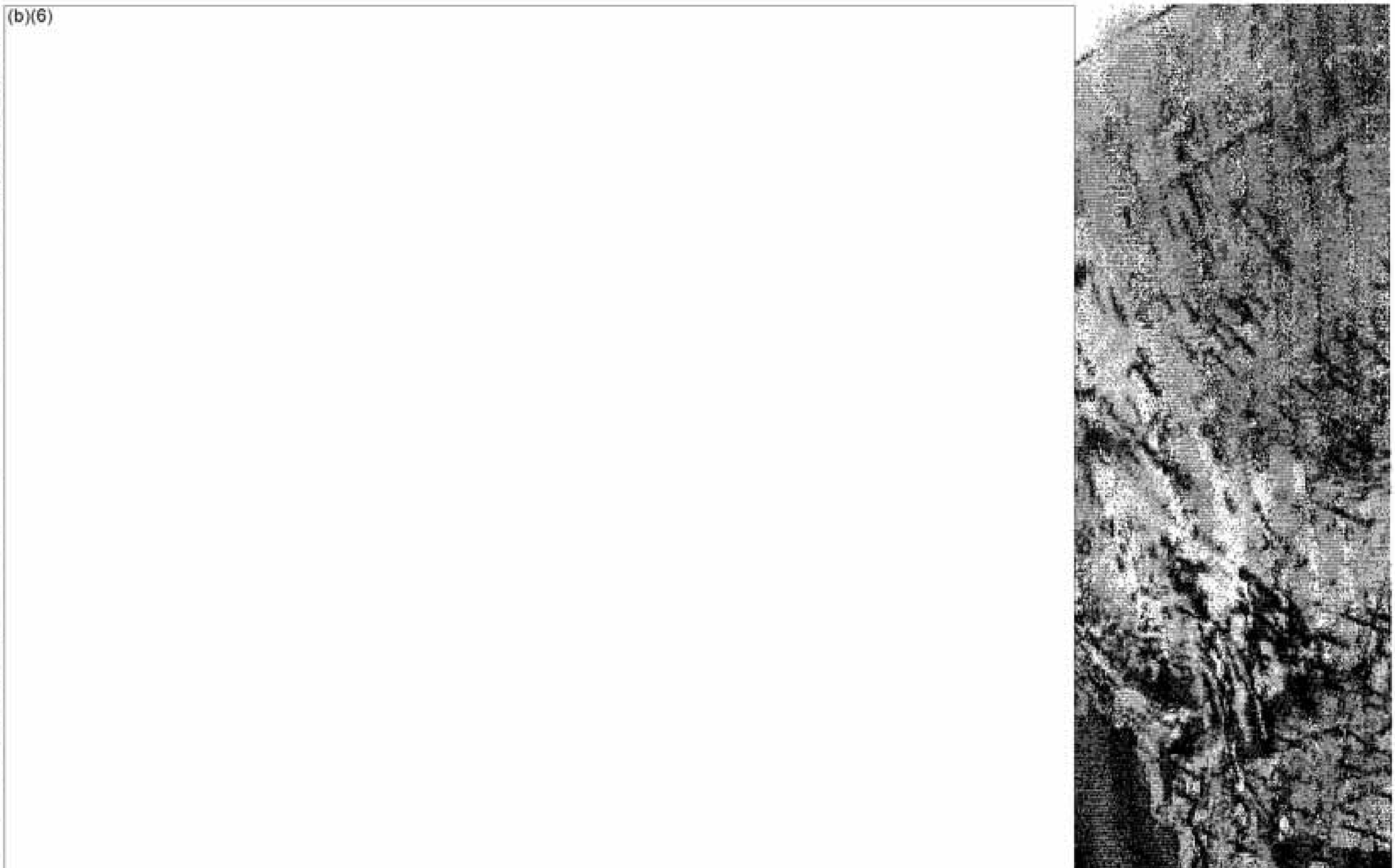

II. The Need for Action

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II. The Need for Action

Around the globe, governments are eagerly comparing their educational outcomes to the best in the world. The goal is not just to see how they rank, but rather to identify and learn from top performers and rapid improvers—from nations and states that offer ideas for boosting their own performance. This process, known as "international benchmarking," has become a critical tool for governments striving to create world-class education systems.

In American education, "benchmarking" often simply means comparing performance outcomes or setting performance targets (or "benchmarks"). But in business and among education leaders in other countries, it means much more: Comparing outcomes to identify top performers or fast improvers, learning how they achieve great results, and applying those lessons to improve one's own performance. The American Productivity and Quality Center puts it this way: "Benchmarking is the practice of being humble enough to admit that someone else has a better process and wise enough to learn how to match or even surpass them."[1]

A Skills-Driven Global Economy

Governments have good reason to benchmark and improve their education systems. Technological, economic, and political trends have increased demand for higher skills while heightening competition for quality jobs. In the U.S., outsourcing and automation have dramatically altered the mix of jobs in the labor force. The proportion of American workers in blue-collar and administrative support jobs plummeted from 56 percent to 39 percent between 1969 and 1999, and the share of jobs requiring more education and specialized skills—work that is managerial, professional, and technical in nature—increased from 23 percent to 33 percent over the same period.[2]

Skill demands *within* jobs are rising as well. A study that analyzed typical tasks in the American workplace found that routine manual and cognitive tasks that follow a set of prescribed rules are rapidly being taken over by computers or workers in other countries. But more sophisticated tasks are on the rise, specifically those that require workers to "bring facts and relationships to bear in problem solving, the ability to judge when one problem-solving strategy is not working and another should be tried, and the ability to engage in complex communication with others," along with "foundational skills" in math and reading.[3]

Technology is changing not just how work gets done, but also where it can be done. Advances in telecommunications allow companies to digitize work tasks and products so that jobs can be performed virtually anywhere in the world. And new management software has enabled firms to shift from "vertical" production—where all tasks are done in sequence in the same place—to "horizontal" production in which tasks are carved up and shipped out to wherever they can be done best and cheapest. The result, according to a blue-ribbon commission report released last year, "is a world in which it is just as easy to create work teams on four continents as it is to create work teams composed of people from four divisions of the same firm located in the same city."[4]

While all these changes took place, political and economic developments opened the doors of this new global economy to more than a billion new workers from Russia, Eastern Europe, China, India, and other developing countries who now compete for jobs with those in developed nations. Harvard economist Richard Freeman calls this "The Great Doubling" of the global workforce. At first, low-skilled, low-paying jobs were outsourced to these workers, but now some higher skilled jobs—from analyzing X-rays to tutoring high school students to preparing tax returns—are migrating abroad, too.[5] The twin forces of globalization and computerization mean that any job reducible to a set of scripted rules is vulnerable to outsourcing or automation.[6]

International trade agreements, such as China's membership in the World Trade Organization in 2001, have sped this transformation along. Although some firms have long had global links, globalization is now pervasive: More nations are joining the marketplace, more goods and services are traded globally, and more of the production process is interconnected in a worldwide supply web. Since 1980, global trade has grown 2.5 times faster than the global gross domestic product (GDP). Recent estimates put today's world exports at $12.5 trillion, nearly 20 percent of world GDP.[7]

Recent research suggests that globalization is not only here to stay, it is evolving and intensifying at a rapid pace. In June, Harvard and Duke University researchers published the first in a series of studies documenting how corporations are no longer just outsourcing production; they are beginning to outsource *innovation* as well. For example, big pharmaceutical companies such as Merck, Eli Lilly, and Johnson & Johnson are relying on India and China not only for manufacturing and clinical trials, but also for advanced research and development. As a result, scientists in those countries are rapidly increasing their ability to innovate and create their own intellectual property; the global share of pharmaceutical patent applications originating in India and China increased fourfold from 1995 to 2006.[8]

"Globalization is happening faster than people think," says Vivek Wadhwa, the researcher and former entrepreneur who led the study. "Having India and China conduct such sophisticated research and participate in drug discovery was unimaginable even five years ago."[9] Wadhwa's team is finding the same kind of rapid change in a wide range of industries—from telecommunications and computer networking to aerospace and computers. Indeed, the National Academy of Engineering recently noted that nearly all of the top 20 U.S.-based semiconductor companies have opened design centers in India, nine of them since 2004.[10] "Our take is that the global technology landscape has changed dramatically over the last decade," says Wadhwa, "and that we're at the beginning of a new wave of globalization."[11]

Education for Economic Growth

As a result of these trends, American workers are competing not only with skilled workers here, but with those living in far-away places. Labor economists Frank Levy and Richard Murnane argue that "over the long run, better education is the best tool we have to prepare the population for a rapidly changing job market."[12] Studies show that higher math performance at the end of high school translates into substantially higher future earnings; an increase of one standard deviation in math scores translates into a 12 percent boost in wages.[13] Family income for households headed by someone with a college degree grew by nearly 40 percent from 1973 to 2006, compared with less than 6 percent for families headed by someone with only a high school diploma.[14]

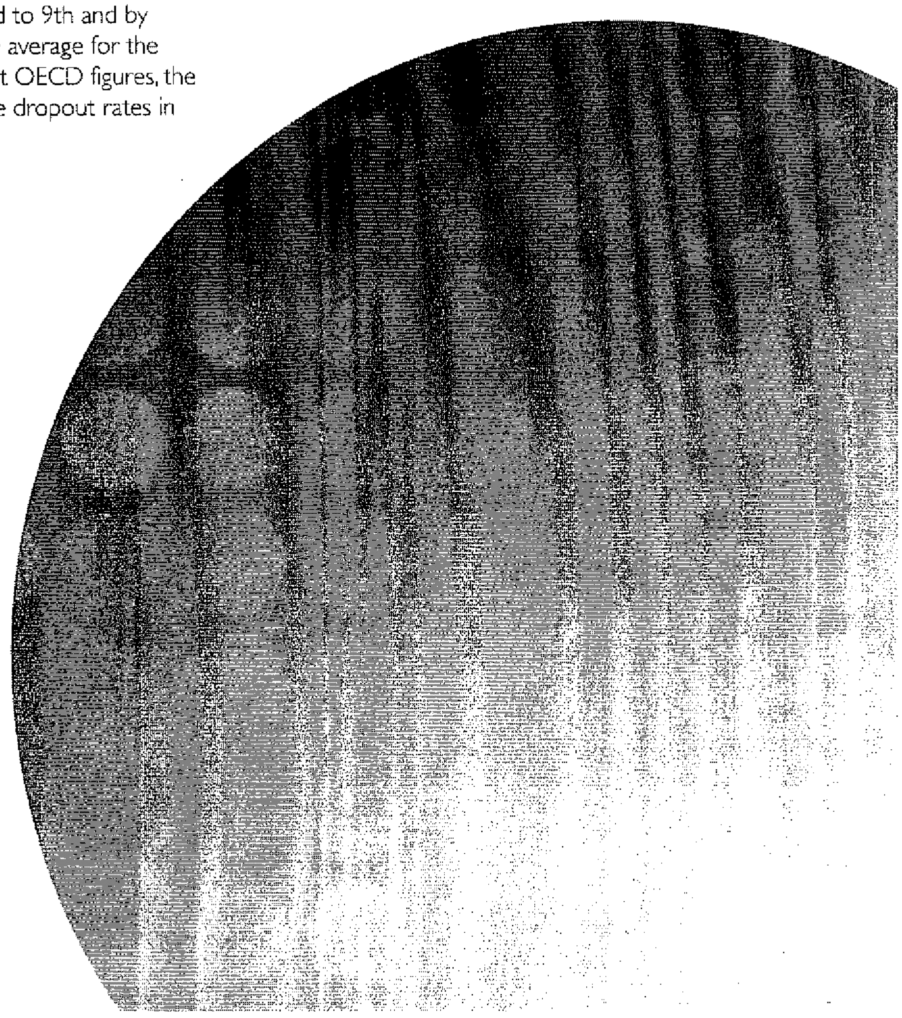
Fortune may favor the prepared mind, but it also favors the prepared *place*—whether that place is a nation, a region, or an individual state. To lay a solid foundation for widespread economic growth, governments around the world are adopting policies aligned with a 21st century economy that is increasingly knowledge-fueled, innovation-driven, and global in scope. The Organisation for Economic Co-Operation and Development (OECD) estimates that each additional year of schooling among the adult population raises a nation's economic output by between 3 percent and 6 percent.[15] New studies by Stanford economist Eric Hanushek and others have found strong evidence that high skills lead to elevated individual wages, a more equitable distribution of income, and substantial gains in economic productivity.[16]

Indeed, Hanushek estimates that if the U.S. improved enough to become a top-performing nation on international assessments between 2005 and 2025, by 2037 its GDP would be an additional 5 percent higher than if skills stayed the same. Improving human capital pays off even more handsomely over a longer time horizon: By 2080, America's GDP would be *36 percent higher* than would be the case if the U.S. remained mediocre in math and science.[17]

The implications are clear: In today's world, high wages follow high skills, and long-term economic growth increasingly depends on educational excellence. Unfortunately, American education has not adequately responded to these challenges. As other countries seize the opportunity to improve their education systems so their citizens can benefit from new economic opportunities, the United States is rapidly losing its leading edge in the resource that matters most for economic success: human capital.

Four decades ago America had the best high school graduation rate in the world, but by 2006 it had slipped to 18th out of 24 industrialized countries.[18] For most of the 20th century, the U.S. set the standard for quality in higher education—and, in many respects, it still does. But other countries learned from our success and are now catching up or pulling ahead. As recently as 1995 America was still tied for first in the proportion of young adults with a college degree, but by 2000 it had slipped to 9th and by 2006 to 14th—below the OECD average for the first time.[19] According to the latest OECD figures, the U.S. has one of the highest college dropout rates in the industrialized world.[20]

Even if the U.S. improves its high school and postsecondary graduation rates, it will be difficult if not impossible to maintain its historic dominance in the supply of educated workers. Already, America's share of the world's college students has dropped from 30 percent in 1970 to less than half that today.[21] And because of their sheer size, China and India will surpass both Europe and the United States in the number of secondary and postsecondary graduates produced over the next decade.[22] Many experts have concluded that since the U.S. can no longer compete in *quantity* of human capital, it will have to compete in *quality* by providing its young people with the highest level of math, science, reading, and problem-solving skills in the world.



But so far American education has not adequately responded to the skills challenge either. Out of 30 industrialized countries participating in the OECD's Programme for International Student Assessment (PISA) in 2006, the U.S. ranked 25th in math and 21st in science achievement (**Figure 1**). The performance gap between the United States and top-performing nations is huge: American students lag about a full year behind their peers in the countries that perform best in mathematics.[23] Even our "best and brightest" cannot compete with excellent students elsewhere. According to the OECD, "the United States does not just have more students performing badly—it also has many fewer students performing well."[24] America's best math students performed worse than the best math students in 22 other OECD nations. Moreover, only 1.3 percent of U.S. 15-year-olds performed at the highest PISA level in mathematics, while among the top 10 countries the share of high performers was three to seven times as large.[25]

American students seemed to perform better on the most recent Trends in International Mathematics and Science Study (TIMSS), conducted in 2003. For example, fourth-graders scored "above average" in mathematics among participating countries while eighth-graders scored either above average or about average depending on the calculation.[26] However, when compared only with more developed nations that are America's economic competitors, U.S. performance on TIMSS looks more like its performance on PISA. In 2005, the American Institutes for Research (AIR) analyzed a group of industrialized nations participating in both TIMSS and PISA; among that group, U.S. students consistently performed below average across international assessments. "U.S. performance is below the 12-country average at both low- and high-skill levels and low and high-levels of item difficulty."[27]

American students tend to perform better on international assessments of reading than they do in math and science. But U.S. 15-year-olds perform only about average among industrialized countries, and fourth graders' reading scores have stagnated while other countries have made sizeable gains. "Reforms aimed at improving reading achievement seem to have propelled Russia, Hong Kong, and Singapore from middle to top rankings [on the Progress in International Reading Literacy Study (PIRLS)]," *Education Week* reported last year, "even as U.S. performance stood still."[28]

Moreover, a 2003 PISA assessment of students' ability to solve real-world problems found that fewer than half of U.S. 15-year-olds are analytical problem-solvers who can communicate well about solutions. Among 29 industrialized nations, the U.S. had the fifth highest percentage of very weak problem-solvers and the sixth lowest percentage of strong problem-solvers.[29] Such results suggest that U.S. schools not only are failing to provide many students with strong foundational skills in subjects like math and science, but they also are not providing enough students with the broader skills that the modern workplace increasingly demands.

Schools also must find ways to provide students with the "global awareness" that the globalization of work requires.[30] To collaborate on international work teams, manage employees from other cultures and countries, and communicate with colleagues and clients abroad, Americans will need to know and understand much more about the rest of the world than they do now.[31] "A pervasive lack of knowledge about foreign cultures and foreign languages threatens the security of the United States as well as its ability to compete in the global marketplace and [to] produce an informed citizenry," the National Academy of Sciences warned last year.[32]

The Equity Imperative

Some might argue that it is enough to produce the next generation of elite "rocket scientists" who can invent new technologies and spur innovation. There is a widespread belief that providing America's top students with a world-class education is the single most important way to boost economic growth. This notion is often paired with a conviction that focusing on educational equity for all sacrifices excellence for the few who are already advanced. But these are myths. Our national commitment to closing achievement gaps is not only compatible with a global competitiveness agenda, it is essential for realizing that agenda.

Figure 1: U.S. 15-Year-Old Performance Compared with Other Countries

Programme for International Student Assessment (PISA)

Average is measurably higher than the U.S.

Average is measurably lower than the U.S.

Mathematics (2006)

Rank		Score
1	Finland	548
2	Korea	547
3	Netherlands	531
4	Switzerland	530
5	Canada	527
6	Japan	523
7	New Zealand	522
8	Belgium	520
9	Australia	520
10	Denmark	513
11	Czech Republic	510
12	Iceland	506
13	Austria	505
14	Germany	504
15	Sweden	502
16	Ireland	501
17	France	496
18	United Kingdom	495
19	Poland	495
20	Slovak Republic	492
21	Hungary	491
22	Luxembourg	490
23	Norway	490
24	Spain	480
25	United States	474
26	Portugal	466
27	Italy	462
28	Greece	459
29	Turkey	424
30	Mexico	406

OECD average 498

Science (2006)

Rank		Score
1	Finland	563
2	Canada	534
3	Japan	531
4	New Zealand	530
5	Australia	527
6	Netherlands	525
7	Korea	522
8	Germany	516
9	United Kingdom	515
10	Czech Republic	513
11	Switzerland	512
12	Austria	511
13	Belgium	510
14	Ireland	508
15	Hungary	504
16	Sweden	503
17	Poland	498
18	Denmark	496
19	France	495
20	Iceland	491
21	United States	489
22	Slovak Republic	488
23	Spain	488
24	Norway	487
25	Luxembourg	486
26	Italy	475
27	Portugal	474
28	Greece	473
29	Turkey	424
30	Mexico	410

OECD average 500

Reading (2003)

Rank		Score
1	Finland	543
2	Korea	534
3	Canada	528
4	Australia	525
5	New Zealand	522
6	Ireland	515
7	Sweden	514
8	Netherlands	513
9	Belgium	507
10	Norway	500
11	Switzerland	499
12	Japan	498
13	Poland	497
14	France	496
15	United States	495
16	Denmark	492
17	Iceland	492
18	Germany	491
19	Austria	491
20	Czech Republic	489
21	Hungary	482
22	Spain	481
23	Luxembourg	479
24	Portugal	478
25	Italy	476
26	Greece	472
27	Slovak Republic	469
28	Turkey	441
29	Mexico	400

OECD average 494

Problem Solving (2003)

Rank		Score
1	Korea	550
2	Finland	548
3	Japan	547
4	New Zealand	533
5	Australia	530
6	Canada	529
7	Belgium	525
8	Switzerland	521
9	Netherlands	520
10	France	519
11	Denmark	517
12	Czech Republic	516
13	Germany	513
14	Sweden	509
15	Austria	506
16	Iceland	505
17	Hungary	501
18	Ireland	498
19	Luxembourg	494
20	Slovak Republic	492
21	Norway	490
22	Poland	487
23	Spain	482
24	United States	477
25	Portugal	470
26	Italy	469
27	Greece	448
28	Turkey	408
29	Mexico	384

OECD average 500

Source: Organisation for Economic Co-Operation and Development and U.S. Department of Education.

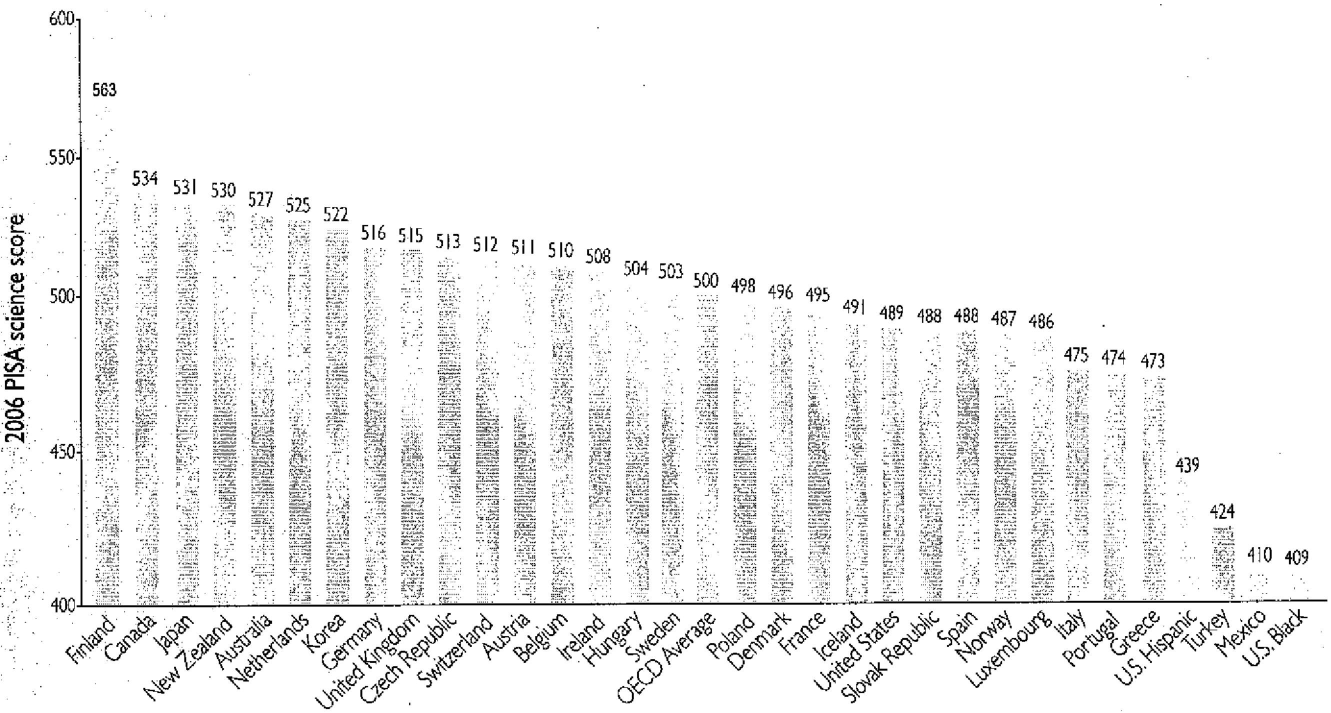
Recent studies offer compelling evidence that educational equity is just as important for economic competitiveness as it is for social justice. Hanushek and colleagues specifically analyzed economic data to answer this question: "Which is more important for growth—having a substantial cadre of high performers or bringing everyone up to a basic level of performance?" They found that to truly maximize growth, it is not enough to produce a high-achieving elite; a nation's economic success also depends on closing achievement gaps to ensure that all students attain a solid foundation of knowledge and skills.[33] Another recent study of 14 developed countries concluded that "increasing the average level of literacy will have a greater effect on growth than increasing the percentage of individuals who achieve high levels of literacy skills."[34]

But the U.S. has a long way to go before it achieves that goal. While American 15-year-olds rank in the *bottom-third* of developed nations in overall performance in math and science, they rank in the *top-third* when it comes to gaps between students from different family backgrounds.[35] In fact, the difference in science scores between students from different socioeconomic backgrounds is bigger in the United States than in almost any other country.[36] Fortunately, international assessments also show that it is possible to realize high average performance alongside more equitable performance. Across several continents, countries like Japan, Korea, Finland, and Canada demonstrate that students from disadvantaged backgrounds need not automatically perform poorly in school.[37]

Learning how some countries achieve performance that is both higher and more equitable has tremendous implications in this country given America's long-term demographic outlook. Demographers now predict that "minorities" will constitute the majority of schoolchildren by 2023 and of working-age Americans by 2039.[38] In 2006, U.S. Hispanic 15-year-olds performed below the average of every OECD country except Turkey and Mexico in science literacy, and black students performed even worse (**Figure 2**).[39] America cannot remain competitive if half of its population graduates from high school so poorly prepared that it is unable to thrive in the global knowledge economy. States that plan to grow their economies *must* find ways to close their achievement gaps.

Of course, some critics of international assessments claim that America's disappointing performance is inevitable precisely because of its demographic challenges. But the data do not support such beliefs: Overall, U.S. 15-year-olds are slightly above the international average when it comes to families' social, economic, and cultural status.[40] The problem is that America's education system does a poor job supporting students and offering equal learning opportunities. According to OECD, in 2006, the U.S. ranked fourth out of 30 countries in the relative *impact* that socioeconomic background had on students' PISA science achievement.[41] Another recent study measuring the impact of family background on TIMSS results found a similar pattern: "The U.S. falls in the top quarter of the most unequal countries."[42]

Figure 2: U.S. Minority Performance Below Averages of Most Industrialized Nations



Source: Baldi, S., Y. Jin., M. Skemer, P.J. Green, and D. Herget. Highlights from PISA 2006: Performance of U.S. 15-Year-Old Students in Science and Mathematics Literacy in an International Context. Washington, DC: U.S. Department of Education, National Center for Education Statistics, December 2007, pp. 6 &15.

Other Countries Pulling Ahead

America's global position is slipping not because U.S. schools are getting worse. Rather, America is losing ground because its educational outcomes have mostly stagnated while those in other countries have surged. Nations that formerly lagged far behind the U.S. have caught up with and in some cases even surpassed it.

Korea, for instance, has gone from well behind to significantly ahead of the United States in high school attainment in just a few generations—an education triumph that has helped fuel the country's tremendous progress (**Figure 3**). In 1960, Mexico's economic productivity was twice as large as Korea's, but by 2003 Korea's GDP was twice as large as Mexico's. According to the World Bank, "the contribution of knowledge ... was a key factor in Korea's miracle of rapid economic growth."[43]

Other countries have made rapid strides in building competitive knowledge-and-innovation economies. "At the end of World War II, a single nation stood atop Mount Innovation, and it was the United States," notes former Harvard Business School professor John Kao in his 2007 book *Innovation Nation*. "Now, powerful new climbers have emerged to challenge U.S. supremacy. ... Some may be surprising—Brazil, Denmark, Estonia, Finland, New Zealand, Singapore, and Taiwan."[44] Not surprisingly, some of those same nations also top the list of countries achieving high performance or seeing big gains on international assessments.

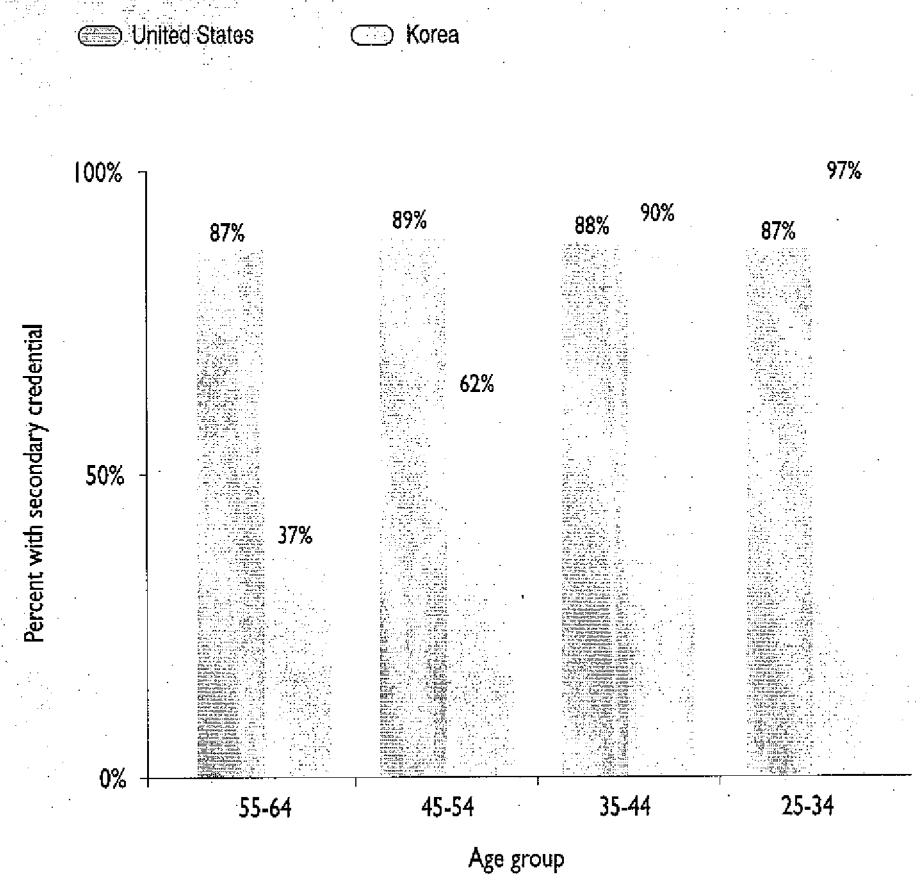
"Young Chinese, Indians, and Poles are not racing us to the bottom," *New York Times* columnist Thomas Friedman observed in 2005. "They do not want to work for us; they don't even want to be us. They want to dominate us—in the sense that they want to be creating the companies of the future ...."[45]

These governments are giving their people an edge by making major efforts to improve K-12 education. Between 2000 and 2006, Poland increased its PISA reading achievement by 29 points—almost a year's worth of learning—while decreasing the proportion of achievement variation across schools from 51 percent to 12 percent. Improving average skills while decreasing the achievement gap is no accident: Poland's major education reforms are now bearing fruit.[46]

Some countries are working hard to compare their performance internationally and to use those comparisons to drive improvement. Mexico plans to link its national assessment to PISA and has set presidential targets for 2012 and for 2030. Brazil has benchmarked every secondary school against PISA so that each one receives two scores—one benchmarked to the national metric and one benchmarked to PISA. The goal is to have all Brazilian secondary schools achieving at the international average by 2021. "Instead of spending years complaining that they don't do well, they turned it around to talk about what to do about it and to measure progress," says Andreas Schleicher, head of the Indicators and Analysis Division at OECD's Directorate for Education.[47]

Many nations are going beyond performance to benchmark their policies and practices with the world's top performers—and making major strategic changes as a result. When Germany received disappointing results on the PISA 2000 assessment, leaders commissioned a team of experts from high-performing and innovative countries to investigate best practices and provide advice. In 2003, the German government launched a $4.6 billion package of education reforms, including a program to expand learning time by introducing 10,000 all-day schools across the country.[48] And by 2004, Germany's 16 *Länder* (states) began to adopt common, jointly developed "national education standards"—something that previously had been considered politically daunting if not impossible.[49]

Figure 3: Korea's Education Advancement



Source: Organisation for Economic Co-Operation and Development. Education at a Glance 2008. Paris: OECD, September 2008, p. 43, Table A1.2a.

Germany is not alone in its response to international assessment results. A recent evaluation of the policy impact of PISA found that the assessment has had a major influence on educational policy and practice in many OECD countries, most notably on educational standards and curricula as well as on systems of evaluation and accountability.[50]

Countries have responded to TIMSS and PIRLS results as well. A 2005 study found that 10 out of 18 developing nations had changed their science curricula in response to the TIMSS 1999 results, and eight had changed their math curricula—including "relocating into grade 8 topics that had been taught later."[51] Hong Kong's reading reforms, which boosted its fourth-grade PIRLS achievement from significantly below the U.S. to significantly above it, were enacted in response to disappointing results on the 2001 assessment.[52] Singapore's impressive math and science performance on TIMSS assessment is hardly a mistake; rather, the outcomes resulted from major education reforms the country launched in response to poor performance on the Second International Science Study (a precursor of TIMSS) in the mid-1980s.[53]

Vivien Stewart, vice president of the Asia Society, says she is often impressed by the openness and eagerness of education leaders in other countries to learn from and apply international best practice. "Singapore is currently at the top and China is rapidly improving and India is just beginning to improve, but they are all very interested in using international best practices," she says. "China, before it engages in any reforms, will send teams to examine best practices around the world. Although this is mostly done at the national level, it's increasingly done at the province level too. China is doing this with a vengeance because they traditionally have been cut off from the rest of the world, and they want to catch up quickly. A lot of the Chinese curriculum reforms are based on looking at systems in other parts of the world."[54]

China's educational efforts are well matched with its economic aspirations. In 2006, the country's Eleventh Five-Year-Plan put technological innovation squarely at the center, emphasizing the need to develop a "rich talent base" and calling for the government to "cultivate talents with creativity and completely improve our capacity of self-innovation so top universities in China will become an important force for the establishment of an innovation nation."[55] A July 2008 study found that the University of California, Berkeley had been displaced by not one but two Chinese universities as the top undergraduate feeder institutions for U.S. Ph.D. programs.[56] In addition, while America could once expect talented foreigners studying here to stay and contribute to the U.S. economy after graduation, foreign-born specialists educated in this country are increasingly returning home to take advantage of new economic opportunities in their own countries.

Many other regions and nations are working to benchmark and improve education to attract high-skilled, high-paying jobs. In 2000, the European Union (EU) heads of state adopted the goal of becoming "the most competitive and dynamic knowledge-based economy in the world," encouraging member nations to introduce a host of education and other reforms. Since then, the EU has adopted educational goals that are internationally benchmarked, and publishes an annual report that allows national leaders to compare results within Europe as well as with the U.S. and other countries around the world. The 2008 edition emphasizes the critical role of international benchmarking: "All Member States can learn from the best performers in the Union. ... This is why the Council asked for the three best performing countries (leaders) in specific policy areas to be identified."[57]

Such attitudes stand in stark contrast to the United States, which so far has largely ignored the international benchmarking movement in education. "The U.S. education system in general is very introverted," observes Sir Michael Barber, a former top education official in Great Britain who now focuses on international benchmarking at McKinsey and Company, a global management consulting firm.[58] The U.S. participates in far fewer international benchmarking studies than do many other countries, especially compared with those working hardest to improve. In June, a group of governors attending an NGA- and Hunt Institute-sponsored seminar on educational competitiveness learned that the U.S. is the only OECD country with a federal-style education system where most state leaders have no regular and reliable information to compare student performance internationally.

Barber argues that will need to change if the U.S. wants to remain competitive. "All around the world," he says, "governments are seeking insights into how to improve education systems, and many understand that the only way for a country or a state to keep up globally is to look at what's happening with best practice around the world."[59]

Of course, the U.S. education system has strengths as well as weaknesses, and plenty to teach other countries. For example, U.S. ninth-graders scored well above average on the 1999 Civic Education Study, ranking sixth out of 28 countries overall and first in students' ability to critically interpret political information. Moreover, the U.S. was one of only two countries whose students scored above average not only in civics content, but also on measures of positive civic engagement and attitudes.[60] Clearly, educators in emerging democracies can look to the U.S. for lessons in how to prepare students for active civic engagement.

Many countries also find much to admire about America's higher education system and reforms around the globe have been informed by the U.S. "You have created a public-private partnership in tertiary education that is amazingly successful," Singapore's Education Minister Tharman Shanmugaratnam told *Newsweek* in 2006. "The government provides massive funding, and private and public colleges compete, raising everyone's standards." Moreover, some Asian countries have looked to U.S. schools for ideas on how to encourage innovation and risk taking. "America has a culture of learning that challenges conventional wisdom, even if it means challenging authority," says Shanmugaratnam. "These are the areas where Singapore must learn from America."[61]

But the U.S. cannot afford to rest on its past accomplishments. The global knowledge economy is here, and if state leaders want to ensure that their citizens can compete in it, they must seize the initiative, looking beyond America's borders and benchmarking their education systems with the best in the world. The state mandate to educate all students remains, but the world that schools are preparing students for has changed—and will continue to change—dramatically.

OECD's Schleicher says the case for adopting a global perspective on improving education is undeniable:

> It is only through such benchmarking that countries can understand relative strengths and weaknesses of their education system and identify best practices and ways forward. The world is indifferent to tradition and past reputations, unforgiving of frailty and ignorant of custom or practice. Success will go to those individuals and countries which are swift to adapt, slow to complain, and open to change.[62]

Myths and Realities about International Comparisons

Myth: *Other countries test a more select, elite group of students.*

Reality: That might have been true for early international assessments, but it is no longer true today. According to Jim Hull, who examined international assessments for the National School Boards Association, "Since the 1990s, due to better sampling techniques and a move by more countries to universal education, the results represent the performance of the whole student population, including students who attend public, private, and vocational schools, students with special needs, and students who are not native speakers of their nation's language."[63]

While the U.S. still sets a relatively high age for compulsory education among OECD nations, that does not automatically translate into higher rates of school enrollment. U.S. enrollment rates in primary and secondary education are the same as or below those in other industrialized nations. For example, among OECD member nations, the U.S. ranks only 22nd in school enrollment of 5- to 14-year-olds and 23rd in enrollment of 15- to 19-year-olds.[64]

Moreover, on the most recent PISA assessment, OECD member nations on average tested a *higher* proportion of 15-year-olds than did the U.S. (97 percent versus 96 percent of those enrolled in schools, and 89 percent versus 86 percent of the entire 15-year-old population), which refutes the idea that the U.S. was disadvantaged by testing a broader population.[65] While no assessment is perfect, PISA, TIMSS, and PIRLS all have tight quality-control mechanisms, including very strict and transparent guidelines for sampling students and administering assessments. All exclusions must be thoroughly documented and justified, and total exclusions must fall below established thresholds.

Myth: *The U.S. performs poorly because of poverty and other family factors.*

Reality: According to the U.S. Department of Education, the U.S. looks about average compared with other wealthy nations on most measures of family background.[66] Among the OECD's 30 member nations, U.S. 15-year-olds are slightly *above* the international average on a composite index of economic, social, and cultural status (ESCS); only 11 percent of U.S. students fall within the lowest 15 percent of the ESCS internationally.[67] Moreover, America's most affluent 15-year-olds ranked only 23rd in math and 17th in science on the 2006 PISA assessment when compared with affluent students in other industrialized nations.[68] In fact, when the OECD uses statistical methods to estimate how PISA scores would look if the ESCS index were equalized across all countries—a leveling of the playing field—U.S. performance actually looks *worse* rather than better.[69]

This is not to say that demographics are unimportant in American schools: The U.S. ranks high in the impact that family background has on student achievement (fourth out of 30 countries),[70] in part because its education system does a particularly poor job supporting students and equalizing learning opportunities. For example, a 2006 study published in the *European Journal of Political Economy* found that out of 18 developed nations, the U.S. is the only country where weaker students are more likely to be enrolled in larger classes.[71] Another study found that the U.S. has one of the largest gaps in access to qualified teachers between students of high and low socioeconomic status.[72]

Myth: *Cultural factors prevent U.S. students from performing as well as those in other nations, particularly Asian countries.*

Reality: U.S. 15-year-olds reported spending *more* time on self study or homework in science, math, and reading than did students on average across the 30 OECD nations taking the 2006 PISA assessment, including those in Japan and, except for math, in Korea.[73] Moreover, high-performing nations and states can be found all over the world, not just in Asia. For example, the five top-scoring nations in the 2006 PISA science assessment were located on four different continents, reflecting a range of cultures: Europe (Finland), North America (Canada), Asia (Japan), and Oceania (New Zealand and Australia).

Singapore is often singled out for its top performance on the TIMSS math assessment, which some say must be due to an unusually strong work ethic. But that belief was challenged in a 2005 study by the American Institutes for Research (AIR): "Singaporean students are hardworking, but if Singapore's success is attributable only to work ethic, how can we account for the fact that its high achievement is a comparatively recent development? On the Second International Science Study in the mid-1980s, Singaporean fourth graders scored only 13th out of 15 participating nations, and Singaporean eighth graders did no better than their U.S. counterparts .... In response to these poor scores, Singapore's Ministry of Education re-engineered and strengthened the education system, reforming both the science and mathematics curriculum."[74]

Countries such as Finland, Korea, and Hong Kong have achieved major improvements in learning outcomes over time without changing their national cultures. In fact, as recently as the mid-1980s Finnish students performed only about average among OECD nations on tests used at the time.[75] Hong Kong instituted numerous reading reforms that boosted its fourth-graders' performance from significantly below the U.S. in 2001 to significantly above it in 2006.[76]

Of course, cultural attitudes can play a role in achievement. Studies conducted in the 1980s found that mothers and students in some Asian countries were likely to attribute success in math more to effort than to innate ability, while the reverse was true for Americans.[77] But experimental studies have shown that students' beliefs can be changed in ways that positively impact learning; the National Mathematics Panel recommended that such strategies be used more widely in American classrooms.[78]

Myth: *Other countries are less diverse.*

Reality: The U.S. is a diverse nation, but that diversity should not prevent states from improving student achievement. Among the 11 other OECD countries that like the U.S. had more than 10 percent immigrant students, all of them performed higher in math and nine performed higher in science.[79] And Singapore, which scored at the top of the most recent TIMSS math assessment, is not as homogeneous as many assume. According to the 2005 AIR report, "Arguments about Singapore's homogeneity are not persuasive. ... Singapore has three major ethnic groups. About three-fourths of Singapore's population is Chinese, but almost a quarter is Malay or Indian. Like the United States, Singapore experienced serious ethnic strife in the 1960s."[80]

Cultural homogeneity has been cited as a factor in Finland's high achievement in that it lends itself to a great deal of agreement about education and education reform. But Finland's success also is attributable to very different educational policies and practices in areas like teacher recruitment and student support.[81]

Myth: *Wealthier countries spend more than the U.S. on education.*

Reality: The U.S. is wealthier and spends more on education than most other countries. Among the OECD's 30 member nations, the U.S. ranks highest in GDP per capita and second highest in educational expenditures.[82] A report on the U.S. economy published by OECD last year observed, "On average, and relative to other OECD countries, U.S. students come from well-educated, wealthy families and ... go to schools that are unusually well-financed. Given any of these factors, U.S. students might be expected to be among the world leaders."[83] However, while the U.S. ranks high in education spending, it ranks only near the middle of OECD nations in its "effort" to fund education when expenditures are compared with wealth (gross national product).[84]

Myth: *U.S. attainment rates cannot be compared with other countries' because the U.S. tries to educate many more students.*

Reality: The U.S. does rank higher than average on access to higher education, but that does not explain its very low college-completion rates. While America's entry rate for four-year and advanced postsecondary programs exceeds the OECD average by 10 percentage points (64 percent to 54 percent), its college "survival rate" trails the OECD average by 17 points (54 percent to 71 percent).[85] According to OECD, "Comparatively high drop out rates in the United States are [negatively] contributing to the United States' relative standing against other countries" in educational attainment.[86]

Myth: *Education does not really affect the economy anyway.* A Nation at Risk *warned that America's economy would suffer, but that never happened.*

Reality: While *A Nation at Risk* erred in linking the recession of the early 1980s to educational stagnation (other factors such as the business cycle are more important over the short term), the report was correct that improving education is critical to America's economic competitiveness. New research based on extensive data from many countries over several decades confirms that cognitive skills as measured by international tests strongly influence long-term economic growth.[87]

Other factors matter too, of course. In fact, America's historic advantages in other areas have made up for its students' mediocre skills and allowed the U.S. to grow its economy without significantly improving its schools. First, the sheer size of the U.S. and its much earlier investment in mass secondary and postsecondary education gave it a significant numerical advantage in human capital. Second, its open and agile economy, flexible labor markets, and intellectual property protections enabled industry to make better use of the human capital available.[88]

But those historic advantages are eroding as other countries imitate the U.S. example. America already has lost its lead in educational attainment, and many countries are instituting economic reforms. "Eventually, our competitors will narrow our economic lead as they learn how to create their own versions of agility and scale," says economist Anthony Carnevale. "At that point, the competition will really come down to who has the best human capital."[89]

(b)(6)

III. Five Steps Toward Building Globally Competitive Education Systems

III. Five Steps Toward Building Globally Competitive Education Systems

States have both the authority and the responsibility to provide students with a high-quality education, and state leaders *already* are deeply engaged in efforts to raise standards, improve teaching quality, and help low-performing schools and students improve. For example, 34 states now belong to the American Diploma Project Network, an initiative dedicated to making sure that every high school graduate is prepared for college or work. In those states, governors, state superintendents of education, business executives, and college leaders are working to improve high school standards, assessments, and curricula by aligning expectations with the demands of postsecondary education and work.

International benchmarking provides an additional tool for making every state's existing education policy and improvement process more effective, offering insights and ideas that cannot be garnered by examining educational practices only within U.S. borders. State leaders can use benchmarking to augment their "database of policy options" by adding strategies suggested by international best practice to the range of ideas already under consideration. Indeed, international benchmarking should not be a stand-alone project, but rather should function as a critical and well-integrated component of the regular policy planning process.

The following action steps were carefully chosen to help states focus their efforts on the policy areas that have both a high impact on student performance and also a high potential for best practice learning—in other words, where existing research has shown significant differences in how high-performing nations or states organize education compared with traditional approaches in most U.S. states. However, this should not be viewed as a static checklist. Benchmarking is a process of discovery as well as adaptation, and state leaders should keep an open mind as they collect information on practices abroad to expand their policy toolkits.

For example, action steps two through four address the major elements of what can be thought of as the "instructional delivery system"—the people, tools, and processes that translate educational expectations into teaching and, ultimately, into learning for students. Other countries have shown that all of these elements can be tightly aligned and focused through systematic reform, so they should not be considered in isolation. And because benchmarking is meant to broaden the policy lens, revealing lessons that might not be apparent in a limited state or national context, state leaders should be attuned to all the ways that other nations are delivering instruction more efficiently and effectively—from educational technology to school finance to governance.

Finally, higher education leaders should be asked to join international benchmarking efforts as full participants so existing initiatives are better coordinated with pre–K-12 and higher education policies through P-16 councils and other mechanisms. For example, higher education plays a key role in the recruitment and training of teachers and an increasingly important role in ensuring that high school graduation standards reflect college- and career-readiness requirements. Partnering with higher education also will facilitate a robust discussion about college graduation rates, which are very low in the United States and have contributed to the erosion of America's preeminence in higher education. Since the responsibility probably lies both with K-12 preparation and with higher education practice, leaders from both sectors should work together to ensure that attainment rates are internationally competitive.

The Action Steps

Action 1: *Upgrade state standards by adopting a common core of internationally benchmarked standards in math and language arts for grades K-12 to ensure that students are equipped with the necessary knowledge and skills to be globally competitive.*

Research has revealed striking similarities among the math and science standards in top-performing nations, along with stark differences between those world-class expectations and the standards adopted by most U.S. states. According to Bill Schmidt, a Michigan State University researcher and expert on international benchmarking, standards in the best-performing nations share the following three characteristics that are not commonly found in U.S. standards:

Focus. World-class content standards cover a smaller number of topics in greater depth at every grade level, enabling teachers to spend more time on each topic so that all students learn it well before they advance to more difficult content. In contrast, state content standards in the U.S. typically cover a large number of topics in each grade level—even first and second grade. U.S. schools therefore end up using curricula that are "a mile wide and an inch deep."

Rigor. By the eighth grade, students in top-performing nations are studying algebra and geometry, while in the U.S., most eighth-grade math courses focus on arithmetic. In science, American eighth-graders are memorizing the parts of the eye, while students in top-performing nations are learning about how the eye actually works by capturing photons that are translated into images by the brain.[90] In fact, the curriculum studied by the typical American eighth-grader is two full years behind the curriculum being studied by eighth-graders in high-performing countries.[91]

Coherence. Math and science standards in top-performing countries lay out an orderly progression of topics that follow the logic of the discipline, allowing thorough and deep coverage of content. In contrast, standards in many U.S. states resemble an arbitrary "laundry list" of topics, resulting in too much repetition across grades. "In the United States the principle that seems to guide our curriculum development is that you teach everything everywhere," says Michigan researcher Schmidt, "because then somehow somebody will learn something somewhere."[92]

To upgrade state standards, leaders will be able to leverage the Common State Standards Initiative, an upcoming joint project of NGA, CCSSO, Achieve, the Alliance for Excellent Education, and the James B. Hunt, Jr. Institute for Educational Leadership and Policy. The initiative will enable all states to adopt coherent and rigorous standards in K-12 math, reading, and language arts that are fully aligned with college and career expectations and also internationally benchmarked against leading nations. Achieve is developing an important tool for the initiative: a set of voluntary, globally competitive reference standards based on the existing American Diploma Project (ADP) framework. Because of how it was originally developed, the ADP framework *already* reflects the skills necessary to succeed in college and in well-paying jobs in today's labor market. Achieve is now working to further calibrate the framework to reflect international expectations as well as recent research on college and career readiness.

A key goal of the initiative will be to ensure that standards reflect all three of the critical dimensions exemplified by high-performing nations—not only rigor but also focus and coherence. In a study published last year, Schmidt and a colleague found that trying to cover too many topics per grade clearly has a negative influence on student learning, even when the order of topics is otherwise coherent. At the eighth-grade level, the researchers found "a decrease of fifty in the number of intended topics and grade combinations would predict an increase in achievement of almost three-fourths of a standard deviation. ... The amount of 'clutter' created by covering too many topics ... must be kept small."[93] Therefore, the internationally benchmarked common core of standards should not be seen as an addition to existing standards, but rather the foundation for states to establish rigorous standards that also are fewer and clearer (**Figure 4**).

Figure 4: Mathematics Topics in Content Standards of 21 States

Topic	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Whole number meaning	●	●	●	●	⊙	○		
Whole number operations	●	●	●	●	⊙	○		
Measurement units	⊙	●	●	⊙	●	●	●	⊙
Common fractions	○	⊙	⊙	⊙	●	⊙	○	○
Equations and formulas	○	○	⊙	⊙	⊙	●	●	●
Data representation and analysis	●	●	●	●	●	●	●	⊙
2-D geometry: basics	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Polygons and circles	●	●	●	●	●	●	●	⊙
Perimeter, area and volume		○	○	○	⊙	●	●	⊙
Rounding and significant figures								
Estimating computations	○	○	⊙	⊙	⊙	⊙	⊙	⊙
Properties of whole number operations	○	○	○	○				
Estimating quantity and size			○					
Decimal fractions			○	⊙	⊙	⊙	○	○
Relationship of common and decimal fractions				○	○	○		
Properties of common and decimal fractions								
Percentages					○	⊙	⊙	○
Proportionality concepts						⊙	○	
Proportionality problems						⊙	⊙	⊙
2-D coordinate geometry			○	⊙	○	○	○	⊙
Geometry: transformations	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
Negative numbers, integers, and their properties						○	⊙	○
Number theory					⊙	○	○	○
Exponents, roots and radicals						○	○	●
Exponents and orders of magnitude							○	○
Measurement estimation and errors	○	○	⊙	○	⊙	⊙	⊙	○
Constructions w/ straightedge/ruler and compass								
3-D geometry	●	●	●	⊙	●	⊙	●	⊙
Congruence and similarity					○	⊙	⊙	○
Rational numbers and their properties						⊙	⊙	○
Patterns, relations, and functions	⊙	●	●	●	⊙	●	●	●
Slope and trigonometry								

○ Intended by 67 percent of the 21 states
⊙ Intended by 83 percent of the 21 states
● Intended by *all* of the 21 states

Source: Schmidt, W.H., C.H. Wang, and C.C. McKnight. Curriculum Coherence: An Examination of U.S. Mathematics and Science Content Standards from an International Perspective. Journal of Curriculum Studies 37, no. 5, 2005, pp. 525-559. (p. 541, Figure 4)

Bold yellow line shows content coherence typical of top-performing countries

Action 2: *Leverage states' collective influence to ensure that textbooks, digital media, curricula, and assessments are aligned to internationally benchmarked standards and draw on lessons from high-performing nations and states.*

Research shows that top-performing countries support rigorous, coherent standards with a wide range of tightly aligned instructional tools—from assessments to classroom curriculum materials. In the U.S., while each state retains its own authority to make decisions in those areas, states can more efficiently reflect international best practice by working cooperatively on ways to upgrade those elements of their standards-based education systems.

Assessment offers a good example. Top-performing countries administer assessments that are more rigorous and better aligned with standards than the tests U.S. students typically take. For example, AIR found that Singapore's math assessments expect greater rigor and depth in mathematical knowledge; to test that knowledge, they employ fewer multiple choice questions and more problems that require multistep solutions and finding unknowns. In fact, Singapore's sixth-grade assessment proved more challenging than the eighth-grade math tests given in seven states as well as the eighth-grade National Assessment of Educational Progress.[94]

Such assessments typically are more expensive to develop and administer than the multiple-choice exams commonly used in the U.S. However, states can save time and money by sharing resources and expertise to develop high-quality voluntary assessments or a common pool of assessment items. That kind of collective effort also can ensure the availability of voluntary assessments or assessment items that are aligned with the internationally benchmarked standards to be developed through the Common State Standards Initiative.

The same is true when it comes to the components of the curriculum. Schmidt and colleagues found that the coherence typical of math standards in high-performing countries "is translated into textbooks, workbooks, diagnostic tests for teacher use, and other classroom materials that enable teachers to bring the curriculum into the classroom in a relatively consistent, effective way. In turn, the curriculum serves as an important basis for the nation's preservice teacher education and for ongoing professional development."[95]

While textbooks are only one of many kinds of instructional tools, they usefully illustrate the power of state collaboration to address international best practice. Researchers have found that U.S. textbooks, compared with those used in high-performing countries, are less aligned with standards and much less focused and coherent in the topics they cover. "If you look at U.S. textbooks," Schmidt and colleagues observe, "you'll find there is no textbook in the world that has as many topics as our mathematics textbooks, bar none."[96] For example, common elementary math textbooks in the U.S. cover almost twice as many topics per grade as do Singapore's. As a result, math textbooks in Singapore expect students to complete about one thorough lesson on a single topic per week, while U.S. students are expected to complete about one lesson on a narrowly focused topic each day.[97]

The problem is not simply a lack of focus and coherence in individual state standards, but also a lack of agreement *across* state standards. Publishers of math textbooks market them nationally by cramming them with enough topics to cover states' widely divergent standards. The Common State Standards Initiative partly solves this problem by providing a more focused and coherent set of expectations around which to develop textbooks and digital media. By working in concert to address concerns about length, focus, and coherence with commercial publishers, states can ensure that new expectations for textbooks, digital media, and other instructional materials are being addressed by the industry.

Finally, states can pool resources to develop entirely new tools, such as replacement units or diagnostic assessments that align with internationally benchmarked standards. In doing so, leaders should collaborate to ensure that curriculum supports take advantage of the newest technologies, including multimedia strategies, to support instruction. Harvard Business School professor Clayton Christensen predicts that by 2019 half of all high school courses will be delivered online.[98] Some research indicates that countries are pursuing a wide range of strategies and goals to encourage the use of computers and information technology for instruction, suggesting that there might be much to learn in this area from international benchmarking.[99]

Action 3: *Revise state policies for recruiting, preparing, developing, and supporting teachers and school leaders to reflect the human capital practices of top-performing nations and states around the world.*

Beyond establishing world-class educational standards, high-performing nations also adopt policies to ensure that students receive the best instruction possible. Recent studies have identified major differences in how top-performers and fast-improvers recruit, train, and support their teachers and school leaders compared with the policies in place in most U.S. states. Tackling these challenges can yield big dividends. Studies by U.S. researchers have found that assigning students to strong teachers for three years in a row can boost their test scores by as much as 50 percentile points above what they would gain with three ineffective teachers in a row.[100]

According to a study by Sir Michael Barber and Mona Mourshed of McKinsey and Company, the best-performing nations begin by recruiting top talent to the teaching profession: Korea recruits from the top 5 percent of graduates, Finland the top 10 percent, and Singapore the top 30 percent. The McKinsey researchers found that some countries accomplish this by setting a high initial bar and limiting access to teacher training to prevent an oversupply of candidates—especially weak ones—which, along with other strategies, raises the status of the profession and aids in recruitment.[101] "Finns have come to cherish good educators as Texans do ace quarterbacks," Kao writes in *Innovation Nation*.[102]

In contrast, the U.S. teacher pipeline seems to discourage individuals with competitive academic skills from entering and remaining in the profession. College students with high SAT and ACT scores are less likely to train to become teachers, less likely to take a teaching job, and less likely to stay in the classroom after a few years.[103] The likelihood that a highly talented female in the top 10 percent of her graduating class would become a teacher shrank by half, from about 20 percent to about 10 percent, between 1964 and 2000.[104]

Top-performing nations and provinces also use a range of strategies to provide teachers with excellent training and ongoing professional development—both of which are mostly mediocre in the United States. An international study released last year by the International Association for the Evaluation of Educational Achievement (IEA) and Michigan State University found that college students preparing to be teachers have weaker knowledge of mathematics and take less rigorous math courses than those in other countries. "What's most disturbing is that one of the areas in which U.S. future teachers tend to do the worst is algebra, and algebra is the heart of middle school math," say Bill Schmidt, who directed the study.[105]

Top-performing nations are going well beyond recruitment and initial training to build a 21st century teaching force, however. According to Schleicher and Stewart, "These countries are abandoning the traditional factory model, with teachers at the bottom of the production line receiving orders from on high, to move toward a professionalized model of teachers as knowledge workers. In this model, teachers are on a par with other professionals in terms of diagnosing problems and applying evidence-based practices and strategies to address the diversity in students' interests and abilities."[106] Such countries recognize that quality of classroom instruction is the most critical element of any education system, and they work to build cultures that combine high expectations with strong support and empowerment of teachers.

However, bolstering teacher professionalism does not mean asking teachers to create everything from scratch. Korea's Institute for Curriculum and Evaluation operates a Teaching and Learning Center that offers information about the national curriculum; promotes aligned instructional practices; and provides educators with a wide range of teaching materials, guidelines, and assessment tools.[107] The New Zealand Ministry of Education has supported development of tools for formative assessment, including Assessment Tools for Teaching and Learning, which can be used to assess literacy and numeracy of upper elementary and lower secondary students, as well as national curriculum exemplars in all subject areas. Teachers use the tools to evaluate the impact of instruction on student learning and adjust teaching to better meet students' needs.[108]

Based on conversations with many local educators across the United States, Education Trust President Kati Haycock underscores that benchmarking efforts should consider the immediate concerns of classroom teachers: "What do the leading countries do with children who arrive behind? What is international best practice for improving the performance of language minorities? How do teachers differentiate instruction without losing sight of rigorous standards?"[109] Since educators ultimately will be responsible for ensuring that students meet the new globally competitive standards, policymakers should take care to incorporate such questions into their benchmarking research.

Top nations and states also focus on developing excellent school leaders and charge principals with ensuring that teachers provide consistently high-quality instruction. The state of Victoria in southeastern Australia recently implemented an intensive strategy to improve educational leadership that has been dubbed "cutting edge" by international experts. The strategy is closely aligned with the state's comprehensive effort to improve schools and includes a rigorous principal selection process; mentoring programs for new principals and a coaching program for experienced ones; a "balanced scorecard" approach to principal performance management; an accelerated program for high-potential leaders; and a program to develop high-performing principals. The government has established 19 separate leadership-development opportunities, each firmly rooted in research and best practice (**Figure 5**).[110]

Singapore's approach to developing leaders is widely admired too. Singapore screens prospective school leaders using a rigorous process and then provides a six-month training program run by the National Institute of Education. The program includes management and leadership courses from leading executive training programs; one day per week spent in schools to come up with innovative solutions to practical problems; group projects; two-week overseas placements with major corporations; and rigorous evaluation.[111] Great Britain recently revamped its national approach to developing principals based on a careful study of that model.[112]

Sir Michael Barber emphasizes that there are important lessons for improving teaching and leadership that can be adapted and applied across nations—and vigorous policy efforts can result in rapid improvements. When the British government surveyed adults aged 24 to 35 in the year 2000 about switching jobs, teaching ranked 92nd out of 150 career choices. But in a follow-up survey conducted in 2005, after improvements to teacher training coupled with a vigorous marketing campaign, teaching came out on top.[113] "Our benchmarking suggests that the same broad policies are effective in different systems irrespective of the cultural context in which they are applied," Barber and Mourshed conclude in their report.[114] U.S. state leaders could learn much from such examples; particularly during the current economic downturn, there might be many adults with strong content backgrounds who could be induced to switch to a career in teaching.

In the U.S., costs related to human capital account for the vast majority of education spending. The goal for international benchmarking should be to ensure the most effective and efficient use of funds for preparation, recruitment, training, ongoing development, and support. This will require a careful examination of how higher education institutions and systems in top-performing countries are structured to encourage young people to enter the teaching field and prepare them to become quality instructors at the elementary and secondary level.

Figure 5: Leadership Development Opportunities in Victoria, Australia

Name of Programme	Open to	Description	Aspirant leaders	Assistant principals	Principals
Master in School Leadership	All after 5 years teaching	Taught modules, in-school elements and mentoring or shadowing; 2 years	√	√	√
Building capacity for improvement	Teams of teachers	Briefing, residential and day workshops, coaching support and feedback; 1 year	√	√	√
Building the capacity of school leadership teams	School leadership teams	Three-day residential, action research in school, 3 coaching sessions, follow-up workshop; 1 year	√	√	√
Leading across effective small schools	Small school teams	Three 1-day forums, action learning project, Web-based support, mentor with small school experience; 1 year	√	√	√
Leading in effective schools (strategic planning)	High potential leaders	Briefing, preparatory activities and 360-degree feedback, two workshops, 4 coaching sessions and ongoing e-mail contact; 1 year	√	√	
Preparing for leadership	Experienced teachers	Two-day conference, four-day workshops, background reading, pre- & post-programme 360-degree feedback, school based project, shadowing; 1 year	√		
Leading for student learning	Expert teachers	Five days workshops, reading and data collection, 360-degree feedback, peer learning groups; 1 year	√		
Leading professional learning	Professional development coordinators	One year part-time programme	√	√	
Scholarships for postgraduate study	Postgraduate teachers	Range of postgraduate courses	√	√	
Eleanor Davies school leadership programme	Female leading teachers / APs	Five months including mentoring, reading, seminars, school based project	√	√	
Leaders in the making	Assistant principals	One year with workshops and strategic planning project	√	√	
Stepping up to the principalship	Assistant principals	One year, including data-collection, workshop, shadowing, reviews		√	
Educational leadership: shaping pedagogy	APs and principals	One year, including preparation, intensive workshop, review, feedback, action planning		√	√
Human leadership: developing people	APs and principals	One year, development and implementation of a professional learning plan		√	√
Technical leadership: thinking and planning strategically	APs and principals	One year, including strategic planning project		√	√
Mentoring for first time principals	First time principals	One year			√
Coaching to enhance the capabilities of experienced principals	Experienced principals	One year with assigned coach			√
Development programme for high performing principals	Principals	Over a two-year period including contribution to system development and individual professional development			√
Building the capacity of the principals of small schools	Principals of small schools	One year			√
Teachers professional leave	All teachers	30 days	√		

Source: Matthews, P., H. Moorman, and D. Nusche. In Pont, B., D. Nusche, and D. Hopkins (Eds.), Improving School Leadership, Volume 2: Case Studies on System Leadership. Organisation for Economic Co-Operation and Development, Paris: OECD, 2008, pp. 179–213. (p. 196, Box 7.5)

Action 4: *Hold schools and systems accountable through monitoring, interventions, and support to ensure consistently high performance, drawing upon international best practices.*

Top-performing nations exhibit a wide range of different approaches to the functions commonly defined in the U.S. under the rubric of "accountability." But recent research suggests that such nations share several key strategic priorities and employ a broader range of tools for managing those priorities than is evident in this country.

First, most high-performing nations use multiple mechanisms to monitor school performance, including annual student assessments in key grades and whole-school reviews or "inspections." Such inspections evaluate the performance of a school against a broad set of criteria, including, but not limited to, student achievement and also examine the school *practices* that contribute to student results. Inspections take many different forms in different countries, including annual reviews conducted by an external agency; annual self evaluations complemented by an external review every few years; and self reviews coupled with external reviews on a much more occasional basis, often initiated by schools themselves.[115] New York City recently adopted a system of school inspections based on the British model.[116]

One advantage of such an approach is that leaders can more precisely diagnose the root causes of underperformance and, consequently, better match interventions with specific needs. According to a benchmarking report commissioned by Achieve for the state of Ohio, the British system "takes account of each school's day-to-day working and its capacity for change. ... When [the Office for Standards in Education] finds poor student outcomes and poor quality leadership, for instance, it calls for stronger measures than it would for a school with bad test scores but competent leadership."[117]

Second, some top-performing countries have adopted policies to ensure that every student succeeds by monitoring students' progress and intervening to prevent them from falling too far behind. In Finland, every school employs "special education teachers" who receive additional training to provide individual or small-group support to students who need it, mainly in Finnish language arts and mathematics. On average, about 30 percent of students receive such additional help every year, sometimes even the best students. The goal is to identify any student who is having difficulty at a particular point in time and get that student caught up and able to handle a rigorous classroom curriculum.[118]

In Singapore, schools use a national examination to identify upper elementary grade students who are having difficulty in math. Those students then receive special instruction based on an adapted curriculum framework taught by trained Mathematics Support Teachers. Importantly, they also receive about 30 percent *more* math instruction than their peers so that they can cover the same rigorous content, only at a slower pace.[119]

According to Schleicher and Stewart, many of the countries that perform well on PISA have established strong norms and mechanisms to support students. Teachers in such countries "don't have the option of making students repeat the school year—retention is not permitted—or transferring students to schools with lower performance requirements," they say. "Even where retention or transfers are technically possible, incentive structures for teachers and schools encourage teachers to address and solve challenges rather than hand them to others."[120]

Moreover, a thoughtful approach to accountability can help ensure that students experience a curriculum consistent with state standards and also that academic expectations do not vary too much across schools and classrooms. Even though Finland has an educational culture that greatly values the autonomy granted to local educators, its government recently tightened the national core curriculum after evaluations revealed too many gaps between students' classroom grades and their assessment results. "Another reason for the new approach is the fact that students use their final school reports in basic education when applying to upper secondary education institutions," says Reijo Laukkanen of the Finnish National Board of Education. "Thus, the new rules also safeguard the equality of students."[121]

Finally, top-performing nations balance accountability with greater school autonomy. A number of studies based on PISA, TIMSS, and PIRLS have found that students perform better in systems that give schools greater freedom to hire and reward teachers, purchase supplies and make other school-specific budget allocations, and choose curriculum materials and teaching methods.[122] Those studies also show that decentralization works best when it is combined with various forms of accountability. According to one team of researchers, the positive impact of school autonomy coupled with choice and accountability amounts to more than one-and-a-half grade-level equivalents on the PISA assessment.[123]

In general, however, there is still much to learn about forms of accountability in other nations. One area that states might examine closely as part of their benchmarking work is how other nations use assessment for accountability. What kinds of assessments do they administer in which grades and subjects? What content and skills do those tests measure? What kinds of questions do they use—multiple choice or more open-ended problems? How are assessments scored? And how are the results published and used for accountability purposes?

Action 5: *Measure state-level education performance globally by examining student achievement and attainment in an international context to ensure that, over time, students are receiving the education they need to compete in the 21st century economy.*

As states establish world-class standards and adopt other policies based on international best practice, leaders will want information on whether students are benefiting from the changes and are meeting higher expectations. "States are no longer competing with just the states next door but with countries around the world," argues Vivien Stewart. "Their students are competing with students in Singapore, Shanghai, and Salzburg; it's important to have a sense of whether they are being prepared to thrive in a global, knowledge-based economy."[124] Over time such data also can help prevent newly upgraded, internationally benchmarked state standards from slipping back below globally competitive levels.

In most industrialized countries with a federal-style education system, state leaders already have access to that kind of information because most take part in PISA at state levels and some also participate in TIMSS. In the U.S., governors and chief state school officers would welcome the opportunity to compare student performance internationally. However, state leaders are concerned about the number of tests students already are required to take for various purposes as well as the costs of administering additional assessments. Currently the U.S. is characterized by an overly cumbersome and fragmented testing system in which the federal government, states, districts, and schools together administer many different assessments to meet a wide variety of purposes.

Therefore, states can best address this action step through cooperative action to find a streamlined and cost-effective solution for generating international student achievement comparisons. Since all states already are required to participate in the National Assessment of Educational Progress (NAEP), leaders can use their collective leverage to work with the National Assessment Governing Board (NAGB) to explore the feasibility of upgrading NAEP to yield results that are comparable with existing international assessments such as TIMSS, PIRLS, and PISA. The strategy should permit states to secure representative school-level samples to analyze the relationship between school-level practices and student achievement, which in turn would enable leaders to craft policies promoting more widespread use of effective practices.

Adapting NAEP to yield internationally comparable results will be easier to accomplish in the case of TIMSS and PIRLS. TIMSS is more closely aligned with NAEP, and they both assess students in math and science in grades four and eight. Similarly, PIRLS tests students in reading in grade four, though a recent U.S. Department of Education study found that PIRLS incorporates easier reading passages than NAEP while also assessing some kinds of reading tasks that NAEP does not.[125]

Since PISA assesses 15-year-olds in participating nations, NAGB would need to explore how to adjust NAEP samples to include a comparable group of young people, as well as how to incorporate the more open-ended assessment items that characterize PISA. (PISA relies on "constructed response" items over multiple choice questions by a margin of two to one, while the reverse is true for TIMSS and NAEP.[126]) However, many consider PISA to be an important complement to TIMSS and PIRLS because, while the majority of countries participating in TIMSS are low-and middle-income countries, PISA focuses on the lead industrialized countries that are the main economic competitors of the United States (**Appendix A, pg. 41**). In addition, PISA assesses students near the end of compulsory education on whether they can *apply* what they have learned in math, science, and reading to solve real-world problems.

Governors, chief state school officers, and other leaders also should work to develop assessments that indicate whether students are on track for college readiness. The best example of such an initiative is California's Early Assessment Program (EAP), a collaborative effort among the California State Board of Education, the California Department of Education, and California State University (CSU). EAP allows students to take an additional component of the Grade 11 California Standards Test in reading and mathematics. The results provide an "early warning" that signals the student's college-readiness status; students who meet the benchmark are exempt from having to take the CSU placement test, which is normally given to students after they enroll.[127] Fourteen states in the American Diploma Project Network are developing a common end-of-course exam for Algebra II that is intended to serve the same purpose.

Of course, each state has the authority to make its own decisions regarding assessment and leaders always can choose to administer one or more of the existing international tests. For many policymakers, the most significant difference between TIMSS and PISA is in the type of content and skills each assesses. According to an analysis by the U.S. Department of Education, "TIMSS and NAEP appear to have the most in common, with a focus on material that is more likely to be taught through the school curriculum than PISA, which is more situation and phenomena-based. . . . TIMSS and PISA differ in a number of respects, including a greater focus on factual knowledge in mathematics and science in TIMSS than in PISA, and a greater focus on problem solving and the critical evaluation of information in PISA than in TIMSS. Moreover, PISA has a greater focus on data analysis, statistics and probability in mathematics than either TIMSS or NAEP [**Table 1**]."[128]

Some U.S. states already have participated in the TIMSS assessment, including Massachusetts and Minnesota in 2007. The IEA and the U.S. Department of Education are working to develop cost models for various levels of state participation in the next administrations of TIMSS and PIRLS in 2011. While no U.S. state has yet participated in PISA, most federal education systems around the world—including Australia, Belgium, Canada, Germany, Italy, Mexico, Spain, Switzerland, and the United Kingdom—have worked with OECD to report PISA results for states or provinces. Across OECD nations, state-level results are generated using a variety of strategies, offering U.S. states several proven models to consider.

A few nations and states have experimented with approaches that do not require students to take the full international assessment every few years. One option is to embed a selection of PISA or TIMSS items into existing state assessments. Another is to generate a statistical "link" using NAEP tests that can then be used to estimate state PISA or TIMSS performance. Such options are less expensive, and in practice are less burdensome on schools that must administer the tests, but what they save in dollars, time, and effort, they sacrifice in depth of data, since policymakers will not be able to dig beneath overall averages.

In addition to achievement, state leaders should gather information to compare educational *attainment* with top-performing and fast-improving nations, starting with indicators published by the OECD in its annual *Education at a Glance* report. Many of the raw data necessary are already collected by federal statistical agencies. For the OECD's 2008 report, the United States provided comparable data on the following key indicators:

- Percentage of 25- to 34-year-olds who have attained at least a high school degree;
- Percentage of 25- to 34-year-olds who have attained a postsecondary degree;
- Upper secondary graduation rate;
- Postsecondary entry rate;
- Postsecondary graduation and completion rates; and
- Number of postsecondary science degree holders per 100,000 employed among 25- to 34-year-olds.

Finally, state leaders should create an explicit plan to ensure that their investment yields more than a new set of numbers—including a strategy for communicating the results; a strategy for analyzing the results to dig beneath averages and identify significant patterns, strengths, and weaknesses; and the designation

Table 1. The Three Major International Assessments

	PISA	TIMSS	PIRLS
Sponsor	Organisation for Economic Co-Operation and Development	International Association for the Evaluation of Educational Achievement	International Association for the Evaluation of Educational Achievement
Grades or ages tested	15-year-olds	Fourth and eighth graders	Fourth graders
Subjects tested	Math, science, and reading every three years; special problem solving assessment in 2003	Math and science	Reading
Content tested	Ability to apply math, science, and reading to solve real-world problems	Attainment of knowledge and skills in math and science curriculum	Reading comprehension skills
Testing cycle	Every 3 years	Every 4 years	Every 5 years
Last administration	2006	2007	2006
Next administration	2009	2011	2011
Cost for state participation	2009: \$250,000 to \$550,000 depending on level of participation	2007: \$600,000 for full participation including *both* 4th and 8th grades, or \$350,000 for a full sample in just one grade 2011: To be determined	2011: To be determined
Type of test questions	About two-thirds constructed response and one-third multiple choice	About one-third constructed response and two-thirds multiple choice	About one-half constructed response and one-half multiple choice
Sub-topics for which scores are reported	**Math (2003):** Quantity; space and shape; change and relationships; uncertainty **Science (2006):** Overall knowledge; knowledge about earth and space; knowledge about living systems; knowledge about physical systems; identifying scientific issues; explaining phenomena scientifically; using scientific evidence **Reading (2000):** Retrieving information; interpreting texts; reflection and evaluation	**Math:** Grade 4–Number; patterns and relationships; measurement; geometry; data. Grade 8–Number; algebra; measurement; geometry; data **Science:** Grade 4–Life science; physical science; earth science. Grade 8–Life science; chemistry; physics; earth science; environmental science	Reading for literary purposes; reading for informational purposes; retrieving and straightforward inferencing; interpreting, integrating, and evaluating
Technical alignment with NAEP: Can scores be equated to NAEP?	Little alignment; not enough to crosswalk scales and scores	Significant alignment; enough for some researchers to crosswalk scales and scores*	Unknown
Nations participating	*Please refer to Appendix A for a complete list of countries participating in each.*		

* See for example Phillips, G.W. (2007). *Chance Favors the Prepared Mind: Mathematics and Science Indicators for Comparing States and Nations.* Washington, DC: American Institutes for Research.

of an agency or agencies responsible for collecting additional information and making recommendations for improvement.

Addressing the Equity Imperative

Rather than addressing equity as an isolated action step, state leaders should approach it as an overarching or "interdisciplinary" imperative as they tackle each of the action areas described above. Recent research shows that other nations arrange their education systems more equitably. For example, the U.S. falls short across the following dimensions:

- An opportunity gap in access to qualified teachers that is among the largest in the world;[129]
- The only country where lower performing students and children with less-educated parents are likely to be taught in *larger* classes;[130] and
- Math teachers less likely than those in high-performing countries to include conceptual strategies along with basic computation for low-achieving students.[131]

In other words, education systems in the United States tend to give disadvantaged and low-achieving students a watered down curriculum in larger classes taught by less qualified teachers—*exactly the opposite of what high-performing countries do.*

States could greatly improve their repertoire of policy strategies for promoting academic equity by examining specific strategies in other countries. Korea, for example, has two major policies for encouraging more equal access to qualified teachers. First, teachers are rotated within districts on a regular basis every five years. Second, the government offers educators a wide range of attractive incentives to teach in remote areas and regions with disadvantaged populations, including smaller class size, less in-class teaching time, salary stipends, the chance to choose the next school placement, and a competitive advantage when seeking administrative positions.[132]

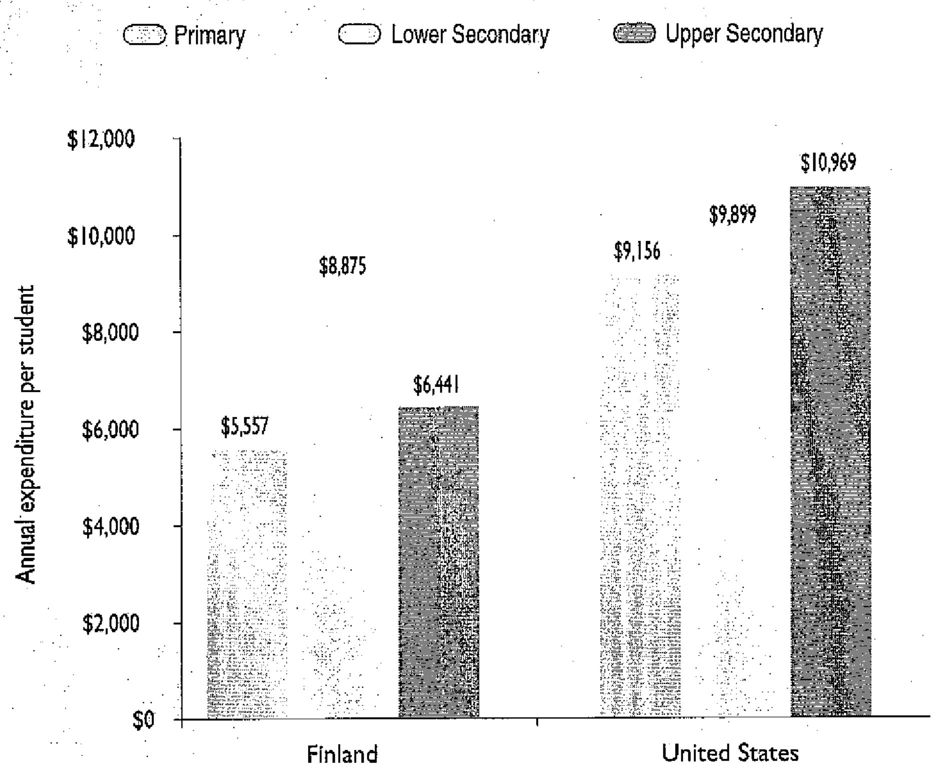
Many high-performing countries also provide intensive, targeted academic supports to students, such as the Finnish and Singaporean intervention strategies described above. The Finnish example is particularly interesting in that it is one of four overlapping "layers" of intensifying interventions for students who fall behind. The first line of attack is formed by regular classroom teachers who receive intensive training to deal with diverse learning challenges through teacher preparation internships, which might deal with "students performing at different levels to the special needs of immigrant children to more difficult cases of fetal alcohol syndrome or attention deficit hyperactivity disorder."[133]

The second line of attack is made up of classroom teaching aides who often work with individuals or small groups of students, followed by the highly trained "special education" teachers described above. Finally, students whose lack of progress is due to family or social difficulties outside of school can be referred to "multi-disciplinary teams."[134] According to a recent case study by the OECD, "Overall, these approaches to minimizing the number of students falling behind display two features: intensification (providing more time by more instructors) and alternative approaches (rather than 'more of the same') ... But they do so in consistent ways, working with the classroom teacher on the specific subjects students are having trouble with, rather than relying on a grab bag of after-school programs and tutoring efforts randomly distributed by grade levels and subjects."[135]

Such supports continue through lower secondary education, including a "class teacher" who follows a particular group of students for three years to monitor individual progress.[136] Indeed, when Finland ended early tracking of students and moved toward a more equitable system in the 1980s, leaders realized that lower secondary education would be a problem spot in the pipeline where vulnerable students might fall off track, so they specifically targeted greater funding toward the lower secondary grades—and continue to do so today (**Figure 6**).[137]

Some would argue that the U.S. cannot learn from Finland because it is a more equitable country socially and economically. However, it is telling that Finland's commitment to equity does not stop at the schoolhouse door; rather, the education system itself has been carefully constructed to maximize equity and ensure consistently high levels of performance for all students. According to an OECD report on educational equity best practices published last year, "Many countries could usefully follow the successful Finnish approach to learning difficulties, offering a sequence of intensifying interventions which draw back into the mainstream those who fall behind."[138]

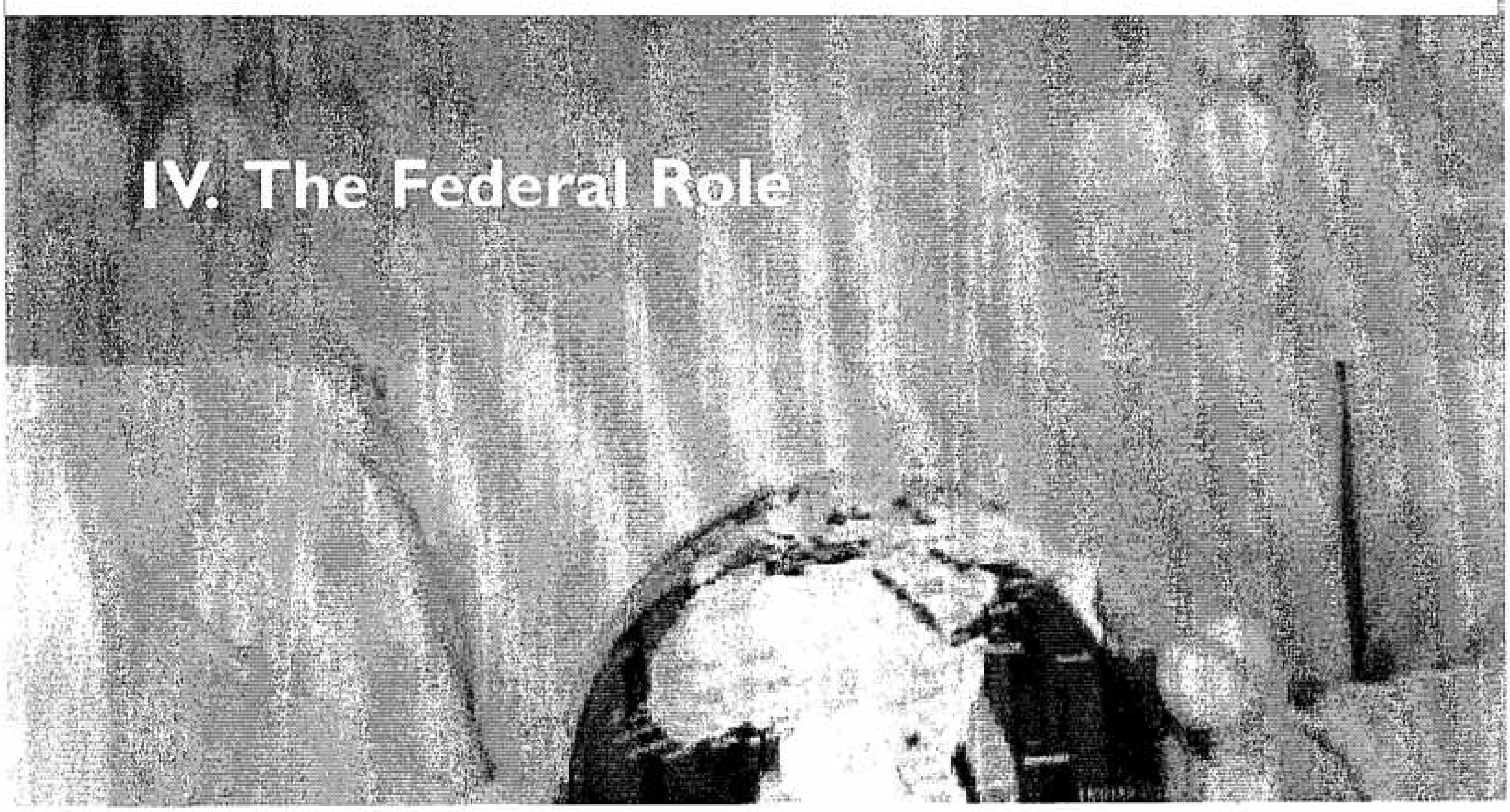
Figure 6: Finland Targets Funds Toward Lower Secondary Where Needs Are Greatest



Source: Organisation for Economic Co-Operation and Development. Education at a Glance 2008. Paris: OECD, September 2008, p. 219, Table B1.1a. Figures represent annual expenditure on educational institutions per full-time equivalent students for all services in 2005, in equivalent U.S. dollars converted using purchasing power parity for gross domestic product.

(b)(6)

IV. The Federal Role



IV. The Federal Role

If benchmarking were only about measuring and comparing outcomes, the federal government might be able to play a leading role. However, because benchmarking is also—and most critically—about improving policy, states must take the lead. States have primary authority over the policy areas that other nations are most eager to benchmark and improve: standards, assessments, curriculum, and the education workforce. States already have led in raising standards, with 16 having adopted a common core of college- and career-ready expectations in math and reading for high school graduation.

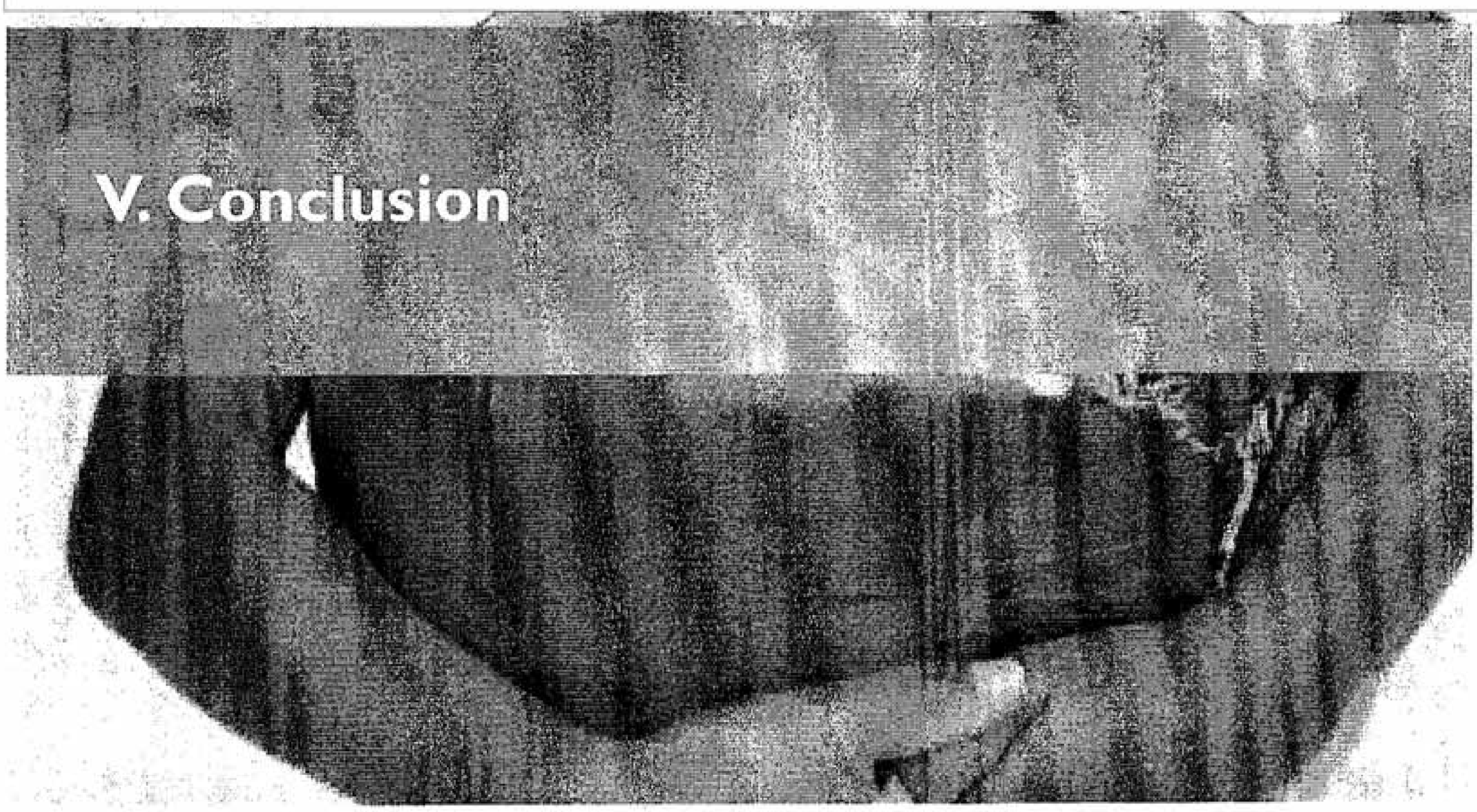
The United States is not alone in this regard. Countries such as Canada, Australia, Germany, and Spain have federal-style education systems where states retain a great deal of authority over education. And in many of those countries, states are taking a leading role in benchmarking educational performance and policies. For example, the public outcry over mediocre results on the 2000 PISA assessment led to a historic new partnership between Germany's federal government and its 16 *Länder* (states), with the *Länder* taking responsibility for the establishment of shared education standards and assessments for schools across the nation while the federal government provided support for those and other state reforms.

America can learn from that example, too: While states must take the lead, the federal government can help. And the federal government can do that best by playing an *enabling* role grounded in a new vision for the historic state–federal partnership in education—one that is *less* restrictive and mandate-driven and *more* encouraging of innovation. As states take on the important work of benchmarking their education systems to the best in the world, the federal government can assist states in specific ways at each stage of the journey:

- As soon as possible, the federal government should offer new funding or allow existing funds to be used to help underwrite the cost for states to take the five action steps described above related to standards and assessment, curriculum, human capital, and accountability.
- At the same time, the federal government should increase its own investment or focus existing resources toward better research and development in this area to provide state leaders with more and better information about tools for benchmarking and international best practice in education. For example, the U.S. Department of Education should:
  1) Support efforts to collect and share international achievement and attainment data relevant to states; help state leaders identify good comparison nations or provinces for benchmarking; and collect and disseminate information about best practices of high-performing and fast-improving nations and provinces around the world; and
  2) Convene a technical advisory committee on assessment to make recommendations for generating internationally benchmarked results by state without adding significantly to costs and testing time. The committee should disseminate useful technical information about existing assessments, share policy options for improving and streamlining state assessment systems, and review the feasibility of adapting NAEP to generate international comparisons as described above.
- As states reach important milestones on the way toward building internationally competitive education systems, the federal government should offer a range of tiered incentives to make the next stage of the journey easier. With accountability at the core for greater results, such incentives could include:
  1) Increased flexibility in the use of federal funds;
  2) Increased flexibility in meeting requirements of existing federal education laws so that states are not thwarted in their efforts to adapt and adopt international best practices; and
  3) Additional funds to help states implement world-class practices.
- Over the *long term*, the federal government should change existing federal laws to align national education policies with the lessons learned from state benchmarking efforts and from federally funded research.

Over time, the combination of better information, additional support, and more flexibility for innovation would greatly accelerate state progress in developing and implementing world-class education systems. And that, in turn, will benefit all Americans, safeguarding U.S. economic security and ensuring continued prosperity in the new global economy.

(b)(6)



V. Conclusion

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Other nations have benefited from America's historic example by expanding educational opportunities for their own citizens. Now it is time for U.S. leaders to ensure that Americans develop the skills they need to compete—and help the U.S. remain competitive—in a rapidly changing world.

The federal government can help, but states must lead. They must look beyond their borders and America's shores to fully understand how to benchmark expectations for student learning. They must significantly broaden the policy lens by drawing lessons from the highest performing, most equitable, and fastest advancing nations and states around the globe and adapting the very best educational practices to incorporate here at home.

If states in other countries can shape the response to the global education imperative, states in America must do so as well. And state leaders have both the authority and an obligation to ensure that students attend globally competitive schools and school districts. America cannot maintain its place in the world—economically, socially, or culturally—unless all of its students gain the skills that allow them to compete on a global scale. The United States will only achieve true international competitiveness when state education policies and institutions are restructured to meet 21st century realities.

(b)(6)

[redacted]

Appendix A: Countries Participating in International Assessments

Appendix A: Countries Participating in International Assessments

Table reflects the most recent test year for which participation information is available.

	PISA 2009	TIMSS 2007 4th	TIMSS 2007 8th	PIRLS 2006
Africa				
Algeria		X	X	
Botswana			X	
Djibouti		X		
Egypt			X	
Ghana			X	
Morocco		X	X	X
South Africa			X	X
Tunisia	X	X	X	
Asia				
Azerbaijan	X			
Bahrain			X	
Chinese Taipei	X	X	X	X
Dubai (UAE)	X			
Hong Kong SAR	X	X	X	X
Indonesia	X		X	X
Iran, Islamic Republic		X	X	X
Israel	X		X	X
Japan	X	X	X	
Jordan	X		X	
Kazakhstan	X			
Korea, Republic of	X		X	
Kuwait		X	X	X
Kyrgyzstan	X			
Lebanon			X	
Macao-China	X			
Malaysia			X	
Mongolia		X	X	
Oman			X	
Palestinian Authority			X	
Qatar	X	X	X	X
Saudi Arabia			X	
Shanghai (China)	X			
Singapore	X	X	X	X
Syria			X	
Thailand	X		X	
Turkey	X		X	
Uzbekistan			X	
Yemen		X		
South America				
Argentina	X			
Brazil	X			
Chile	X			
Colombia	X	X	X	
Dominican Republic	X			
Panama	X			
Peru	X			
Trinidad and Tobago	X			
Uruguay	X			
Oceania				
Australia	X	X	X	
New Zealand	X	X		X

	PISA 2009	TIMSS 2007 4th	TIMSS 2007 8th	PIRLS 2006
Europe				
Albania	X			
Armenia		X	X	
Austria	X	X		X
Belgium	X			X
Bosnia & Herc			X	
Bulgaria	X		X	X
Croatia	X			
Cyprus		X	X	
Czech Republic	X	X	X	
Denmark	X	X		X
England	X	X	X	X
Estonia	X			
Finland	X			
France	X			X
Georgia			X	X
Germany	X	X		X
Greece	X			
Hungary	X	X		X
Iceland	X			X
Ireland	X			
Italy	X	X	X	X
Latvia	X		X	X
Liechtenstein	X			
Lithuania	X	X	X	X
Luxembourg	X			X
Macedonia, Republic of				X
Malta		X		
Moldova, Republic of	X	X	X	X
Montenegro, Republic of	X			
Netherlands, The	X	X		X
Norway	X	X	X	X
Poland	X			X
Portugal	X			
Romania	X		X	X
Russian Federation	X	X	X	X
Scotland	X	X	X	X
Serbia, Republic of	X		X	
Slovak Republic	X	X		X
Slovenia	X	X	X	X
Spain	X		Basque	X
Sweden	X	X	X	X
Switzerland	X			
Ukraine		X	X	
North America				
Belize				
Canada	X	X	X	X
El Salvador		X	X	
Honduras		X	X	
Mexico	X			
Trinidad and Tobago				X
United States	X	X	X	X
Totals	*68*	*40*	*55*	*40*

Source: National Center for Education Statistics and Organisation for Economic Co-Operation and Development.

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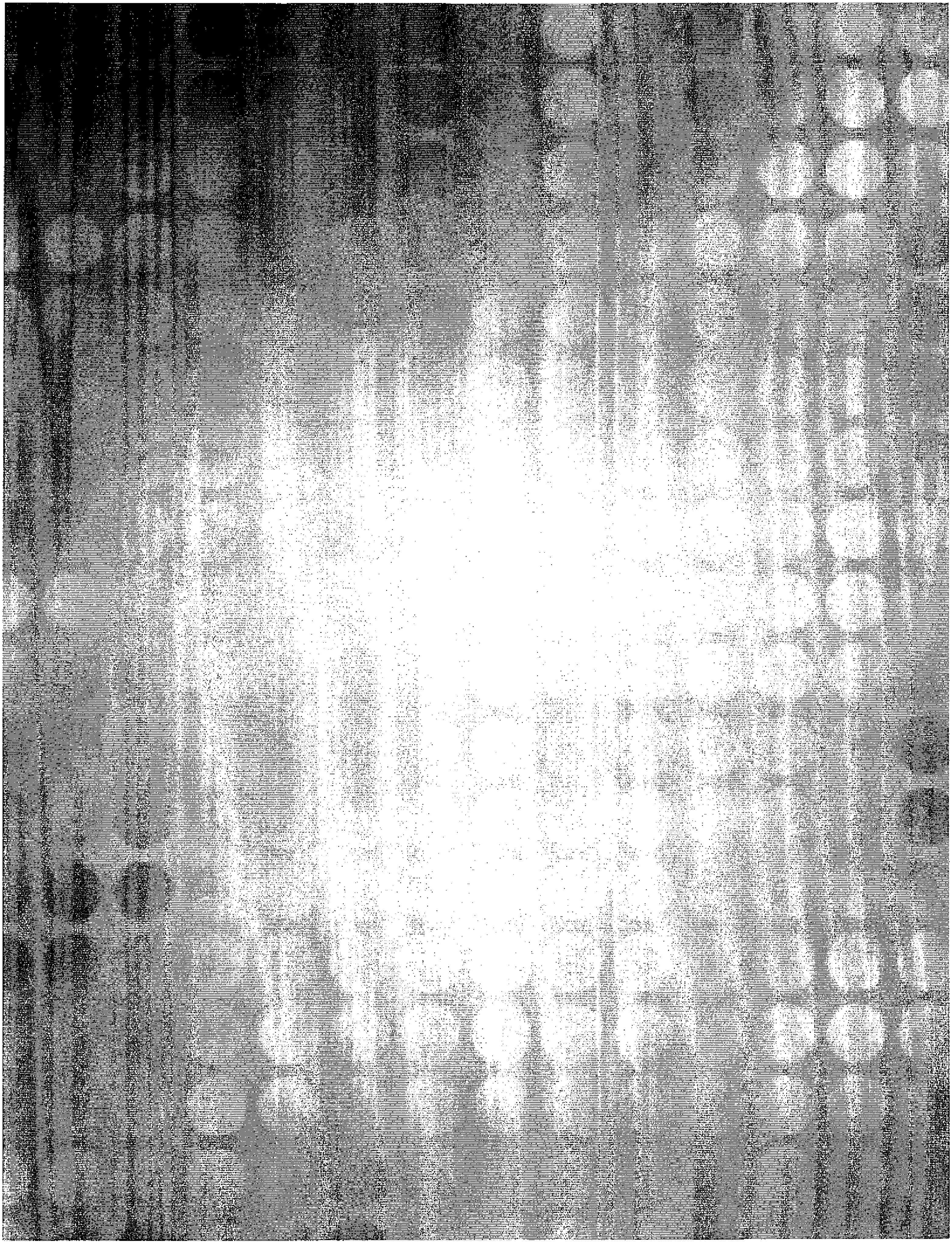

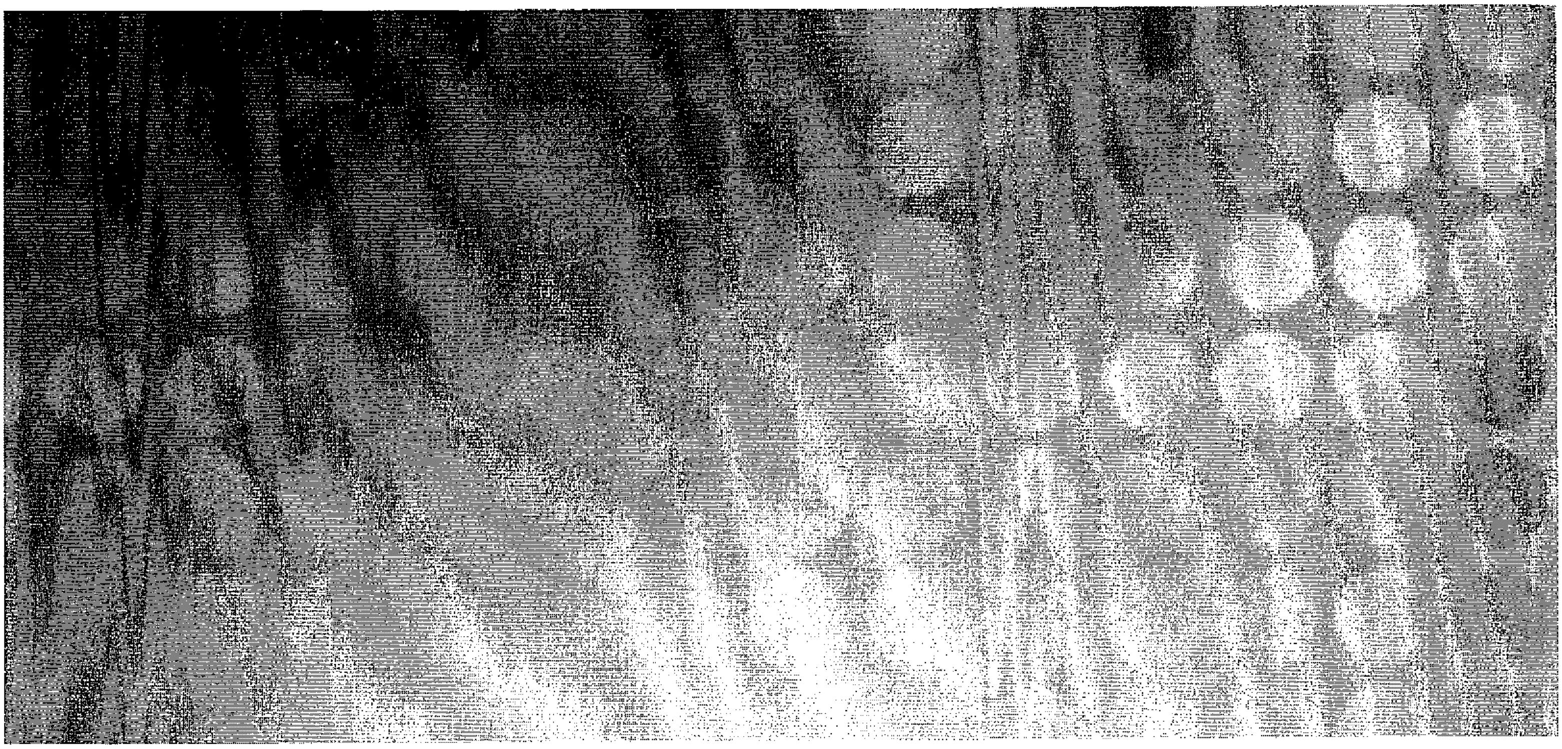

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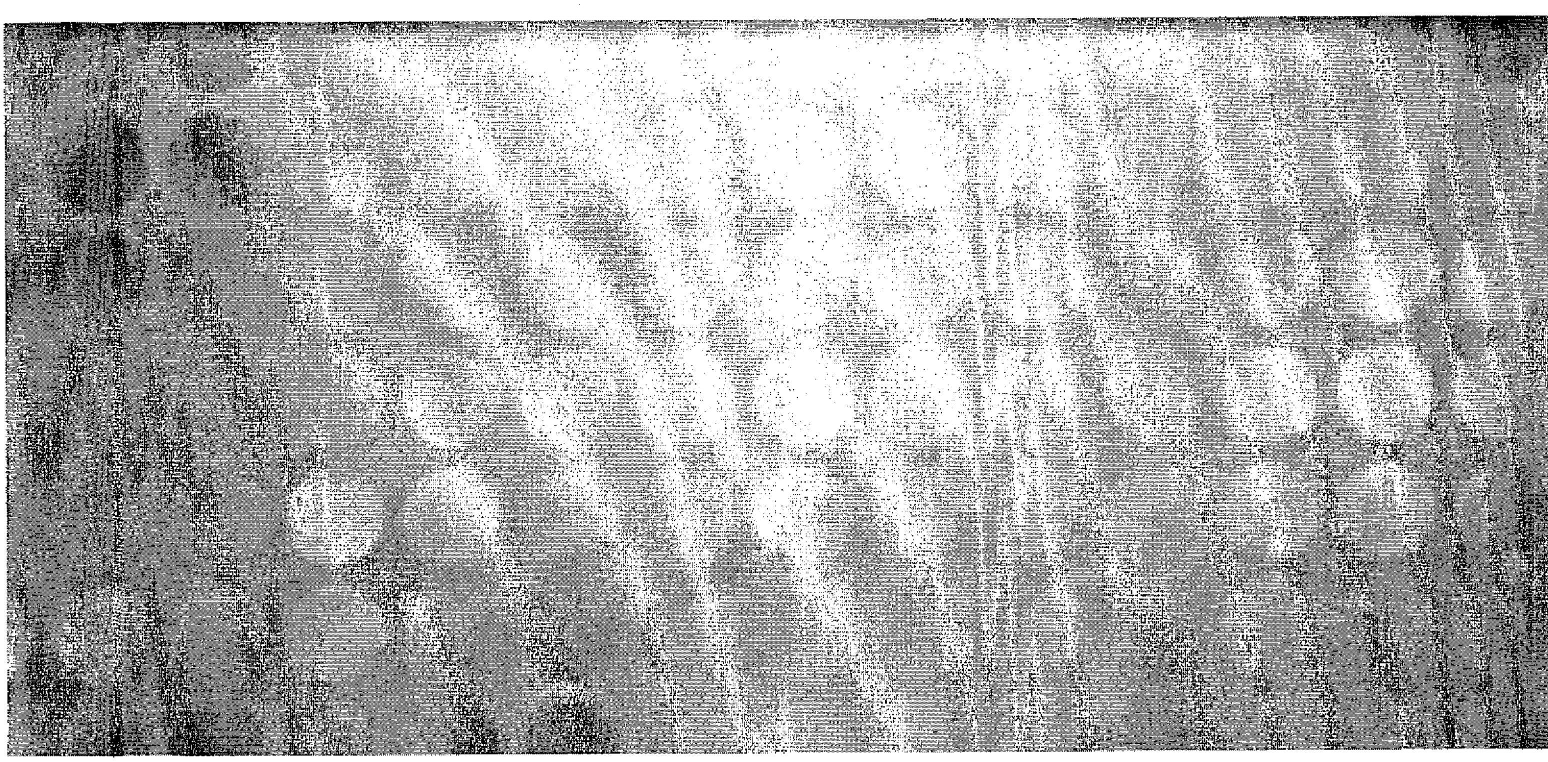


Introduction to the Draft Common Core Standards
March 9, 2010

The Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) are pleased to present the draft Kindergarten-12 grade level Common Core State Standards documents that our organizations have produced on behalf of 48 states, two territories, and the District of Columbia. These English language arts and mathematics standards represent a set of expectations for student knowledge and skills that will result in high school graduates who are prepared for success in college and careers.

To develop these standards, CCSSO and the NGA Center worked with representatives from participating states, a wide range of educators, content experts, researchers, national organizations, and community groups. These drafts reflect their input, and we are grateful for the time and insight hundreds of individuals have contributed to the development of these important documents.

Now, we seek public comment on these draft documents and encourage input via our online survey available at www.corestandards.org. The public comment period will end on April 2, 2010.

After our work groups have had an opportunity to review all of the feedback from the general public and state-led reviews, they will produce final documents. It is expected that the final set of standards documents will be available in late spring 2010.

You will notice that the college- and career-readiness standards have been incorporated into this draft. The final English language arts and mathematics standards documents will include college- and career-readiness standards along with the K-12 grade level standards.

The criteria that we used to develop the college- and career-readiness standards, as well as these K-12 grade level standards are:

- Aligned with college and work expectations;
- Include rigorous content *and* application of knowledge through high-order skills;
- Build upon strengths and lessons of current state standards;
- Informed by top-performing countries, so that all students are prepared to succeed in our global economy and society; and,
- Evidence and/or research-based.

The following links provide more information about the criteria and considerations for standards development.

The standards development process has maximized the best practices and research from across the nation and the world. While we have used all available research to shape these documents, we recognize that there is more to be learned about the most essential knowledge for student success. As new research is conducted and we evaluate the implementation of the common core standards, we plan to revise the standards accordingly on a set review cycle.

Our organizations would also like to thank our advisory group, which provides advice and guidance on this initiative. Members of this group include experts from Achieve, Inc., ACT, the College Board, the National Association of State Boards of Education, and the State Higher Education Executive Officers.

Application of Common Core State Standards for English Language Learners

English language learners (ELLs) must be held to the same level of standards expected of students who are already proficient in English. However, these students are acquiring both English language proficiency and content area knowledge concurrently, so some students will require additional time, and all will require appropriate instructional support and aligned assessments.

ELLs are a heterogeneous group with differences in ethnic background, first language, socioeconomic status, quality of prior schooling, and levels of English language proficiency. Effectively educating these students requires diagnosing each student instructionally, adjusting instruction accordingly, and closely monitoring student progress. For example, ELLs who are literate in a first language that shares cognates with English can apply first-language vocabulary knowledge when reading in English; likewise ELLs with high levels of schooling can bring to bear conceptual knowledge developed in their first language when reading in a second language. However, ELLs with limited or interrupted schooling will need to acquire background knowledge prerequisite to educational tasks at hand. Those ELLs who are newcomers to U.S. schools will need sufficiently scaffolded instruction and assessments to make sense of content delivered in a second language and to display this content knowledge.

English Language Arts

The common core standards for English language arts (ELA) articulate rigorous grade-level expectations in the areas of speaking, listening, reading, and writing to prepare all students to be college and career ready, including English language learners. Second-language learners also will benefit from instruction about how to negotiate situations outside of those settings so they are able to participate on equal footing with native speakers in all aspects of social, economic, and civic endeavors.

ELLs bring with them many resources that enhance their education and can serve as resources for schools and society. Many ELLs have first language and literacy knowledge and skills that boost their acquisition of language and literacy in a second language; additionally, they bring an array of talents and cultural practices and perspectives that enrich our schools and our society. Teachers must build on this enormous reservoir of talent and provide those students who need it with additional time and appropriate instructional support. This includes language proficiency standards that teachers can use in conjunction with the ELA standards to assist ELLs in becoming proficient and literate in English.

To help ELLs meet high academic standards in language arts it is essential that they have access to:

- Teachers and personnel at the school and district levels who are well prepared and qualified to support ELLs while taking advantage of the many strengths and skills they bring to the classroom;

students who are learning English have opportunities to communicate mathematically, this is not primarily a matter of learning vocabulary. Students learn to participate in mathematical reasoning, not by learning vocabulary, but by making conjectures, presenting explanations, and/or constructing arguments.

- While vocabulary instruction is important, it is not sufficient for supporting mathematical communication. Furthermore, vocabulary drill and practice are not the most effective instructional practices for learning vocabulary. Research has demonstrated that vocabulary learning occurs most successfully through instructional environments that are language-rich, actively involve students in using language, require that students both understand spoken or written words and also express that understanding orally and in writing, and require students to use words in multiple ways over extended periods of time. To develop written and oral communication skills, students need to participate in negotiating meaning for mathematical situations and in mathematical practices that require output from students.

- Literacy-rich school environments where students are immersed in a variety of language experiences;
- Instruction that develops foundational skills in English that enable ELLs to participate fully in grade-level coursework;
- Coursework that prepares ELLs for postsecondary education or the workplace yet is made comprehensible for students learning content in a second language (through specific pedagogical techniques and additional resources);
- Opportunities for classroom discourse and interaction that are well-designed to enable ELLs to develop communicative strengths in language arts;
- Ongoing assessment and feedback to guide learning; and
- Speakers of English who know the language well enough to provide ELLs with models and support.

Mathematics

ELLs can participate in mathematical discussions as they learn English. Mathematics instruction for ELL students should draw on multiple resources and modes available in classrooms—such as objects, drawings, inscriptions, and gestures—as well as home languages and mathematical experiences outside of school. While mathematics instruction for ELLs should address mathematical discourse and academic language, this involves much more than vocabulary instruction.

Language is a resource for learning mathematics; it is not only a tool for communicating, but also a tool for thinking and reasoning mathematically. All languages and language varieties (e.g., different dialects, home or everyday ways of talking, vernacular, slang) provide resources for mathematical thinking, reasoning, and communicating.

Regular and active participation in the classroom—not only reading and listening but also discussing, explaining, writing, representing, and presenting—is critical to the success of ELLs in mathematics. Research has shown that ELLs can produce explanations, presentations, etc. and participate in classroom discussions *as they are learning English.*

ELLs, like English-speaking students, require regular access to teaching practices that are most effective for improving student achievement. Mathematical tasks should be kept at high cognitive demand; teachers and students should attend explicitly to concepts; and students should wrestle with important mathematics.

Overall, research suggests that:

- Language switching can be swift, highly automatic, and facilitate rather than inhibit solving word problems in the second language, as long as the student's language proficiency is sufficient for understanding the text of the word problem.
- Instruction should ensure that students understand the text of word problems before they attempt to solve them.
- Instruction should include a focus on "mathematical discourse" and "academic language" because these are important for ELLs. Although it is critical that

Application of Common Core State Standards for Students with Disabilities

The Common Core Standards articulate rigorous, grade-level expectations in the areas of English language arts and mathematics to prepare students to be college and career ready.

All students, including students with disabilities— students eligible under the Individuals with Disabilities Education Act (IDEA) — must be challenged to excel within the general curriculum and prepared for success in their post-school lives, including college and/ or careers. The common core state standards provide a historic opportunity to improve access to academic content standards for students with disabilities. The continued development of understanding about research-based instructional practices and a focus on their effective implementation will also help improve access to the common core state standards.

Students with disabilities are a heterogeneous group with one common characteristic: the presence of disabling conditions that significantly hinder their abilities to benefit from general education (IDEA 34 CFR §300.39, 2004). Therefore, *how* these high standards are taught and assessed is of the utmost importance in reaching this diverse group of students.

For special education students to meet high academic standards and to fully demonstrate their conceptual and procedural knowledge and skills in mathematics and English language arts, their instruction must incorporate supports and often times, accommodations, including:

- Special education supports and related services designed to meet the unique needs of these students and to enable their access to the general education curriculum (IDEA 34 CFR §300.34, 2004).
- An Individualized Education Program, which includes annual goals aligned with and chosen to facilitate their attainment of grade-level academic standards.
- Teachers and specialized instructional support personnel who are prepared and qualified to deliver high-quality, evidence-based, individualized instruction and support services.

Promoting a culture of high expectations for all students is a fundamental goal of the common core state standards. To participate with success in the general curriculum, students with disabilities, as appropriate, may be provided additional supports and services, such as:

- Instructional supports for learning, based on the principles of Universal Design for Learning, which foster student engagement by presenting information in multiple ways and allowing for diverse avenues of action and expression.
- Instructional accommodations —changes in materials or procedures— which do not change the standards but allow students to learn within the framework of the common core state standards.

- Assistive technology devices and services to ensure access to the general education curriculum and the common core state standards.

For some students with significant cognitive disabilities to access certain standards, those standards may need to be extended and/or adjusted. However, standards should be extended and/or adjusted only after students receive access to multiple means of learning and demonstrating knowledge. Any extensions and/ or adjustments must align with and retain the rigor and high expectations of the common core state standards.

COMMON CORE STATE STANDARDS FOR

English Language Arts and Literacy in History/Social Studies & Science

Table of Contents

Introduction

The *Common Core State Standards for English Language Arts and Literacy in History/Social Studies and Science* are the culmination of an extended, broad-based effort to fulfill the charge issued by the states to create the next generation of K–12 standards that help ensure that all students are college and career ready in literacy by no later than the end of high school. The *Standards* set requirements for English language arts (ELA) but also for reading, writing, speaking, listening, and language in the social and natural sciences. Just as students must learn to communicate effectively in a variety of content areas, so too must the *Standards* specify the literacy skills and understandings required for eventual college and career readiness in history, social studies, and science as well as ELA. By their structure, the *Standards* encourage curriculum makers to take a comprehensive approach that coordinates ELA courses with courses in other subject areas in order to help students acquire a wide range of ever more sophisticated knowledge and skills through reading, writing, speaking, and listening.

The present work, led by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA), builds on the foundation laid by states in their decades-long work on crafting high-quality education standards, including their work on the American Diploma Project with Achieve. The *Standards* also draw on the most important international models as well as research and input from numerous sources, including scholars, assessment developers, professional organizations, and educators from kindergarten through college. In their design and content, the *Standards* represent a synthesis of the best elements of standards-related work to date and an important advance over that previous work.

As specified by CCSSO and NGA, the *Standards* are (1) research and evidence based, (2) aligned with college and work expectations, (3) rigorous, and (4) internationally benchmarked. A particular standard was included in the document only when the best available evidence indicated that its mastery was essential for students to be college and career ready in a twenty-first-century, globally competitive society. As new and better evidence emerges, the *Standards* will be revised accordingly.

The *Standards* are an extension of a prior initiative led by CCSSO and NGA to develop College and Career Readiness (CCR) standards in reading, writing, speaking, listening, and language as well as in mathematics. The CCR Reading, Writing, and Speaking and Listening Standards, released in draft form in September 2009, serve, in revised form, as the backbone of the present document. Consistent across grades and disciplines, the CCR Standards create an essential unity within the document and a consistent point of reference for educators. Whether guiding third graders through a science unit or high school sophomores through a classic work of literature, teachers can look to the same CCR Standards—included in each section of this document—to help judge whether students are on course for being college and career ready. Grade-specific K–12 standards in reading, writing, speaking, listening, and language translate the broad (and, for the earliest grades, seemingly distant) aims of the CCR Standards into age- and attainment-appropriate terms.

While college and career readiness is the end point of the *Standards*—an ambitious goal in its own right—some students will reach that point before the end of high school. For those students who do complete the *Standards'* requirements before graduation, advanced work in such areas as literature, composition, language, and journalism should be available. It is beyond the scope of the *Standards* to describe what such advanced work should consist of, but it should provide the next logical step up from the college and career readiness baseline established here.

As a natural outgrowth of meeting the charge to define college and career readiness, the *Standards* also lay out a vision of what it means to be a literate person in the twenty-first century. Indeed, the skills and understandings students are expected to demonstrate have wide applicability outside the classroom or workplace. Students who meet the *Standards* readily undertake the close, attentive reading that is at the heart of understanding and enjoying complex works of literature. They habitually perform the critical reading necessary to pick carefully through the staggering amount of information available today in print and online. They actively seek the wide, deep, and thoughtful engagement with high-quality literary and informational texts that builds knowledge, enlarges experience, and broadens worldviews. They reflexively demonstrate the cogent reasoning and use of evidence that is essential to both private deliberation and responsible citizenship in a democratic republic. In short, students who master the *Standards* develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

March 2010

Key Design Considerations

A focus on results rather than means

By focusing on required achievements, the *Standards* leave room for teachers, curriculum developers, and states to determine how those goals should be reached and what additional topics should be addressed. Thus, the *Standards* do not mandate such things as a particular writing process or specify the full range of metacognitive strategies that students may need to use to monitor and direct their thinking and learning. Teachers are thus free to provide students with whatever tools and knowledge their professional judgment and experience identify as most helpful for meeting the goals set out in the *Standards*.

An integrated model of literacy

Although the *Standards* are divided into Reading, Writing, Speaking and Listening, and Language strands for conceptual clarity, the processes of communication are closely connected, as reflected throughout this document. For example, Writing Standard #9 requires that students be able to write about what they read. Likewise, Speaking and Listening Standard #4 sets the expectation that students will share findings from their research.

Language conventions and vocabulary are treated in detail in a separate strand not because those skills should be taught in isolation from other communication activities but because their importance extends beyond writing and reading, where standards documents often place such skills. Many of the conventions must be observed in standard spoken as well as written English, and students, particularly the youngest ones, encounter and acquire new words through conversations as well as through texts. To signal the link between the Language skills and the rest of the standards even more strongly, some skills associated with language use are also found in other strands when appropriate. Reading Standard #4, for example, concerns determining word meanings, and Writing Standard #5 includes editing among the skills students must be able to use to strengthen writing.

Research and media skills integrated into the Standards *as a whole*

To be ready for college, workforce training, and life in a technological society, students need the ability to gather, comprehend, evaluate, synthesize, report on, and create a high volume and extensive range of print and nonprint texts in media forms old and new. The need to research and to consume and produce media is embedded into every element of today's curriculum; in like fashion, the associated skills and understandings are embedded throughout the *Standards* rather than treated in a separate section.

Shared responsibility for students' literacy development

The *Standards* establish that instruction in reading, writing, speaking, listening, and language is a shared responsibility. The *Standards* present reading instruction in K–5 as fully integrative, including a rich blend of stories, drama, and poetry as well as informational texts from a range of content areas. ELA-specific standards for grade 6 and above include fiction, poetry, and drama but also literary nonfiction (e.g., speeches, essays, and historical documents with significant cultural importance and literary merit). Literacy standards specific to history/social studies and science for grade 6 and above are predicated on teachers in these areas using their unique disciplinary expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields.

Part of the motivation behind the interdisciplinary approach to literacy promulgated by the *Standards* is extensive research establishing the need for college- and career-ready students to be proficient in reading complex informational text independently in a variety of content areas. Most of the required reading in college and workforce training programs is informational in structure and challenging in content; postsecondary education programs typically provide students with both a higher volume of such reading than is generally required in K–12 schools and comparatively little scaffolding.

The *Standards* are not alone in calling for a special emphasis on informational text. The 2009 reading framework of the National Assessment of Educational Progress (NAEP) requires a high and increasing proportion of informational text on its assessment as students advance through the grades.

Distribution of Literary and Informational Passages by Grade in the 2009 NAEP Reading Framework

Grade	Literary	Informational
4	50%	50%
8	45%	55%
12	30%	70%

The *Standards* aim to align instruction with this framework so that many more students can meet the demands of college and career readiness. In K–5, the *Standards* balance the teaching of literature with informational text, including texts in history/social studies and science. Fulfilling the standards for 6–12 ELA requires much greater attention to literary nonfiction than has been traditional. The NAEP framework also makes clear that significant reading of informational texts should take place outside of the ELA classroom in order for students to be ready for college and careers. The NAEP framework applies the sum of all the reading students do in a grade, not just their reading in the ELA context. The percentages do not imply, for example, that high school ELA teachers must teach 70 percent informational text; they demand instead that a great deal of reading should occur in other disciplines. To measure students' growth toward college and career readiness, assessments aligned with the *Standards* should adhere to the distribution of texts across grades cited in the NAEP framework.

A progression of writing toward college and career readiness

NAEP likewise outlines a distribution across the grades of the core purposes and types of student writing. Similar to the *Standards,* the NAEP framework cultivates the development of three mutually reinforcing writing capacities: writing to persuade, to explain, and to convey real or imagined experience. Evidence concerning the demands of college and career readiness gathered during development of the *Standards* concurs with NAEP's shifting emphases: in grades 9–12 in the *Standards*, students continue writing in all three forms but focus overwhelmingly on writing to argue and to inform or explain.

Distribution of Communicative Purposes by Grade in the 2011 NAEP Writing Framework

Grade	To Persuade	To Explain	To Convey Experience
4	30%	35%	35%
8	35%	35%	30%
12	40%	40%	20%

It follows that writing assessments aligned with the *Standards* should adhere to the distribution of writing purposes across grades outlined by NAEP.

Grade levels for K–8; grade bands for 9–10 and 11–12

The *Standards* use individual grade levels in kindergarten through grade 8 to provide useful specificity; the *Standards* use two-year bands in grades 9–12 to allow schools, districts, and states flexibility in high school course design.

What is not *covered by the* Standards

The *Standards* should be recognized for what they are *not* as well as what they are. Three of the most important intentional design limitations are as follows:

1) The *Standards* define what all students are expected to know and be able to do but not *how* teachers should teach. The *Standards* must be complemented by a well-developed, content-rich curriculum consistent with the expectations laid out in this document.

2) While the *Standards* do attempt to focus on what is most essential, they do not describe all that *can* or *should* be taught. A great deal is left to the discretion of teachers and curriculum developers. The aim of the *Standards* is to articulate the fundamentals, not to set out an exhaustive list nor a set of restrictions that limits what can be taught beyond what is specified herein.

3) The *Standards* set grade-level standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. No set of grade-level standards can fully reflect the great variety in achievement levels of students in any given classroom. However, the *Standards* do provide clear signposts along the way to the goal of college and career readiness for all students.

The Student Who is College and Career Ready in Reading, Writing, Speaking, Listening, and Language

The descriptions that follow are not standards themselves, but instead offer a portrait of students who meet the standards set out in this document. As students advance through the grades and master the standards in reading, writing, speaking, listening, and language, they are able to exhibit with increasing fullness and regularity these capacities of the literate individual.

- **They demonstrate independence.**

Students can, without significant scaffolding or support, comprehend and evaluate complex texts across a range of types and disciplines, and they can construct effective arguments and clearly convey intricate or multifaceted information. Likewise, students are independently able to discern a speaker's key points and request clarification if something is not understood. They ask relevant questions, build on others' ideas, articulate their own ideas, and ask for confirmation that they have been understood. Without prompting, they observe language conventions, determine word meanings, attend to the connotations of words, and acquire new vocabulary.

- **They build strong content knowledge.**

Students establish a base of knowledge across a wide range of subject matter by engaging with works of quality and substance. They become proficient in new areas through research and study. They read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. They refine and share their knowledge through writing and speaking.

- **They respond to the varying demands of audience, task, purpose, and discipline.**

Students consider their communication in relation to audience, task, purpose, and discipline. They appreciate nuances, such as how the composition of an audience should affect tone when speaking and how the connotations of words affect meaning. They also know that different disciplines call for different types of evidence (e.g., documentary evidence in history, experimental evidence in the sciences).

- **They comprehend as well as critique.**

Students are engaged and open-minded—but discerning—readers and listeners. They work diligently to understand precisely what an author or speaker is saying, but they also question an author's or speaker's assumptions and assess the veracity of claims.

- **They value evidence.**

Students cite specific evidence when offering an oral or written interpretation of a text. They use relevant evidence when supporting their own points in writing and speaking, making their reasoning clear to the reader or listener, and they constructively evaluate others' use of evidence.

- **They use technology and digital media strategically and capably.**

Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals.

- **They come to understand other perspectives and cultures.**

Students appreciate that the twenty-first-century classroom and workplace are settings in which people from often widely divergent cultures and who represent diverse experiences and perspectives must learn and work together. Students actively seek to understand other perspectives and cultures through reading and listening, and they are able to communicate effectively with people of varied backgrounds. They evaluate other points of view critically and constructively. Through reading great classic and contemporary works of literature representative of a variety of periods, cultures, and worldviews, students can vicariously inhabit worlds and have experiences much different than their own.

How to Read This Document

Overall Document Organization and Main Features

The *Standards* comprise three main sections: a comprehensive K–5 section and two content area–specific sections for grades 6–12, one in English language arts and one in history/social studies and science.

Each section is divided into Reading, Writing, Speaking and Listening, and Language *strands*. Each strand is headed by a set of *College and Career Readiness (CCR) Standards* that is identical across all grades and content areas. The uniformity of the CCR Standards provides a consistent point of reference for educators, facilitating schoolwide goal setting and professional development.

CCR Standards: The basis for the K–12 Standards

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the College and Career Readiness (CCR) Standards in each strand. Each *grade-specific standard* (as these standards will be collectively referred to) corresponds to a particular CCR Standard. Put another way, each CCR Standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate terms.

Who is responsible for which portion of the Standards

A single K–5 section sets CCR and grade-specific standards for reading, writing, speaking, listening, and language across the curriculum, reflecting the fact that most or all of the instruction students receive in these grades comes from one elementary school teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for the history/social studies and the science teacher. Each of these sections uses the same CCR Standards but also includes discipline-specific standards tuned to the literacy requirements of these disciplines. It is important to note that the literacy standards in history/social studies and science are meant to complement rather than supplant content standards in those disciplines.

Key Features of the Strands

Reading: Text complexity and the growth of comprehension

To foster students' ability to comprehend literary and informational texts of steadily increasing complexity, the *Standards* (starting formally in grade 2) define what proportion of the texts students read each year should come from a particular text complexity grade band (2–3, 4–5, 6–8, 9–10, or 11–12). Whatever they are reading, students must also show a steadily increasing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

Writing: Text types, responding to sources, and research

The *Standards* acknowledge the fact that whereas some writing skills, such as the ability to reflect purpose, task, and audience, are important for many types of writing, others are more properly part of writing narratives, informative and explanatory texts, or arguments. Beginning at grade 4, the *Standards* specify the sorts of writing over extended and shorter time frames that students in each grade are to produce in response to sources. Because of the centrality of writing to most forms of inquiry, research standards are primarily included in this strand.

Speaking and Listening: Flexible communication and interpersonal skills

Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to sift through and evaluate multiple points of view, listen thoughtfully in order to build on and constructively question the ideas of others while contributing their own ideas, and, where appropriate, reach agreement and common goals through teamwork.

Language: Conventions and vocabulary

The Conventions standards in the Language strand include the essential "rules" of formal written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The Vocabulary standards focus on both understanding words and their nuances and acquiring new words through conversation, reading, and being taught them directly.

Appendices

Appendix A contains supplementary material on reading text complexity, writing, speaking and listening, language conventions, and vocabulary. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels. Appendix C includes annotated writing samples demonstrating at least adequate performance at various grade levels.

Standards for English Language Arts and Literacy in History/Social Studies & Science

K–5

College and Career Readiness Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do in each grade and build toward the ten College and Career Readiness Standards.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

3. Analyze in detail where, when, why, and how events, ideas, and characters develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and explain how specific word choices shape meaning or tone.

5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section or chapter) relate to each other and the whole.

6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Synthesize and apply information presented in diverse ways (e.g., through words, images, graphs, and video) in print and digital sources in order to answer questions, solve problems, or compare modes of presentation.[1]

8. Delineate and evaluate the reasoning and rhetoric within a text, including assessing whether the evidence provided is relevant and sufficient to support the text's claims.

9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range and Level of Text Complexity

10. Read complex texts independently, proficiently, and fluently, sustaining concentration, monitoring comprehension, and, when useful, rereading.[2]

[1]Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.
[2]Proficiency in this standard is measured by students' ability to read a range of appropriately complex texts in each grade as defined on page 14.

Note on range and content of student reading

To build a foundation for college and career readiness, students must read widely and deeply from among a broad range of high-quality, increasingly challenging literary and informational texts. Through extensive reading of stories, dramas, poems, and myths from diverse cultures and different time periods, students gain literary and cultural knowledge as well as familiarity with various text structures and elements. By reading texts in history/social studies, science, and other disciplines, students build a foundation of knowledge in these fields that will also give them the background to be better readers in all content areas. Students can only gain this foundation when the curriculum is intentionally and coherently structured to develop rich content knowledge within and across grades. Students also acquire the habits of reading independently and closely, which are essential to their future success.

Reading Standards for Literature K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades.

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about details and events in a text.	**1.** Ask and answer questions about key details and events in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details and events in a text.
2. Retell familiar stories.	**2.** Retell stories, demonstrating understanding of the central message or lesson.	**2.** Paraphrase stories, fables, folktales, or myths from diverse cultures and determine their lessons or morals.
3. Identify characters, settings, and key events in a story.	**3.** Describe characters, settings, and key events in a story.	**3.** Describe how characters in a story respond to key events and conflicts.
Craft and Structure		
4. Ask questions about unknown words in a text.	**4.** Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	**4.** Identify words and phrases (e.g., regular beats, rhymes, and repeated lines) that supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	**5.** Distinguish major categories of writing from each other (e.g., stories and poems), drawing on a wide reading of a range of text types.	**5.** Refer to core elements of stories, plays, and myths, including characters, settings, and plots, when writing or speaking about a specific text.
6. Name the author and illustrator of a text and define the role of each.	**6.** Identify who is speaking at various points in a story, myth, fable, or narrative poem.	**6.** Distinguish between characters by speaking in a different voice for each character when reading aloud.
Integration of Knowledge and Ideas		
7. Relate pictures and illustrations to the overall story in which they appear.	**7.** Use pictures, illustrations, and details in a story to describe characters, events, or settings.	**7.** Explain how images and illustrations contribute to and clarify a story.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the adventures of characters in familiar stories.	**9.** Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.	**9.** Compare and contrast characters or events from different stories addressing similar themes.
Range and Level of Text Complexity		
10. Read emergent-reader literature texts with purpose and understanding.	**10.** Read independently, proficiently, and fluently literature texts appropriately complex for grade 1.	**10.** Read literature independently, proficiently, and fluently within the grades 2–3 text complexity band; read texts at the high end of the range with scaffolding as needed.

Reading Standards for Literature K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, explicitly using the text as the basis for the answers.	**1.** Draw on details and examples from a text to support statements about the text.	**1.** Quote from a text to support statements about the text.
2. Use key supporting details in stories, fables, folktales, or myths from diverse cultures to determine the lessons or morals.	**2.** Summarize a text and derive a theme of a story, drama, or poem from details in the text.	**2.** Determine a theme of a text, drawing on how characters in a story respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe the main characters in a story (e.g., their traits, motivations, or feelings) and explain how they contribute to the sequence of events.	**3.** Describe in detail a character, event, or setting, drawing on specific details in the text (e.g., from a character's thoughts, words, deeds, or interactions with others).	**3.** Compare and contrast two or more characters, events, or settings in a text, drawing on specific details.
Craft and Structure		
4. Interpret key words and phrases in a text, distinguishing literal from figurative language.	**4.** Understand words and phrases in a text that allude to significant characters found in mythology (e.g., *Herculean*), drawing on a wide reading of classic myths from a variety of cultures and periods.	**4.** Identify how metaphors and similes as well as rhymes and other repetitions of sounds (e.g., alliteration) supply meaning and rhythm in a specific verse or stanza of a poem.
5. Demonstrate understanding of common features of legends, myths, and folk- and fairytales (e.g., heroes and villains; quests or challenges) when writing or speaking about classic stories from around the world.	**5.** Explain major differences between poems and prose, and refer to the structural elements of poems (e.g., stanza, verse, rhythm, meter) when writing or speaking about specific poems.	**5.** Explain major differences between drama and prose stories, and refer to the structural elements of drama (e.g., casts of characters, setting descriptions, dialogue, stage directions, acts, scenes) when writing or speaking about specific works of dramatic literature.
6. Distinguish their own point of view from those of characters in a story.	**6.** Compare the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	**6.** Identify how a narrator's perspective or point of view influences how events are described.
Integration of Knowledge and Ideas		
7. Use information from illustrations and other visual elements in a text with the words to develop an understanding of the setting, characters, and plot.	**7.** Integrate information from several illustrations and other visual elements in a text with the words to develop an understanding of how the setting and characters change and the plot develops.	**7.** Explain how images, sounds, and movements contribute to an animated or live-action adaptation of a story, comparing that version to what they "see" or "hear" from reading the text.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the plots, settings, and themes of stories written by the same author about the same or similar characters (e.g., in books from a series).	**9.** Compare and contrast thematically similar tales, myths, and accounts of events from various cultures.	**9.** Compare the treatment of similar ideas and themes (e.g., opposition of good and evil) as well as character types and patterns of events in myths and other traditional literature from different cultures.
Range and Level of Text Complexity		
10. Read literature independently, proficiently, and fluently within the grades 2–3 text complexity band; read "stretch" texts in the grades 4–5 text complexity band with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 4–5 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently within the grades 4–5 text complexity band; read "stretch" texts in the grades 6–8 text complexity band with scaffolding as needed.

Reading Standards for Informational Text K–5

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about information and events a text.	**1.** Ask and answer questions about key information and events in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key information and events in a text.
2. Identify the main topic and main ideas of a text.	**2.** Identify the main topic, main ideas, and key details of a text.	**2.** Identify the main focus of a multiparagraph text as well as that of specific paragraphs within the text.
3. With prompting and support, describe the connection between two events or ideas in a text.	**3.** Describe the connection between two key events or ideas in a text.	**3.** Describe the connection between two or more historical events or scientific concepts in a text.
Craft and Structure		
4. Ask questions about unknown words in a text.	**4.** Learn and determine the meanings of words and phrases encountered in text relevant to a *grade 1 topic or subject area*.	**4.** Learn and determine the meanings of words and phrases encountered in text relevant to a *grade 2 topic or subject area*.
5. Locate basic information in a text.	**5.** Describe how a text groups information into general categories (e.g., cows, pigs, and horses are *farm animals*).	**5.** Know and use various text features (e.g., captions, headings, tables of contents, glossaries, indexes, electronic menus, icons) to locate key facts or information.
6. Name the author and illustrator of a text and define the role of each.	**6.** Distinguish between information provided by pictures or illustrations and that provided by the words in a text.	**6.** Identify the main purpose of a text, including what question the author aims to answer or what the author aims to explain or describe.
Integration of Knowledge and Ideas		
7. Relate pictures or illustrations to the overall text in which they appear.	**7.** Use pictures, illustrations, and details in a text to describe the key ideas.	**7.** Explain how images and illustrations contribute to and clarify a text.
8. With prompting and support, recognize cause-and-effect relationships in a text.	**8.** Identify cause-and-effect relationships in a text.	**8.** Describe how specific causes link key events or ideas together in a text.
9. With prompting and support, recognize basic similarities in and differences between two texts on the same topic (e.g., in illustrations or descriptions).	**9.** Identify similarities in and differences between two texts on the same topic (e.g., in illustrations or descriptions).	**9.** Describe similarities in and differences between two texts on the same topic.
Range and Level of Text Complexity		
10. Read emergent-reader informational texts with purpose and understanding.	**10.** Read independently, proficiently, and fluently informational texts appropriately complex for grade 1.	**10.** Read informational texts independently, proficiently, and fluently within the grades 2–3 text complexity band; read texts at the high end of the range with scaffolding as needed.

Reading Standards for Informational Text K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, explicitly using the text as the basis for the answers.	**1.** Draw on details and examples from a text to support statements about the text.	**1.** Quote from a text to support statements about the text.
2. Determine the main idea of a text and explain how it is supported by the key details.	**2.** Determine the main idea and supporting details of a text; summarize the text.	**2.** Determine two or more main ideas and how they are supported by details; summarize the text.
3. Describe the relationship between historical or scientific events or ideas in a text, using knowledge of connective devices that pertain to time, sequence, and cause and effect.	**3.** Describe the sequence of events in an historical or scientific account, including what happened and why, based on specific information in a text.	**3.** Explain the relationships between two or more historical events or scientific concepts by drawing on specific information from one or more texts.
Craft and Structure		
4. Learn and determine the meanings of general academic language and domain-specific words and phrases encountered in a text relevant to a *grade 3 topic or subject area*.	**4.** Learn and determine the meanings of general academic language and domain-specific words or phrases encountered in a text relevant to a *grade 4 topic or subject area*.	**4.** Learn and determine the meanings of general academic language and domain-specific words and phrases encountered in a text relevant to a *grade 5 topic or subject area*.
5. Use text features (e.g., bold print, key words, topic sentences, hyperlinks, electronic menus, icons) to locate information quickly and efficiently.	**5.** Use text features and search tools to locate and process information relevant to a given topic.	**5.** Describe how events, ideas, or information are organized (e.g., chronology, comparison, cause and effect) in a whole text or in part of a text.
6. Compare what is presented in a text with relevant prior knowledge and beliefs, making explicit what is new or surprising.	**6.** Compare an eyewitness account to a secondhand account of the same event or topic.	**6.** Analyze two accounts of the same event or topic and describe important similarities and differences in the details they provide.
Integration of Knowledge and Ideas		
7. Integrate information from illustrations and other visual elements (e.g., maps, photographs) in print and digital texts as an aid to understanding where, when, why, and how key events occur.	**7.** Interpret factual information presented graphically or visually (e.g., in charts, diagrams, time lines, animations, and interactive elements) and explain how the information contributes to understanding a print or digital text.	**7.** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
8. Describe the logical connection between paragraphs and between sentences in a text (e.g., comparison, sequence, example).	**8.** Explain how an author uses evidence to support his or her claims in a text.	**8.** Explain how an author uses evidence to support his or her claims in a text, identifying what evidence supports which claim(s).
9. Compare and contrast information drawn from two texts on the same subject.	**9.** Describe how two or more texts on the same subject build on one another; provide a coherent picture of the information they convey.	**9.** Integrate information from several texts on the same subject in order to write or speak about the subject knowledgeably.
Range and Level of Text Complexity		
10. Read informational texts independently, proficiently, and fluently within the grades 2–3 text complexity band; read "stretch" texts in the grades 4–5 text complexity band with scaffolding as needed.	**10.** Read informational texts independently, proficiently, and fluently within the grades 4–5 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read informational texts independently, proficiently, and fluently within the grades 4–5 text complexity band; read "stretch" texts in the grades 6–8 text complexity band with scaffolding as needed.

Reading Standards: Foundational Skills (K–3)

These standards are directed toward fostering students' understanding and working knowledge of concepts of print, the alphabetic principle, and other basic conventions of the English writing system. These Foundational Skills are not an end in and of themselves; rather, they are necessary and important components of an effective, comprehensive reading program designed to develop proficient readers with the capacity to comprehend texts across a range of types and disciplines.

Kindergartners:

Print Concepts

1. Demonstrate understanding of the organization and basic features of print.

a. Identify the front cover, back cover, and title page of a book.
b. Follow words from left to right, top to bottom, and page by page.
c. Understand that words are separated by spaces in print.
d. Recognize and name all upper- and lowercase letters of the alphabet.

Phonological Awareness

2. Demonstrate understanding of spoken words, syllables, and phonemes.

a. Recite and produce rhyming words.
b. Count, pronounce, blend, and segment syllables in spoken words.
c. Count individual words in spoken phrases or simple sentences.
d. Blend and segment consonants and rimes of spoken words (*/g/ - /oat/*, */bl/ - /ack/*).
e. Demonstrate phonemic awareness by isolating and pronouncing the initial, medial vowel, and final phonemes (sounds) in three-phoneme (CVC) words (e.g., */save/*, */ham/*).[1] (This does not include CVCs ending with */l/*, */r/*, or */x/*.)
f. Add or substitute individual phonemes in simple, one-syllable words to make new words (e.g., */at/* → */sat/* → */mat/* → */map/*).

Grade 1 students:

1. (Not applicable)

2. Demonstrate understanding of spoken words, syllables, and phonemes.

a. Aurally distinguish long from short vowel sounds in spoken single-syllable words (e.g., */tap/* vs. */tape/*, */sock/* vs. */soak/*, */sit/* vs. */sight/*).
b. Orally produce single-syllable words by blending phonemes, including consonant blends (e.g., */cats/*, */black/*, */blast/*).
c. Isolate and pronounce initial, medial vowel, and final phonemes (sounds) in spoken single-syllable words (e.g., *fast*, *fast*, *fast*).
d. Segment spoken single-syllable words into their complete sequence of individual phonemes (e.g., lap: /l/-/a/-/p/→ /f/-/l/-/a/-/p/).

[1]Words, syllables, or phonemes written in /slashes/refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

Reading Standards: Foundational Skills (K–3)

Kindergartners:	Grade 1 students:	Grade 2 students:	Grade 3 students:
Phonics and Word Recognition			
3. Know and apply grade-level phonics and word analysis skills in decoding words. a. Demonstrate basic knowledge of letter-sound correspondences by producing the primary or most frequent sound for each consonant. b. Associate the long and short sounds with the graphemes for the five major vowels. c. Read at least twenty-five very-high-frequency words by sight (e.g., *the, of, to, you, she, my, is, are, do, does*). d. Distinguish between similarly spelled words by identifying the sounds of the letters that differ (e.g., *bat* vs. *sat*, *cat* vs. *can*, *hit* vs. *hot*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs (e.g., *-ll, -ck, wr-, sh*). b. Decode regularly spelled one-syllable words (e.g., *lock, much, see, rain, slide, bake, bring*). c. Know final *-e* (e.g., *take, side*) and common vowel team conventions (e.g., *rain, day, week, seat, road, show*) for representing long vowel sounds. d. Use knowledge that every syllable must have a vowel sound to determine the number of syllables in a printed word. e. Decode two-syllable words following basic patterns (e.g., *rabbit*) by breaking the words into syllables. f. Read words with inflectional endings (e.g., *-s, -es, -ed, -ing, -er, -est*). g. Recognize and read grade-appropriate irregularly spelled words (e.g., *said, were, could, would, their, there, through, none, both*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Distinguish long and short vowels when reading regularly spelled one-syllable words (e.g., *hop* vs. *hope*, *men* vs. *mean*, *fell* vs. *feel*, *bend* vs. *bead*). b. Know spelling-sound correspondences for additional common vowel teams (e.g., *loud, cow, look, loop, boy, boil*). c. Decode regularly spelled two-syllable words with long vowels (e.g., *surprise, remain, needle, baby, paper*). d. Decode words with common prefixes and suffixes (e.g., *unhappy, carefully, goodness, unbutton*). e. Identify words with inconsistent but common spelling-sound correspondences (e.g., *heat* vs. *head*, *roll* vs. *doll*, *hint* vs. *hind*). f. Recognize and read grade-appropriate irregularly spelled words (e.g., *through, eyes, busy, ocean, island, people*).	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Identify and know the meaning of the most common prefixes and derivational suffixes (e.g., *un-, re-, mis-, -ful, -less, -able*). b. Decode words with common Latin suffixes (e.g., *-tion/-sion, -ture, -tive/-sive, -ify, -ity, -ment*). c. Decode multisyllable words (e.g., *supper, chimpanzee, refrigerator, terrible, frightening*). d. Read grade-appropriate irregularly spelled words (e.g., *although, science, stomach, machine*).
Fluency			
4. Read with sufficient accuracy and fluency to support comprehension. a. Read emergent-reader texts with purpose and understanding.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	**4.** Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level text orally with accuracy, appropriate rate, and expression on successive readings c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Range and Level of Text Complexity for Student Reading by Grade (Standard 10)

Students demonstrate proficiency in reading texts at the following ranges of text complexity to progress on a path to college and career readiness.

K (See specific exemplars.)

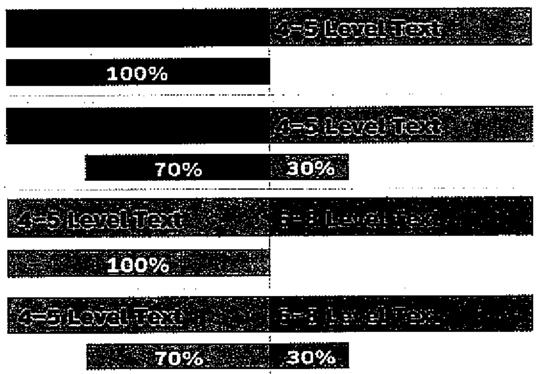
1

2 **In grade 2**, students focus on reading texts independently in the grades 2–3 text complexity band, with scaffolding likely required for texts at the high end of the range.

3 **In grade 3**, students focus on reading texts independently in the grades 2–3 text complexity band (70 percent) and are introduced to texts in the grades 4–5 text complexity band as "stretch" texts (30 percent), which will likely require scaffolding.

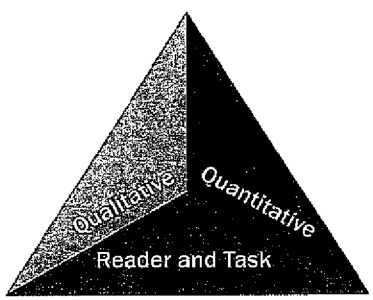
4 **In grade 4**, students focus on reading texts independently in the grades 4–5 text complexity band, with scaffolding likely required for texts at the high end of the range.

5 **In grade 5**, students focus on reading independently in the grades 4–5 text complexity band (70 percent) and are introduced to texts in the grades 6–8 text complexity band as "stretch" texts (30 percent), which will likely require scaffolding.



Note: In any given classroom, the actual range of students' reading ability could be greater than the proposed range. Some students will require extra time and intense support and scaffolding to enable them to read grade-level material, whereas other students will be ready for—and should be encouraged to read—more advanced texts.

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity, and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Matching reader to text and task: Reader knowledge, motivation, and interests as well as the complexity generated by the tasks to be assigned and the questions to be posed

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

Range of Text Types for K–5

Students in K–5 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	**Drama**	**Poetry**	**Literary Nonfiction, History/Social Studies, and Science and Technical Texts**
Includes children's adventure stories, folktales, legends, fables, fantasy, realistic fiction, and myth	Includes staged dialogue and brief familiar scenes	Includes nursery rhymes and the subgenres of the narrative poem, limerick, and free verse poem	Includes biographies and autobiographies; books about history, social studies, science, and the arts; and digital media sources on a range of topics

College and Career Readiness Standards for Writing

The K–5 standards on the following pages define what students should understand and be able to do in each grade and build toward the ten College and Career Readiness Standards.

Text Types and Purposes[1]

1. Write arguments to support a substantive claim with clear reasons and relevant and sufficient evidence.
2. Write informative/explanatory texts to convey complex information clearly and accurately through purposeful selection and organization of content.
3. Write narratives to convey real or imagined experiences, individuals, or events and how they develop over time.

Production and Distribution of Writing

4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.
5. Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce, publish, and interact with others about writing.

Research to Build Knowledge

7. Perform short, focused research projects as well as more sustained research in response to a focused research question, demonstrating understanding of the material under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate and cite the information while avoiding plagiarism.
9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.[3]

[1] These broad categories of writing include many subgenres. See Appendix A for definitions of key writing types.
[2] See "Conventions" in Language, pages 22–26, for specific editing expectations.
[3] This standard is measured by the proficiency of student writing products.

Note on range and content of student writing

To build a foundation for college and career readiness, students need to learn to use writing as a way of offering and supporting opinions, demonstrating understanding of the subjects they are studying, and conveying thoughts, feelings, and real and imaginary experiences. They learn to appreciate that a key purpose of writing is to communicate clearly to an external, sometimes unfamiliar audience, and they begin to adapt the form, content, and style of their writing to accomplish a particular purpose and task. They develop the capacity to build knowledge on a subject through research projects and to respond analytically to literary and informational sources. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications. Growth in writing ability is characterized by an increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas. At the same time, the content and sources that students address in their writing grow in demand every year.

Kindergartners:	Grade 1 students:	Grade 2 students:
Text Types and Purposes		
1. Use a combination of drawing, dictating, and writing to compose opinions in which they tell a reader the name of a book or the topic they are "writing" about and give an opinion about the topic (e.g., *My favorite book is . . .*).	**1.** Write opinions in which they introduce the topic or the name of the book they are writing about, state an opinion, and provide a reason for their opinion.	**1.** Write opinions in which they introduce the topic or book(s) directly, state an opinion, provide reasons and details to support opinions, use words to link opinions and reason(s) (e.g., *because*, *and*, *also*), and provide a sense of closure.
2. Use a combination of drawing, dictating, and writing to compose informative and explanatory texts in which they name what they are "writing" about and share some information about it.	**2.** Write informative and explanatory texts in which they name a topic, supply some facts relevant to the topic, and provide some sense of closure.	**2.** Write informative and explanatory texts in which they introduce a topic, use facts and definitions to develop points, present similar information together using headers to signal groupings when appropriate, and provide a concluding sentence or section.
3. Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order that they occurred, and provide a reaction to what happened.	**3.** Write narratives in which they include at least two or more appropriately sequenced events, use time cue words to signal event order, and provide some details and a sense of closure.	**3.** Write narratives in which they recount a well-elaborated event or series of events, use temporal words and phrases to signal event order, include details to tell what the narrator did, thought, and felt, and provide closure.
Production and Distribution of Writing		
4. (Begins in grade 3)	**4.** (Begins in grade 3)	**4.** (Begins in grade 3)
5. With guidance and support from adults, add details to strengthen writing as needed through revision.	**5.** With guidance and support from adults, add details to strengthen writing as needed through revision.	**5.** With guidance from adults, strengthen writing as needed by revising and editing.
6. (Begins in grade 2)	**6.** (Begins in grade 2)	**6.** With guidance from adults, use technology to produce writing.
Research to Build Knowledge		
7. (Begins in grade 1)	**7.** Participate in shared research and writing projects (e.g., exploring a number of books on a given topic).	**7.** Participate in shared research and writing projects (e.g., exploring a number of books on a given topic).
8. Gather information from experiences or provided text sources to answer a specific question.	**8.** Gather information from experiences or provided text sources to answer a specific question.	**8.** Gather information from experiences or provided text sources to answer a specific question.
9. (Begins in grade 4)	**9.** (Begins in grade 4)	**9.** (Begins in grade 4)
Range of Writing		
10. (Begins in grade 4)	**10.** (Begins in grade 4)	**10.** (Begins in grade 4)

Writing Standards K–5

Text Types and Purposes

Grade 3 students:

1. Write opinions in which they:
   a. Introduce the topic or book(s) directly, state an opinion relative to the topic, and create an organizing structure that lists reasons.
   b. Provide reasons that support the opinion.
   c. Use appropriate words to link opinions and reason(s) (e.g., *because*, *therefore*, *in order to*, *since*, *for example*).
   d. Provide a sense of closure.

2. Write informative/explanatory pieces in which they:
   a. Introduce a topic and create an organizational structure that presents similar information together.
   b. Provide some details to develop points.
   c. Use linking words (e.g., *also*, *another*, *and*, *more*) to connect ideas within categories of information.
   d. Include a concluding sentence or section.

3. Write narratives in which they:
   a. Establish a situation, introduce a narrator and/or characters, and organize an event sequence that unfolds naturally.
   b. Employ dialogue and descriptions of characters' actions, thoughts, and feelings.
   c. Use temporal words and phrases to signal event sequence.
   d. Provide a sense of closure.

Grade 4 students:

1. Write opinions in which they:
   a. Introduce an opinion about a concrete issue or topic and create an organizing structure where related ideas are grouped to support the writer's purpose.
   b. Provide reasons that are supported by facts and details.
   c. Link reasons and details together using words and phrases (e.g., *so*, *then*, *for instance*, *in addition*).
   d. Adopt an appropriate style for sharing and defending an opinion.
   e. Provide a concluding statement or section.

2. Write informative/explanatory pieces in which they:
   a. State the topic clearly and group related information in paragraphs and sections.
   b. Develop the topic using facts, concrete details, quotations, or other information and examples.
   c. Use appropriate links to join ideas within categories of information.
   d. Employ domain-specific vocabulary when appropriate.
   e. Provide a conclusion related to the information or explanation offered.

3. Write narratives in which they:
   a. Orient the reader by establishing a situation, introduce a narrator and/or characters, and organize an event sequence that unfolds naturally.
   b. Use narrative techniques such as dialogue and description to develop events and show the characters' external behaviors and internal responses to events.
   c. Use a variety of temporal words and phrases to manage the sequence of events.
   d. Use concrete and sensory words and phrases to convey events and experiences precisely.
   e. Provide a satisfying conclusion that follows from the narrative's events.

Grade 5 students:

1. Write opinions in which they:
   a. Introduce an opinion about a concrete issue or topic and create an organizing structure where ideas are logically grouped to support the writer's purpose.
   b. Provide logically ordered reasons that are supported by facts and details.
   c. Link reasons and details together using words, phrases, and clauses (e.g., *consequently*, *generally*, *specifically*).
   d. Adopt an appropriate style for sharing and defending an opinion.
   e. Provide a concluding statement or section.

2. Write informative/explanatory pieces in which they:
   a. State the topic clearly, provide a general observation and focus, and group related information logically.
   b. Develop the topic using relevant facts, concrete details, quotations, or other information and examples.
   c. Use appropriate links to join ideas within and across categories of information.
   d. Employ domain-specific vocabulary and some technical terms when appropriate.
   e. Provide a conclusion related to the information or explanation offered.

3. Write narratives in which they:
   a. Engage and orient the reader by establishing a situation, introduce a narrator and/or characters, and create an organization that sequences events naturally and logically.
   b. Use narrative techniques such as dialogue, pacing, and description to develop events and show characters' external behaviors and internal responses.
   c. Use a variety of temporal words, phrases, and clauses to manage the sequence of events.
   d. Use well-chosen words and phrases to convey events and experiences precisely.
   e. Provide a satisfying conclusion that follows from the narrative's events.

Writing Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Production and Distribution of Writing		
4. (Begins in grade 4).	**4.** Produce coherent and clear writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)	**4.** Produce coherent and clear writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With guidance and support from peers and adults, strengthen writing as needed by revising and editing.	**5.** With guidance and support from peers and adults, strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. With guidance and support from adults, use technology to produce and publish writing.	**6.** With guidance and support from adults, use technology to produce, publish, and interact with others about writing.	**6.** With guidance and support from adults, use technology, including the Internet, to produce, publish, and interact with others about writing.
Research to Build Knowledge		
7. Perform short, focused research tasks that build knowledge about a topic.	**7.** Perform short, focused research tasks that build knowledge through investigation of different aspects of a single topic.	**7.** Perform short, focused research tasks that build knowledge through investigation of different aspects of a topic using several sources.
8. Gather information from experience as well as print and digital resources, take simple notes on sources, and sort evidence into provided categories.	**8.** Gather relevant information from experience as well as print and digital sources, take notes and categorize evidence, restate information in written text, and provide basic bibliographic information.	**8.** Gather relevant information from experience as well as print and digital sources; summarize or paraphrase information in notes and finished work, and provide basic bibliographic information.
9. (Begins in grade 4)	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 4 reading standards* to informational texts (e.g., "Explain how an author uses evidence to support his or her claims in a text"). b. Apply *grade 4 reading standards* to literature (e.g., "Describe in detail a character, event, or setting, drawing on specific details in the text (e.g., from a character's thoughts, words, deeds, and interactions with others").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 5 reading standards* to informational texts (e.g., "Explain how an author uses evidence to support his or her claims in a text, identifying what evidence supports which claim(s)"). b. Apply *grade 5 reading standards* to literature (e.g., "Compare and contrast two or more characters, events, or settings in a text, drawing on specific details").
Range of Writing		
10. (Begins in grade 4)	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

College and Career Readiness Standards for Speaking and Listening

The K–5 standards on the following pages define what students should understand and be able to do in each grade and build toward the six College and Career Readiness Standards.

Comprehension and Collaboration

1. Participate effectively in a range of interactions (one-on-one and in groups), exchanging information to advance a discussion and to build on the input of others.
2. Integrate and evaluate information from multiple oral, visual, or multimodal sources in order to answer questions, solve problems, or build knowledge.
3. Evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, evidence, and reasoning in a clear and well-structured way appropriate to purpose and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To build a foundation for college and career readiness, students must have ample opportunities to take part in a variety of rich, structured conversations—whole class, small group, and with a partner. Being productive members of these conversations requires that students contribute accurate, relevant information; respond to and develop what others have said; make comparisons and contrasts; and analyze and synthesize a multitude of ideas in various domains.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.

Speaking and Listening Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Kindergartners:	Grade 1 students:	Grade 2 students:
Comprehension and Collaboration		
1. Participate in conversations with peers and adults about *kindergarten topics and texts* being studied in class. a. Listen to others and take turns speaking. b. Continue a conversation through several exchanges.	**1.** Initiate and participate in conversations with peers and adults about *grade 1 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions, such as listening to others, speaking one at a time, and gaining the floor in respectful ways. b. Respond to the comments of others through multiple exchanges. c. Ask questions to clear up confusion about a topic.	**1.** Engage in group discussions on *grade 2 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions, such as listening to others, speaking one at a time, and gaining the floor in respectful ways. b. Stay on topic by linking their own additions to the conversation to the previous remarks of others. c. Ask for clarification and further explanation as needed. d. Extend their ideas and understanding in light of the discussions.
2. Confirm understanding of information presented orally or through media by asking and answering questions about key details.	**2.** Confirm understanding of information presented orally or through media by restating key elements and asking and answering questions about key details.	**2.** Retell key details or ideas presented orally or through media.
3. Ask questions to get information, seek help, or clarify something that is not understood.	**3.** Ask questions to get information, clarify something that is not understood, or gather additional information.	**3.** Ask and answer questions about information presented orally or visually in order to deepen their understanding or clarify comprehension.
Presentation of Knowledge and Ideas		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	**4.** Describe familiar people, places, things, and events with relevant details, expressing ideas and feelings clearly.	**4.** Recount stories or experiences with appropriate facts and descriptive details.
5. (Begins in grade 4)	**5.** (Begins in grade 4)	**5.** (Begins in grade 4)
6. (Begins in grade 1)	**6.** Produce complete sentences when appropriate to task and situation, using correct verb tenses to convey a sense of past, present, and future. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Produce complete sentences when appropriate to task and situation to provide requested detail or clarification, ensuring subject-verb agreement and correct use of irregular plural nouns. (See "Conventions" in Language, pages 22–26, for specific demands.)

Speaking and Listening Standards K–5

Grade 3 students:	Grade 4 students:	Grade 5 students:
Comprehension and Collaboration		
1. Initiate and engage in group discussions on *grade 3 topics and texts* being studied in class. a. Follow agreed-upon rules for discussions and carry out assigned roles in small-group discussions. b. Pose relevant questions and link their own additions to the conversation to the previous remarks of others. c. Extend their ideas and understanding in light of the discussions.	**1.** Initiate and engage in group discussions on *grade 4 topics and texts* being studied in class. a. Come to discussions prepared, having read required material; in discussions, explicitly draw on that material and other information known about the topic. b. Pose and respond to questions as well as build on the ideas of previous speakers. c. Acknowledge new information provided by others and incorporate it into their own thinking as appropriate.	**1.** Initiate and engage in group discussions on *grade 5 topics and texts* being studied in class. a. Come to discussions prepared, having read the required material; in discussions, explicitly draw on that material and other information known about the topic. b. Respond to questions with elaboration, make comments that contribute to the topic, and build on the ideas of previous speakers. c. Ask questions to clarify or follow up on ideas or information presented orally or through media. d. Draw conclusions based on the ideas of others and incorporate them into their own thinking as appropriate.
2. Identify the main ideas and supporting details of information presented graphically, visually, orally, or multimodally.	**2.** Paraphrase the key information or ideas presented graphically, visually, orally, or multimodally.	**2.** Summarize the key ideas and supporting details presented graphically, visually, orally, or multimodally.
3. Ask and answer questions about presentations, offering appropriate elaboration and detail.	**3.** Identify the claims and supporting evidence used by a speaker or a presenter.	**3.** Summarize the claims made by a speaker or presenter and explain how each claim is supported with evidence.
Presentation of Knowledge and Ideas		
4. Report on a topic or recount stories or experiences with appropriate facts and descriptive details.	**4.** Report on events, topics, or texts in an organized manner, using appropriate, specific facts and descriptive details to support main ideas.	**4.** Report on events, topics, or texts in a focused, organized manner, sequencing ideas logically and using appropriate, specific facts, details, examples, or other information to develop main ideas.
5. (Begins in grade 4)	**5.** Incorporate visual displays and digital media into presentations when appropriate.	**5.** Incorporate visual displays and digital media into presentations when appropriate.
6. Speak coherently, employing a variety of tenses and ensuring subject-verb and pronoun-antecedent agreement. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See "Conventions" in Language, pages 22–26, for specific demands.)	**6.** Adapt speech to a variety of contexts and communicative tasks, using formal English when appropriate to task and situation. (See "Conventions" in Language, pages 22–26, for specific demands.)

College and Career Readiness Standards for Language

The K–5 standards on the following pages define what students should understand and be able to do in each grade and build toward the six College and Career Readiness Standards.

Conventions in Writing and Speaking

1. Demonstrate a command of the conventions of standard English grammar and usage.
2. Demonstrate a command of the conventions of capitalization, punctuation, and spelling.
3. Make effective choices about language, punctuation, and sentence structure for meaning and style.

Vocabulary Acquisition and Use

4. Determine the meaning of words and phrases encountered through conversations, reading, and media use.
5. Understand the nuances of and relationships among words.
6. Use grade-appropriate general academic vocabulary and domain-specific words and phrases purposefully acquired as well as gained through conversation and reading and responding to texts.

Note on range and content of student language use

To build a foundation for college and career readiness in language, students must gain control over many conventions of writing and speaking as well as acquire new words and understand those that they encounter through listening, reading, and media use. They must be able to determine the meaning of grade-appropriate words, come to appreciate that words have shadings of meaning and relationships to other words, and expand their vocabulary through conversation and (especially in later grades) through reading and by being taught words directly in the course of studying subject matter. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are

Language Standards K–5

Following are the standards for K–5, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Conventions in Writing and Speaking

Kindergartners:

1. Observe conventions of grammar and usage.
   a. Print most upper- and lowercase letters.
   b. Write a letter or letters for most consonant and short-vowel sounds (phonemes).
   c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog*, *dogs*; *wish*, *wishes*) when speaking.
   d. Understand and use the most frequently occurring prepositions in English (e.g., *to/from*, *in/out*, *on/off*, *for*, *of*, *by*, *with*) when speaking.
   e. Produce and expand complete sentences in shared language and writing activities.
   f. Understand and use question words (e.g., *who*, *what*, *where*, *when*, *why*, *how*) in discussions.
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Capitalize the first word in a sentence and the pronoun *I*.
   b. Name and identify end punctuation, including periods, question marks, and exclamation points.
   c. Spell simple words phonetically using knowledge of sound-letter relationships.
3. (Begins in grade 3)

Grade 1 students:

1. Observe conventions of grammar and usage.
   a. Print all upper- and lowercase letters.
   b. Use singular and plural nouns with matching verbs in simple sentences (e.g., *He hops*; *We hop*).
   c. Use subject, object, and possessive pronouns in speaking and writing (e.g., *I*, *me*, *my*; *they*, *them*, *their*).
   d. Use verbs to convey a sense of past, present, and future in writing and speaking (e.g., *Yesterday I walked home*; *Today I walk home*; *Tomorrow I will walk home*).
   e. Understand and use frequently occurring prepositions in English (e.g., *during*, *beyond*, *toward*).
   f. Produce and expand complete declarative, interrogative, imperative, and exclamatory sentences in response to questions and prompts.
   g. Understand that, minimally, every sentence must be about something (the subject) and tell something (the predicate) about its subject.
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Capitalize names, places, and dates.
   b. Use end punctuation for sentences, including periods, question marks, and exclamation points.
   c. Use commas in dates and to separate single words in a series.
   d. Use conventional spelling for words with common spelling patterns and for common irregular words.
   e. Use phonetic spellings for untaught words, drawing on phonemic awareness and spelling conventions.
   f. Form new words through addition, deletion, and substitution of sound and letters (e.g., *an* → *man* → *mat* → *mast* → *must* → *rust* → *crust*).
3. (Begins in grade 3)

Grade 2 students:

1. Observe conventions of grammar and usage.
   a. Form common irregular plural nouns (e.g., *feet*, *children*, *teeth*, *mice*, *fish*).
   b. Form the past tense of common irregular verbs (e.g., *sat*, *hid*, *told*).
   c. Produce and expand complete declarative, interrogative, imperative, and exclamatory sentences.
   d. Produce and expand complete sentences to provide requested detail or clarification.
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Capitalize holidays, product names, geographic names, and important words in titles.
   b. Use commas in greetings and closings of letters.
   c. Use apostrophes to form contractions and common possessives.
   d. Generalize learned spelling patterns when writing words (e.g., *cage* → *badge*; *boy* → *boil*; *paper* → *copper*).
   e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
3. (Begins in grade 3)

Kindergartners:

Vocabulary Acquisition and Use

4. Determine word meanings (*based on kindergarten reading*).
   a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.
   b. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*).
   c. Use the most common affixes in English (e.g., *-ed*, *-s*, *re-*, *un-*, *pre-*, *-ful*, *-less*) as a clue to the meaning of an unknown word.

5. Understand word relationships.
   a. Build real-life connections between words and their use (e.g., note places at school that are *colorful*).
   b. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk*, *march*, *strut*, *prance*) by acting out the meanings.
   c. Use common adjectives to distinguish objects (e.g., the *small blue* square; the *shy white* rabbit).
   d. Demonstrate understanding of common verbs and adjectives by relating them to their opposites (antonyms).

6. Use newly learned words acquired through conversations, reading, and responding to texts.

Grade 1 students:

4. Determine word meanings (*based on grade 1 reading*).
   a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent.
   b. Use sentence-level context as a clue to the meaning of an unknown word.
   c. Use common affixes in English as a clue to the meaning of an unknown word.
   d. Define words by category and by one or more key attributes (e.g., a *duck* is a bird that swims; a *tiger* is a large cat with stripes).
   e. Demonstrate understanding of the concept of multiple-meaning words (e.g., *match*, *kind*, *play*) by identifying meanings of some grade-appropriate examples of such words.

5. Understand word relationships.
   a. Build real-life connections between words and their use (e.g., note places at home that are *cozy*).
   b. Distinguish shades of meaning among verbs differing in manner (e.g., *look*, *peek*, *glance*, *stare*, *glare*, *scowl*) and adjectives differing in intensity (e.g., *large*, *gigantic*) by defining, choosing, or acting out the meanings.

6. Use newly learned words acquired through conversations, reading, and responding to texts.

Grade 2 students:

4. Determine word meanings (*based on grade 2 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as understanding how the word is used in a sentence; analyzing the word's sounds, spelling, and meaningful parts; and consulting glossaries or beginning dictionaries, both print and digital.
   b. Explain the meaning of grade-appropriate compound words (e.g., *birdhouse*, *lighthouse*, *housefly*; *bookshelf*, *notebook*, *bookmark*).
   c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *addition*, *additional*).
   d. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/unhappy*, *tell/retell*).

5. Understand word relationships.
   a. Build real-life connections between words and their use (e.g., describe foods that are *spicy* or *juicy*).
   b. Distinguish shades of meaning among related verbs (e.g., *toss*, *throw*, *hurl*) and related adjectives (e.g., *thin*, *slender*, *skinny*, *scrawny*).

6. Use newly learned words acquired through conversations, reading, and responding to texts.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Conventions in Writing and Speaking		
1. Observe conventions of grammar and usage. a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in specific sentences. b. Form and use the simple (e.g., *I walked*, *I walk*, *I will walk*) verb tenses. c. Ensure subject-verb and pronoun-antecedent agreement.* d. Produce simple, compound, and complex sentences.	**1.** Observe conventions of grammar and usage. a. Form and use the progressive (e.g., *I was walking*, *I am walking*, *I will be walking*) verb aspects. b. Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences.* c. Produce complete sentences, avoiding rhetorically poor fragments and run-ons.* d. Correctly use frequently confused words (e.g., *to*, *too*, *two*; *there*, *their*).*	**1.** Observe conventions of grammar and usage. a. Form and use the perfect (e.g., *I had walked*, *I have walked*, *I will have walked*) verb aspects. b. Recognize and correct inappropriate shifts in verb tense and aspect.*
2. Observe conventions of capitalization, punctuation, and spelling. a. Use correct capitalization. b. Use quotation marks in dialogue. c. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., *sitting*, *smiled*, *cries*, *happiness*). d. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. e. Consult reference materials, including dictionaries, as needed to check and correct spellings.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use quotation marks to mark direct speech and quotations from a text. b. Spell grade-appropriate words correctly, consulting references as needed.	**2.** Observe conventions of capitalization, punctuation, and spelling. a. Use punctuation to separate items in a series.* b. Use a comma to separate an introductory element from the rest of the sentence. c. Use underlining, quotation marks, or italics to indicate titles of works. d. Spell grade-appropriate words correctly, consulting references as needed.
3. Make effective language choices. a. Use words for effect.*	**3.** Make effective language choices. a. Use punctuation for effect.* b. Maintain consistency in style and tone.* c. Choose words and phrases to convey ideas precisely.*	**3.** Make effective language choices. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.*

* Conventions standards noted with an asterisk (*) need to be revisited by students in subsequent grades as their writing and speaking grows in sophistication. See chart on page 27 for a complete listing.

Grade 3 students:

Vocabulary Acquisition and Use

4. Determine word meanings (*based on grade 3 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as understanding how the word is used in a sentence; analyzing the word's sounds, spelling, and meaningful parts; and consulting glossaries or beginning dictionaries, both print and digital.
   b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *company*, *companion*).
   c. Determine the meaning of the new word formed when a known affix is added to a known word (e.g., *agreeable/disagreeable*, *comfortable/uncomfortable*, *care/careless*, *heat/preheat*).
   d. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., *take steps*).
5. Understand word relationships.
   a. Build real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*).
   b. Distinguish among related words that describe states of mind or degrees of certainty (e.g., *knew*, *believed*, *suspected*, *heard*, *wondered*).
6. Use words that are in common, conversational vocabulary as well as grade-appropriate academic vocabulary and domain-specific words (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.

Grade 4 students:

4. Determine word meanings (*based on grade 4 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., definitions, examples, or restatements in text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital.
   b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *telegraph*, *photograph*, *autograph*).
   c. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*).
   d. Paraphrase common idioms, adages, and proverbs.
5. Understand word relationships.
   a. Build real-life connections between words and their various uses and meanings.
   b. Define relationships between words (e.g., how *ask* is like and unlike *demand*; what items are likely to be *enormous*).
   c. Distinguish a word from other words with similar but not identical meanings (synonyms).
6. Use grade-appropriate general academic vocabulary and domain-specific words and phrases (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.

Grade 5 students:

4. Determine word meanings (*based on grade 5 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., definitions, examples, or restatements in text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital.
   b. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *photograph*, *photosynthesis*).
   c. Interpret figurative language, including similes and metaphors.
   d. Explain the meaning of common idioms, adages, and proverbs.
5. Understand word relationships.
   a. Build real-life connections between words and their various uses and meanings.
   b. Define relationships between words (e.g., how *smirk* is like and unlike *smile*; what items are likely to be *vast*).
   c. Distinguish a word from other words with similar but not identical meanings (synonyms).
6. Use grade-appropriate general academic vocabulary and domain-specific words and phrases (in English language arts, history/social studies, and science) taught directly and acquired through reading and responding to texts.

English Language Arts Conventions Progressive Skills, By Standard

The following, marked with an asterisk (*) in the Conventions standards, are skills and understandings that require continued attention in higher grades (after their introduction in the grade listed below) as they are applied to increasingly sophisticated writing and speaking.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grades 9–10
1c. Ensure subject-verb and pronoun-antecedent agreement. **3a.** Choose words for effect.						
	1b. Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences. **1c.** Produce complete sentences, avoiding rhetorically poor fragments and run-ons. **1d.** Correctly use frequently confused words (e.g., *effect/affect*, *to/too/two*). **3a.** Use punctuation for effect. **3b.** Maintain consistency in style and tone. **3c.** Choose words and phrases to convey ideas precisely.					
		1b. Recognize and correct inappropriate shifts in verb tense and aspect. **2a.** Use punctuation to separate items in a series. **3a.** Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.				
			1b. Recognize and correct inappropriate shifts in pronoun number and person. **1c.** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents). **2a.** Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements. **3a.** Vary sentence patterns for meaning, reader/listener interest, and style.			
				1c. Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers. **3b.** Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.		
					1c. Recognize and correct inappropriate shifts in verb voice and mood.	
						1a. Use parallel structure in writing.

* Read-aloud
** Read-along

Texts Illustrating the Complexity, Quality, and Range of Student Reading K–5

Literature: Stories, Drama, Poetry	Informational Texts: Literary Nonfiction, History/Social Studies, Science/Technical Texts
▪ *Over in the Meadow* by John Langstaff (traditional) (c1800)* ▪ *A Boy, a Dog, and a Frog* by Mercer Mayer (1967) ▪ *Pancakes for Breakfast* by Tomie DePaola (1978) ▪ *A Story A Story* by Gail E. Haley (1970)* ▪ *Kitten's First Full Moon* by Kevin Henkes (2004)*	▪ *My Five Senses* by Aliki (1962)* ▪ *Truck* by Donald Crews (1980) ▪ *I Read Signs* by Tana Hoban (1987) ▪ *What Do You Do With a Tail Like This?* by Steve Jenkins & Robin Page (2003)* ▪ *Amazing Whales!* by Sarah L. Thomson (2005)*
▪ "Mix a Pancake" by Christina G. Rossetti (1893)** ▪ *Mr. Popper's Penguins* by Richard Atwater (1938)* ▪ *Little Bear* by Else Holmelund Minarik, illustrated by Maurice Sendak (1957)** ▪ *Frog and Toad Together* by Arnold Lobel (1971)** ▪ *Hi! Fly Guy* by Tedd Arnold (2006)	▪ *A Tree Is a Plant* by Clyde Robert Bulla, illustrated by Stacey Schuett (1960)** ▪ *My Five Senses* by Aliki (1962)** ▪ *Follow the Water from Brook to Ocean* by Arthur Dorros (1991)** ▪ *From Seed to Pumpkin* by Wendy Pfeffer, illustrated by James Graham Hale (2004)* ▪ *How People Learned to Fly* by Fran Hodgkins and True Kelley (2007)*
▪ "Who Has Seen the Wind?" by Christina G. Rossetti (1893) ▪ *Charlotte's Web* by E. B. White (1952)* ▪ *Sarah, Plain and Tall* by Patricia MacLachlan (1985) ▪ *Tops and Bottoms* by Janet Stevens (1995) ▪ *Poppleton in Winter* by Cynthia Rylant, illustrated by Mark Teague (2001)	▪ *A Medieval Feast* by Aliki (1983) ▪ *From Seed to Plant* by Gail Gibbons (1991) ▪ *The Story of Ruby Bridges* by Robert Coles (1995)* ▪ *A Drop of Water: A Book of Science and Wonder* by Walter Wick (1997) ▪ *Moonshot: The Flight of Apollo 11* by Brian Floca (2009)
• *Alice's Adventures in Wonderland* by Lewis Carroll (1865) • "Casey at the Bat" by Ernest Lawrence Thayer (1888) • *The Black Stallion* by Walter Farley (1941) • "Zlateh the Goat" by Isaac Bashevis Singer (1984) ▪ *Bud, Not Buddy* by Christopher Paul Curtis (1999) ▪ *The Birchbark House* by Louise Erdrich (1999) ▪ *Where the Mountain Meets the Moon* by Grace Lin (2009)	▪ *Discovering Mars* by Melvin Berger (1992) ▪ *Hurricanes: Earth's Mightiest Storms* by Patricia Lauber (1996) ▪ *A History of US* by Joy Hakim (2005) ▪ *Horses* by Seymour Simon (2006) ▪ *Quest for the Tree Kangaroo: An Expedition to the Cloud Forest of New Guinea* by Sy Montgomery (2006)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a wide range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of K–5 text complexity.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study that topic in depth. On the next page is an example of progressions of texts building knowledge across grade levels.

[1]Children at the kindergarten and grade 1 levels should be expected to read texts independently that have been specifically written to correlate to their reading level and their word knowledge. Many of the titles listed above are meant to supplement carefully structured independent reading with books to read along with a teacher or that are read aloud to students to build knowledge and cultivate a joy in reading.

Staying on Topic Within a Grade and Across Grades: How to Build Knowledge Systematically in English Language Arts K–5

Building knowledge systematically in English language arts is like giving children various pieces of a puzzle in each grade that, over time, will form one big picture. At a curricular or instructional level, texts—within and across grade levels—need to be selected around topics or themes that systematically develop the knowledge base of students. Within a grade level, there should be an adequate number of titles on a single topic that would allow children to study that topic for a sustained period. The knowledge children have learned about particular topics in early grade levels should then be expanded and developed in subsequent grade levels to ensure an increasingly deeper understanding of these topics. Children in the upper elementary grades will generally be expected to read these texts independently and reflect on them in writing. However, children in the early grades (particularly K–2) should participate in rich, structured conversations with an adult in response to the written texts that are read aloud, *orally* comparing and contrasting as well as analyzing and synthesizing, in the manner called for by the *Standards*.

Preparation for reading complex informational texts should begin at the very earliest elementary school grades. What follows is one example that uses domain-specific nonfiction titles across grade levels to illustrate how curriculum designers and classroom teachers can infuse the English language arts block with rich, age-appropriate content knowledge and vocabulary in history/social studies, science, and the arts. Having students listen to informational read-alouds in the early grades helps lay the necessary foundation for students' reading and understanding of increasingly complex texts on their own in subsequent grades.

Exemplar Texts on a Topic Across Grades	K	1	2–3	4–5
The Human Body Students can begin learning about the human body starting in kindergarten and then review and extend their learning during each subsequent grade.	The five senses and associated body parts ▪ *My Five Senses* by Aliki (1989) ▪ *Hearing* by Maria Rius (1985) ▪ *Sight* by Maria Rius (1985) ▪ *Smell* by Maria Rius (1985) ▪ *Taste* by Maria Rius (1985) ▪ *Touch* by Maria Rius (1985) Taking care of your body: Overview (hygiene, diet, exercise, rest) ▪ *My Amazing Body: A First Look at Health & Fitness* by Pat Thomas (2001) ▪ *Get Up and Go!* by Nancy Carlson (2008) ▪ *Go Wash Up* by Doering Tourville (2008) ▪ *Sleep* by Paul Showers (1997) ▪ *Fuel the Body* by Doering Tourville (2008)	Introduction to the systems of the human body and associated body parts ▪ *Under Your Skin: Your Amazing Body* by Mick Manning (2007) ▪ *Me and My Amazing Body* by Joan Sweeney (1999) ▪ *The Human Body* by Gallimard Jeunesse (2007) ▪ *The Busy Body Book* by Lizzy Rockwell (2008) ▪ *First Encyclopedia of the Human Body* by Fiona Chandler (2004) Taking care of your body: Germs, diseases, and preventing illness ▪ *Germs Make Me Sick* by Marilyn Berger (1995) ▪ *Tiny Life on Your Body* by Christine Taylor-Butler (2005) ▪ *Germ Stories* by Arthur Kornberg (2007) ▪ *All About Scabs* by GenichiroYagu (1998)	Digestive and excretory systems ▪ *What Happens to a Hamburger* by Paul Showers (1985) ▪ *The Digestive System* by Christine Taylor-Butler (2008) ▪ *The Digestive System* by Rebecca L. Johnson (2006) ▪ *The Digestive System* by Kristin Petrie (2007) Taking care of your body: healthy eating and nutrition ▪ *Good Enough to Eat* by Lizzy Rockwell (1999) ▪ *Showdown at the Food Pyramid* by Rex Barron (2004) Muscular, skeletal, and nervous systems ▪ *The Mighty Muscular and Skeletal Systems* Crabtree Publishing (2009) ▪ *Muscles* by Seymour Simon (1998) ▪ *Bones* by Seymour Simon (1998) ▪ *The Astounding Nervous System* Crabtree Publishing (2009) ▪ *The Nervous System* by Joelle Riley (2004)	Circulatory system ▪ *The Heart* by Seymour Simon (2006) ▪ *The Heart and Circulation* by Carol Ballard (2005) ▪ *The Circulatory System* by Kristin Petrie (2007) ▪ *The Amazing Circulatory System* by John Burstein (2009) Respiratory system ▪ *The Lungs* by Seymour Simon (2007) ▪ *The Respiratory System* by Susan Glass (2004) ▪ *The Respiratory System* by Kristin Petrie (2007) ▪ *The Remarkable Respiratory System* by John Burstein (2009) Endocrine system ▪ *The Endocrine System* by Rebecca Olien (2006) ▪ *The Exciting Endocrine System* by John Burstein (2009)

Standards for English Language Arts

6–12

College and Career Readiness Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do in each grade and build toward the ten College and Career Readiness Standards.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze in detail where, when, why, and how events, ideas, and characters develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and explain how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section or chapter) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Synthesize and apply information presented in diverse ways (e.g., through words, images, graphs, and video) in print and digital sources in order to answer questions, solve problems, or compare modes of presentation.[1]
8. Delineate and evaluate the reasoning and rhetoric within a text, including assessing whether the evidence provided is relevant and sufficient to support the text's claims.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range and Level of Text Complexity

10. Read complex texts independently, proficiently, and fluently, sustaining concentration, monitoring comprehension, and, when useful, rereading.[2]

[1]Please see "Research to Build Knowledge" in Writing and "Comprehension and Collaboration" in Speaking and Listening for additional standards relevant to gathering, assessing, and applying information from print and digital sources.
[2]Proficiency in this standard is measured by students' ability to read a range of appropriately complex text in each grade as defined on page 36.

Note on range and content of student reading

To become college and career ready, students must grapple with works of exceptional craft and thought whose range extends across genres, cultures, and centuries. Such works offer profound insights into the human condition and serve as models for students' own thinking and writing. Along with high-quality contemporary works, these texts should be chosen from among the founding U.S. documents, the classics of American literature, and the timeless dramas of Shakespeare. Through wide and deep reading of literature and literary nonfiction of steadily increasing sophistication, students gain a reservoir of literary and cultural knowledge, references, and images; the ability to evaluate intricate arguments; and the capacity to surmount the challenges posed by complex texts.

Reading Standards for Literature 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several sources of textual evidence when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite a wide range of evidence throughout the text when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.
2. Analyze how a theme or central idea develops over the course of a text, drawing on key details.	**2.** Analyze how two or more themes or central ideas in a text relate to one another, drawing on key details.	**2.** Analyze how recurring images or events contribute to the development of a theme or central idea in a text.
3. Describe how a story's plot unfolds (in a series of episodes or as a problem to be solved) as well as how characters adapt or change as they move toward a resolution.	**3.** Analyze how particular lines of dialogue or specific incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.	**3.** Analyze how elements of a story or drama interact (e.g., how plot and setting are integral to one another; how the setting affects characters).
Craft and Structure		
4. Interpret the figurative and connotative meanings of words and phrases as they are used in a text.	**4.** Interpret the figurative and connotative meanings of words and phrases as they are used in a text and describe in detail a specific word choice and its impact on meaning and tone.	**4.** Explain the comparisons an author makes through metaphors, allusions, or analogies in a text and analyze how those comparisons contribute to meaning.
5. Explain the effect of such devices as flashbacks and foreshadowing on the development of the plot and meaning of a text.	**5.** Describe how any given sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the plot or themes.	**5.** Compare a poem with a conventional structure, such as a sonnet, to a poem without a proscribed structure, such as a free verse poem.
6. Describe how an author establishes the point of view of the speaker or a character in a poem, drama, or story.	**6.** Analyze how an author presents the points of view of different characters in a story or drama, including their different reactions to the same person or event(s).	**6.** Explain how a difference in the perspective or knowledge of characters and the audience (e.g., created through the device of dramatic irony) produces suspense or humor.
Integration of Knowledge and Ideas		
7. Analyze how illustrations, diagrams, multimedia elements, and words contribute to the meaning and tone of a print or digital text (e.g., graphic novel, multimedia presentation of fiction).	**7.** Compare and contrast a text to its filmed, staged, or multimedia version, including examining some techniques unique to each medium (e.g., lighting, sound, color, camera focus and angles).	**7.** Analyze to what degree a filmed or live production of a drama or story stays faithful to or departs from the script or text.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Analyze stories in the same genre (e.g., mysteries, adventure stories), comparing and contrasting their approaches to similar themes and topics.	**9.** Analyze a specific case in which a modern work of fiction draws on patterns of events or character types found in traditional literature (e.g., the hero, the quest).	**9.** Compare a fictional portrayal of a time, place, or character to historical sources from the same period as a means of understanding how authors use or alter history.
Range and Level of Text Complexity		
10. Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.	**10.** Read literature independently, proficiently, and fluently in the grades 6–8 text complexity band; engage in sustained practice with "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.

Reading Standards for Literature 6–12

Grades 9–10 students:

Key Ideas and Details

1. Cite the evidence in the text that most strongly supports a specific analysis of what the text says explicitly as well as inferences drawn from the text.
2. Analyze in detail the development and refinement of a theme or central idea in a text, including how it emerges and how it is shaped and refined by specific details.
3. Analyze how complex characters, including those with conflicting motivations or divided loyalties, develop over the course of a text, interact with other characters, and advance the plot or develop the theme.

Craft and Structure

4. Evaluate how an author's use of language, including formality of diction, shapes meaning and tone in a text (e.g., how the language evokes a sense of time and place, how it sets a formal or informal tone).
5. Analyze how an author structures a text, orders events within it (e.g., parallel plots), and manipulates time (e.g., pacing) to create mystery, tension, or surprise.
6. Analyze a case in which the author's work takes a position or stance on a social issue or other topic and describe how the author carries out that purpose.

Integration of Knowledge and Ideas

7. Compare and contrast the representation of a subject or a key scene in two different artistic mediums (e.g., Auden's "Musée de Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).
8. (Not applicable to literature)
9. Analyze a wide range of nineteenth- and early-twentieth-century foundational works of American literature, comparing and contrasting approaches to similar ideas or themes in two or more texts from the same period.

Range and Level of Text Complexity

10. **In grade 9**, read literature independently, proficiently, and fluently in the grades 9–10 text complexity band; read texts at the high end of the range with scaffolding as needed.

    In grade 10, read literature independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts in the grades 11–CCR text complexity band with scaffolding as needed.

Grades 11–12 students:

1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves things uncertain.
2. Analyze how multiple themes or central ideas in a text interact, build on, and, in some cases, conflict with one another.
3. Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).
4. Analyze in detail the condensed language of poems (or particularly rich language use in a narrative or drama), determining how specific word choices and multiple meanings shape the impact and tone.
5. Analyze how an author's choices concerning how to structure a text (e.g., electing at what point to begin or end a story) shape the meaning of the text.
6. Analyze an author's use of satire, sarcasm, irony, understatement, or other means that requires a reader to understand various layers of meaning in a text.
7. Compare and contrast multiple interpretations of a drama or story (e.g., recorded or live productions), distinguishing how each version interprets the source text. (This includes at least one play by Shakespeare as well as one play by an American dramatist.)
8. (Not applicable to literature)
9. Analyze how an author draws on and transforms fictional source material in a specific work (e.g., how Shakespeare draws on a story from Ovid or how a later author draws on a play by Shakespeare).
10. **In grade 11**, read literature independently, proficiently, and fluently in the grades 11–CCR text complexity band; read texts at the high end of the range with scaffolding as needed.

    In grade 12, read literature independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts in the Beyond CCR text complexity band with scaffolding as needed.

Reading Standards for Informational Text 6–12

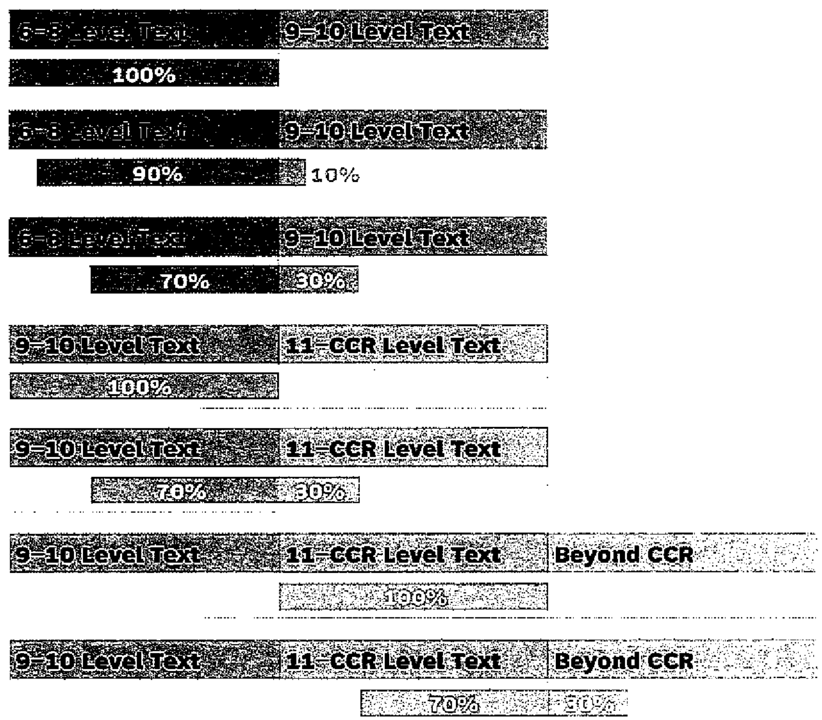
Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several sources of textual evidence when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite a wide range of evidence throughout the text when useful to support analysis of what the text says explicitly as well as inferences drawn from the text.
2. Analyze how a central idea develops over the course of a text, drawing on key details.	**2.** Analyze how two or more central ideas in a text relate to one another, drawing on key details.	**2.** Provide an objective summary of a text, accurately conveying an author's view and specific points.
3. Determine the causes or reasons that link different events, ideas, or information in a text, drawing on key details.	**3.** Describe in detail how an author introduces, illustrates, and elaborates a key idea in a text (e.g., through examples or anecdotes).	**3.** Analyze how an author introduces, illustrates, and elaborates two or more significant ideas in a text, including how the relationship between the ideas is expressed.
Craft and Structure		
4. Interpret words and phrases as they are used in a text, including technical, figurative, and connotative meanings, and analyze how an author's choice of specific words in a text contributes to understanding the ideas or concepts.	**4.** Interpret words and phrases as they are used in a text, including technical, figurative, and connotative meanings, and describe in detail how an author's choice of specific words affects meaning and tone.	**4.** Explain the comparisons an author makes through metaphors, allusions, and analogies in a text and analyze how those comparisons contribute to meaning.
5. Describe the structure an author uses to organize a specific text, including how the major sections contribute to the whole.	**5.** Describe how any given sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	**5.** Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.
6. Compare and contrast one author's point of view on events with that of another (e.g., a memoir written by and a biography on the same person).	**6.** Describe an author's point of view or purpose in a text and analyze how the author distinguishes his or her point of view from that of others.	**6.** Compare and contrast the points of view and purposes of two authors writing about the same topic.
Integration of Knowledge and Ideas		
7. Compare and contrast the accounts of a subject in different mediums (e.g., a person's life story told in print, video, or multimedia), analyzing which details are emphasized and how the account unfolds in each version.	**7.** Compare and contrast the impression conveyed by a printed text to that conveyed when listening to or viewing a video or multimedia presentation of it (e.g., analyzing how the delivery of a speech affects its impact).	**7.** Evaluate the advantages and disadvantages of using different mediums (e.g., text, video, multimedia) to present a particular topic or idea.
8. Distinguish among fact, opinion, and reasoned judgment presented in a text.	**8.** Identify the stated and unstated premises of an argument and explain how they contribute to the conclusions reached.	**8.** Evaluate an argument's claims and reasoning as well as the degree to which evidence supports each claim.
9. Assess the similarities and differences between two or more texts on the same subject and apply the knowledge gained to inform reading of additional texts.	**9.** Analyze where two or more texts provide conflicting information on the same subject and determine whether the texts disagree on matters of fact or on matters of interpretation.	**9.** Compare and contrast how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read texts at the high end of the range with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; engage in sustained practice with "stretch" texts in the grades 9–10 text complexity band with scaffolding as needed.

Reading Standards for Informational Text 6–12

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite evidence in the text that most strongly supports a specific analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves things uncertain.
2. Analyze in detail the development and refinement of a central idea in a text, including how it emerges and is shaped and refined by specific details.	**2.** Analyze how multiple ideas in a text interact, build on, and, in some cases, conflict with one another.
3. Analyze the interactions between and among ideas and events, including how ideas and events influence one another.	**3.** Analyze in detail an author's ideas by describing how the ideas are developed and refined by specific sentences, paragraphs, and larger portions of a text.
Craft and Structure	
4. Evaluate how an author's use of language, including formality and type of diction, shapes meaning and tone in a text (e.g., the formality of a court opinion or a newspaper).	**4.** Interpret how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in Federalist No. 10 and No. 51).
5. Evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.	**5.** Analyze how an author's choices concerning how to structure a text (e.g., how reasons, evidence, and information are organized and emphasized) shape the meaning of the text.
6. Analyze documents of historical and literary significance, including foundational U.S. documents (e.g., the Declaration of Independence, the Preamble to the Constitution, the Bill of Rights) for their premises, purposes, and structure.	**6.** Analyze how various authors express different points of view on similar events or issues, assessing the authors' assumptions, use of evidence, and reasoning, including analyzing seminal U.S. documents (e.g., *The Federalist*, landmark U.S. Supreme Court majority opinions and dissents).
Integration of Knowledge and Ideas	
7. Synthesize information presented in different formats (e.g., text, video, mutimedia) to generate a coherent understanding of an issue.	**7.** Synthesize and apply multiple sources of information presented in different formats in order to address a question or solve a problem, including resolving conflicting information.
8. Assess the truth of an argument's explicit and implicit premises by determining whether the evidence presented in the text justifies the conclusions.	**8.** Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing the relevance and sufficiency of evidence and identifying false statements or fallacious reasoning.
9. Analyze how authors argue with or otherwise respond to one another's ideas or accounts of key events, evaluating the strength of each author's interpretation.	**9.** Synthesize explanations and arguments from diverse sources to provide a coherent account of events or ideas, including resolving conflicting information.
Range and Level of Text Complexity	
10. **In grade 9**, read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 10**, read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts in the grades 11–CCR text complexity band with scaffolding as needed.	**10.** **In grade 11**, read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read texts at the high end of the range with scaffolding as needed. **In grade 12**, read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts in the Beyond CCR text complexity band with scaffolding as needed.

Range and Level of Text Complexity for Student Reading by Grade (Standard 10)

Students demonstrate proficiency in reading texts at the following ranges of text complexity to progress on a path to college and career readiness.



6 **In grade 6**, students focus on reading texts independently in the grades 6–8 text complexity band, with scaffolding likely required for texts at the high end of the range.

7 **In grade 7**, students focus on reading texts independently in the grades 6–8 text complexity band (90 percent) and are introduced to texts in the grades 9–10 text complexity band as "stretch" texts (10 percent), which will likely require scaffolding.

8 **In grade 8**, students focus on reading texts independently in the grades 6–8 text complexity band (70 percent) as well as sustained practice with texts in the grades 9–10 text complexity band as "stretch" texts (30 percent), which will likely require scaffolding.

9 **In grade 9**, students focus on reading texts independently in the grades 9–10 text complexity band, with scaffolding likely required for texts at the high end of the range.

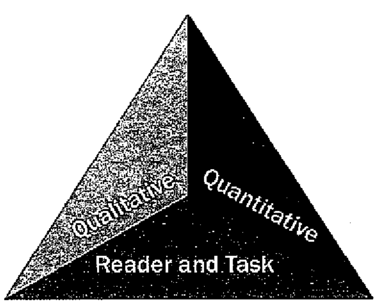
10 **In grade 10**, students focus on reading texts independently in the grades 9–10 text complexity band (70 percent) and are introduced to texts in the grades 11–CCR text complexity band as "stretch" texts (30 percent), which will likely require scaffolding.

11 **In grade 11**, students focus on reading texts independently in the grades 11–CCR text complexity band, with scaffolding likely required for texts at the high end of the range.

12 **In grade 12**, students focus on reading texts independently in the grades 11–CCR text complexity band (70 percent) and are introduced to texts in the Beyond CCR text complexity band as "stretch" texts (30 percent), which will likely require scaffolding.

Note: In any given classroom, the actual range of students' reading ability could be greater than the proposed range. Some students will require extra time and intense support and scaffolding to enable them to read grade-level material, whereas other students will be ready for—and should be encouraged to read—more advanced texts.

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity, and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Matching reader to text and task: Reader knowledge, motivation, and interests as well as the complexity generated by the tasks to be assigned and the questions to be posed

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

College and Career Readiness Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do in each grade and build toward the ten College and Career Readiness Standards.

Text Types and Purposes[1]

1. Write arguments to support a substantive claim with clear reasons and relevant and sufficient evidence.
2. Write informative/explanatory texts to convey complex information clearly and accurately through purposeful selection and organization of content.
3. Write narratives to convey real or imagined experiences, individuals, or events and how they develop over time.

Production and Distribution of Writing

4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.
5. Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce, publish, and interact with others about writing.

Research to Build Knowledge

7. Perform short, focused research projects as well as more sustained research in response to a focused research question, demonstrating understanding of the material under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate and cite the information while avoiding plagiarism.
9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.[3]

[1]These broad categories of writing include many subgenres. See Appendix A for definitions of key writing types.
[2]See "Conventions" in Language, pages 47–50, for specific editing expectations.
[3]This standard is measured by the proficiency of student writing products.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college- and career-ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline as well as the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications. Growth in writing ability is characterized by an increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas. At the same time, the content and sources that students address in their writing grow in demand every year.

Text Types and Purposes

Grade 6 students:

1. Write arguments in which they:
   a. Introduce a claim about a topic or issue and organize the reasons and evidence to support the claim.
   b. Support the claim with clear reasons and relevant evidence.
   c. Use words, phrases, and clauses to convey the relationships among claims and reasons.
   d. Sustain an objective style and tone.
   e. Provide a concluding statement or section that follows from the argument.

2. Write informative/explanatory texts in which they:
   a. Introduce a topic and organize information appropriate to the purpose, using strategies such as definition, classification, comparison/contrast, and cause/effect.
   b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
   c. Use appropriate links and varied sentence structures to join and clarify ideas.
   d. Use straightforward language to create an objective style appropriate for a reader seeking information.
   e. Provide a conclusion that follows logically from the information or explanation presented.

Grade 7 students:

1. Write arguments in which they:
   a. Introduce a claim about a topic or issue, acknowledge alternate or opposing claims, and organize the reasons and evidence logically to support the claim.
   b. Support the claim with logical reasoning and detailed, relevant evidence that demonstrate a comprehensive understanding of the topic.
   c. Use words, phrases, and clauses to convey the relationships among the claims, reasons, and evidence.
   d. Sustain an objective style and tone.
   e. Provide a concluding statement or section that follows logically from the argument.

2. Write informative/explanatory texts in which they:
   a. Introduce and establish a topic that provides a sense of what is to follow and organize information appropriate to the purpose, using strategies such as definition, classification, comparison/contrast, and cause/effect.
   b. Develop the topic with relevant and accurate facts, definitions, concrete details, quotations, or other information and examples.
   c. Use appropriate links and varied sentence structures to create cohesion and clarify ideas.
   d. Use precise language and sustain an objective style appropriate for a reader seeking information.
   e. Provide a conclusion that follows logically from the information or explanation presented.

Grade 8 students:

1. Write arguments in which they:
   a. Introduce a claim about a topic or issue, distinguish it from alternate or opposing claims, and organize the reasons and evidence logically to support the claim.
   b. Support the claim with logical reasoning and detailed and relevant evidence from credible sources to demonstrate a comprehensive understanding of the topic.
   c. Use words, phrases, and clauses to make clear the relationships among claims, reasons, counterclaims, and evidence.
   d. Sustain an objective style and tone.
   e. Provide a concluding statement or section that follows logically from the argument.

2. Write informative/explanatory texts in which they:
   a. Introduce and establish a topic and organize information under broader concepts or categories.
   b. Develop the topic with well-chosen, relevant, and accurate facts, concrete details, quotations, or other information and examples.
   c. Use varied links and sentence structures to create cohesion and clarify information and ideas.
   d. Use precise language and domain-specific and technical wording (when appropriate) and sustain a formal, objective style appropriate for a reader seeking information.
   e. Provide a conclusion that follows logically from the information or explanation presented.

Grade 6 students:

Text Types and Purposes (continued)

3. Write narratives in which they:
   a. Engage and orient the reader by establishing a context and point of view, and organize a sequence of events or experiences.
   b. Develop narrative elements (e.g., setting, event sequence, characters) using relevant sensory details.
   c. Use a variety of transition words, phrases, and clauses to convey sequence, shift from one time frame or setting to another, and/or show the relationships among events and experiences.
   d. Choose words and phrases to develop the events, experiences, and ideas precisely.
   e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.

Production and Distribution of Writing

4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce, publish, and interact with others about writing, including linking to and citing online sources.

Grade 7 students:

3. Write narratives in which they:
   a. Engage and orient the reader by establishing a context and point of view, and purposefully organize a sequence of events or experiences.
   b. Develop narrative elements (e.g., setting, conflict, complex characters) with relevant and specific sensory details.
   c. Use a variety of techniques to convey sequence, shift from one time frame or setting to another, and/or show the relationships among events or experiences.
   d. Choose words and phrases to develop the events, experiences, and ideas precisely and to create mood.
   e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose have been addressed.
6. Use technology, including the Internet, to produce, publish, and interact with others about writing, including presenting and citing information in a digital format.

Grade 8 students:

3. Write narratives in which they:
   a. Engage and orient the reader by establishing a context and point of view, and purposefully organize a progression of events or experiences.
   b. Develop narrative elements (e.g., setting, plot, event sequence, complex characters) with well-chosen, relevant, and specific sensory details.
   c. Use a variety of techniques to convey sequence in multiple storylines, shift from one time frame or setting to another, and/or show the relationships among events or experiences.
   d. Choose words and phrases to effectively develop the events, experiences, and ideas precisely and to create mood.
   e. Provide a satisfying conclusion that follows from the events, experiences, or ideas.
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in Standards 1–3 above.)
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose and context have been addressed.
6. Use technology, including the Internet, to present and cite information effectively in a digital format, including when publishing and responding to writing.

Writing Standards 6–12

Grade 6 students:	Grade 7 students:	Grade 8 students:
Research to Build Knowledge		
7. Perform short, focused research projects in response to a question and refocus the inquiry in response to further research and investigation.	**7.** Perform short, focused research projects in response to a question and generate additional related and focused questions for further research and investigation.	**7.** Perform short, focused research projects in response to a question and generate additional related questions that allow for multiple avenues of exploration.
8. Gather relevant information from multiple print and digital sources, assess the credibility of each source, and quote or paraphrase the data and conclusions of others while avoiding plagiarism and documenting sources.	**8.** Gather relevant information from multiple print and digital sources using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources using advanced search features; assess the credibility and accuracy of each source; and quote or paraphrase the evidence, avoiding plagiarism and following a standard format for citation.
9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grade 6 reading standards* to literature (e.g., "Analyze stories in the same genre (e.g., mysteries, adventure stories), comparing and contrasting their approaches to similar themes and topics."). b. Apply *grade 6 reading standards* to literary nonfiction (e.g., "Distinguish among fact, opinion, and reasoned judgment presented in a text").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned. a. Apply *grade 7 reading standards* to literature (e.g., "Analyze a specific case in which a modern work of fiction draws on patterns of events or character types found in traditional literature (e.g., the hero, the quest). b. Apply *grade 7 reading standards* to literary nonfiction (e.g., "Identify the stated and unstated premises of an argument and explain how they contribute to the conclusions reached").	**9.** Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned: a. Apply *grade 8 reading standards* to literature (e.g., "Compare a fictional portrayal of a time, place, or character to historical sources from the same period as a means of understanding how authors use or alter history"). b. Apply *grade 8 reading standards* to literary nonfiction (e.g., "Evaluate an argument's claims and reasoning as well as the degree to which evidence supports each claim").
Range of Writing		
10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Writing Standards 6–12

Grades 9–10 students:

Text Types and Purposes

1. Write arguments which they:
   a. Introduce a precise claim, distinguish it from alternate or opposing claims, and provide an organization that establishes clear relationships among the claim, reasons, and evidence.
   b. Develop a claim and counterclaim fairly, supplying evidence for each, while pointing out the strengths of their own claim and the weaknesses of the counterclaim.
   c. Use precise words, phrases, and clauses to make clear the relationships between claims and reasons, between reasons and evidence, and between claims and counterclaims.
   d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline as well as to the audience's knowledge of the issue.
   e. Provide a concluding statement or section that follows logically from the argument and offers a reflection or recommendation.

2. Write informative/explanatory texts in which they:
   a. Introduce a topic and organize information under broader concepts and categories to make clear the connections and distinctions between key ideas appropriate to the purpose; include formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to clarify ideas.
   b. Develop a complex topic through well-chosen, relevant, and sufficient facts, concrete details, quotations, extended definitions, or other information and examples.
   c. Use varied transitions and sentence structures to create cohesion, clarify information and ideas, and link major sections in the text.
   d. Use precise language and domain-specific and technical wording (when appropriate) to manage the complexity of the topic in a style that responds to the specific discipline and context as well as to the expertise of likely readers.
   e. Provide a conclusion that follows logically from the information or explanation provided and articulates the implications or significance of the topic.

Grades 11–12 students:

1. Write arguments in which they:
   a. Introduce a substantive claim, establish its significance, distinguish it from alternate or opposing claims, and create an organization so that claims, reasons, and evidence are purposefully and logically sequenced.
   b. Develop a claim and counterclaim thoroughly and fairly, supplying the most relevant evidence, while pointing out the strengths of their own claim and the weaknesses of the counterclaim.
   c. Use precise words, phrases, and complex syntax to make explicit the relationships between claims and reasons, between reasons and evidence, and between claims and counterclaims.
   d. Sustain an objective style and tone while attending to the norms and conventions of the specific discipline as well as to the audience's knowledge, values, and possible biases.
   e. Provide a concluding statement or section that follows logically from the argument and offers a reflection or recommendation.

2. Write informative/explanatory texts in which they:
   a. Introduce a complex topic and organize the information at multiple levels of the text so that each new piece of information builds on that which precedes it to create a unified whole; include formatting (e.g., headings) and graphics (e.g., figures, tables) when useful to clarify ideas.
   b. Thoroughly develop aspects of a complex topic through the purposeful selection of the most significant and relevant facts, concrete details, quotations, extended definitions, or other information and examples.
   c. Use varied transitional devices and sentence structures to create cohesion, clarify complex ideas, and link the major sections of the text.
   d. Use precise language, domain-specific and technical wording (when appropriate), and techniques such as metaphor, simile, and analogy to manage the complexity of the topic in a style that responds to the specific discipline and context as well as to the expertise of likely readers.
   e. Provide a well-developed conclusion that follows logically from the information or explanation provided and articulates the implications or significance of the topic.

Grades 9–10 students:

Text Types and Purposes (continued)

3. Write narratives in which they:
   a. Engage the reader by establishing a problem, situation, or observation and purposefully organize a progression of events or experiences.
   b. Develop narrative elements (e.g., setting, event sequence, complex characters) with well-chosen, revealing details.
   c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.
   d. Use precise language to develop a picture of how the events, experiences, and ideas emerge and unfold.
   e. Provide a satisfying conclusion that follows from what is experienced, observed, or resolved over the course of the narrative.

Production and Distribution of Writing

4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for this standard are defined in Standards 1–3 above.)

5. Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific task and context.

6. Use technology, including the Internet, to produce, publish, and collaborate on a shared writing product, incorporating diverse and sometimes conflicting feedback.

Research to Build Knowledge

7. Perform short, focused research projects and more sustained research; synthesize multiple sources on a subject to answer a question or solve a problem.

8. Assemble evidence gathered from authoritative print and digital sources; assess the credibility and accuracy of the information and its strengths and limitations in terms of answering the research question; and integrate selected information into the text, avoiding overreliance on any one source and following a standard format for citation.

Grades 11–12 students:

3. Write narratives in which they:
   a. Engage the reader by establishing the significance of a problem, situation, or observation and purposefully organize events or experiences.
   b. Develop narrative elements (e.g., setting, stance, event sequence, complex characters) with purposefully selected details that call readers' attention to what is most distinctive or worth noticing.
   c. Use a variety of techniques to build toward a particular impact (e.g., a sense of mystery, suspense, growth, or resolution).
   d. Use precise language to develop the events, experiences, and ideas clearly and to reinforce the style.
   e. Provide a satisfying conclusion that follows from what is experienced, observed, or resolved over the course of the narrative.

4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for this standard are defined in Standards 1–3 above.)

5. Strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

6. Demonstrate command of technology, including the Internet, to produce, publish, and update work in response to ongoing feedback, including fresh arguments or new information.

7. Perform short, focused research projects and more sustained research; synthesize multiple authoritative sources on a subject to answer a question or solve a problem.

8. Analyze evidence gathered from multiple authoritative print and digital sources; assess the credibility and accuracy of the information and its usefulness and relevance for the specific task, purpose, and audience; and integrate selected information into the text, following a standard format for citation.

Grades 9–10 students:

Research to Build Knowledge (continued)

9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned.
   a. Apply *grades 9–10 reading standards* to literature (e.g., "Analyze a wide range of nineteenth- and early-twentieth-century foundational works of American literature, comparing and contrasting approaches to similar ideas or themes in two or more texts from the same period.").
   b. Apply *grades 9–10 reading standards* to literary nonfiction (e.g., "Assess the truth of an argument's explicit and implicit premises by determining whether the evidence presented in the text justifies the conclusions").

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Grades 11–12 students:

9. Write in response to literary or informational sources, drawing evidence from the text to support analysis and reflection as well as to describe what they have learned.
   a. Apply *grades 11–12 reading standards* to literature (e.g., "Analyze how an author draws on and transforms fictional source material, such as how Shakespeare draws on a story from Ovid, or a later author draws on Shakespeare").
   b. Apply *grades 11–12 reading standards* to literary nonfiction (e.g., "Evaluate the reasoning and rhetoric that support an argument or explanation, including assessing the relevance and sufficiency of evidence and identifying false statements or fallacious reasoning").

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

College and Career Readiness Standards for Speaking and Listening

The grades 6–12 standards on the following pages define what students should understand and be able to do in each grade and build toward the six College and Career Readiness Standards.

Comprehension and Collaboration

1. Participate effectively in a range of interactions (one-on-one and in groups), exchanging information to advance a discussion and to build on the input of others.
2. Integrate and evaluate information from multiple oral, visual, or multimodal sources in order to answer questions, solve problems, or build knowledge.
3. Evaluate the speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, evidence, and reasoning in a clear and well-structured way appropriate to purpose and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate.

Note on range and content of student speaking and listening

To become college and career ready, students must have ample opportunities to take part in a variety of rich, structured conversations—whole class, small group, and with a partner—built around important content in various domains. They must be able to contribute appropriately to these conversations, to make comparisons and contrasts, and to analyze and synthesize a multitude of ideas in accordance with the standards of evidence appropriate to a particular discipline. Whatever their intended major or profession, high school graduates will depend heavily on their ability to listen attentively to others so that they are able to build on others' meritorious ideas while expressing their own clearly and persuasively.

New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. The Internet has accelerated the speed at which connections between speaking, listening, reading, and writing can be made, requiring that students be ready to use these modalities nearly simultaneously. Technology itself is changing quickly, creating a new urgency for students to be adaptable in response to change.

Speaking and Listening Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Grade 6 students:

Comprehension and Collaboration

1. Initiate and engage actively in group discussions on *grade 6 topics, texts, and issues* being studied in class.
   a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions.
   b. Cooperate with peers to set clear goals and deadlines.
   c. Build on the ideas of others by asking relevant questions and contributing appropriate and essential information.
   d. Review the key ideas expressed and extend their own thinking in light of new information learned.
2. Interpret information presented in visual or multimodal formats and explain how the information clarifies and contributes to a topic or issue under study.
3. Delineate the claims made by a speaker or presenter and detail what evidence supports which claims.

Presentation of Knowledge and Ideas

4. Present information, emphasizing salient points with pertinent descriptions and details and using appropriate eye contact, adequate volume, and clear pronunciation.
5. Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, on pages 47–50, for specific demands.)

Grade 7 students:

1. Initiate and engage actively in group discussions on *grade 7 topics, texts, and issues* being studied in class.
   a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions.
   b. Cooperate with peers to set clear goals and deadlines.
   c. Advance a discussion by asking questions, responding precisely, and sharing factual knowledge and observations.
   d. Ensure a hearing for the range of positions on an issue.
   e. Take the views of others into account and, when warranted, modify their own views in light of the evidence presented.
2. Determine the main ideas and supporting elements presented in oral, visual, or multimodal formats and explain how the information clarifies and contributes to an understanding of a topic or issue under study.
3. Evaluate a speaker's or presenter's reasoning and claims as well as the degree to which each claim is logically supported by the evidence provided.
4. Present claims and findings with relevant and specific descriptions, facts, and examples, and use appropriate eye contact, adequate volume, and clear pronunciation.
5. Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

Grade 8 students:

1. Initiate and engage actively in group discussions on *grade 8 topics, texts, and issues* being studied in class.
   a. Prepare for discussions by completing reading or conducting research and explicitly draw on that material in discussions.
   b. Cooperate with peers to set clear goals and deadlines.
   c. Advance a discussion by asking questions, responding precisely, and sharing factual knowledge and observations supported by credible evidence.
   d. Ensure a hearing for the range of positions on an issue.
   e. Qualify or justify, when warranted, their own thinking after listening to others' questions or accounts of the evidence.
2. Determine the purpose of and perspectives represented in oral, visual, or multimodal formats and evaluate whether the information is laden with social, commercial, or political motives.
3. Assess the truth of a speaker's or presenter's premises and the validity of his or her conclusions.
4. Present claims and findings with relevant evidence that is accessible and verifiable to listeners, and use appropriate eye contact, adequate volume, and clear pronunciation.
5. Incorporate digital media and visual displays of data when helpful and in a manner that strengthens the presentation.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

Speaking and Listening Standards 6–12

Grades 9–10 students:

Comprehension and Collaboration

1. Initiate and participate effectively in group discussions on *grades 9–10 topics, texts, and issues* being studied in class.
   a. Prepare for discussions by reading and researching material under study and explicitly draw on that preparation in discussions.
   b. Cooperate with peers to set clear goals and deadlines and to establish roles.
   c. Build on essential information from others' input by asking questions and sharing comments that enrich discussions.
   d. Acknowledge the ideas and contributions of others in the group, reach decisions about the information and ideas under discussion, and complete the task.
   e. Evaluate whether the team has met its goals.

2. Synthesize information presented visually or multimodally with other information presented orally, noting any discrepancies between the data that emerge as a result.

3. Determine a speaker's or presenter's position or point of view by assessing the evidence, word choice, points of emphasis, and tone used.

Presentation of Knowledge and Ideas

4. Plan and deliver relevant and sufficient evidence in support of findings and claims such that listeners can follow the reasoning, adjusting presentation to particular audiences and purposes.

5. Make strategic use of digital media elements and visual displays of data to enhance understanding.

6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

Grades 11–12 students:

1. Initiate and participate effectively in group discussions on *grades 11–12 topics, texts, and issues* being studied in class.
   a. Prepare for discussions by distilling the evidence or information about the material under study and explicitly draw on that preparation in discussions.
   b. Cooperate with peers to set clear goals and deadlines, establish roles, and determine ground rules for decision making (e.g., informal consensus, taking votes on key issues, presentation of alternate views).
   c. Propel conversations forward by asking questions that test the evidence and by sharing findings that clarify, verify, or challenge ideas and conclusions.
   d. Summarize accurately the comments and claims made on all sides of an issue and determine what additional information, research, and tasks are required for the team to complete the task.
   e. Evaluate whether the team has met its goals.

2. Integrate multiple streams of data presented through various mediums, evaluating the reliability and credibility of each source of information in order to answer questions, solve problems, or build knowledge.

3. Evaluate the information conveyed and rhetoric used by a speaker or presenter, identifying logical errors in reasoning and exaggerated or distorted evidence.

4. Plan and deliver focused and coherent presentations that convey clear and distinct perspectives such that the line of reasoning and sources of support are clear and alternative perspectives are addressed, adjusting presentation to particular audiences and purposes.

5. Make strategic use of digital media elements and visual displays of data to enhance understanding.

6. Adapt speech to a variety of contexts and communicative tasks, demonstrating a command of formal English when indicated or appropriate. (See "Conventions" in Language, pages 47–50, for specific demands.)

College and Career Readiness Standards for Language

The grades 6–12 standards on the following pages define what students should understand and be able to do in each grade and build toward the six College and Career Readiness Standards.

Conventions in Writing and Speaking

1. Demonstrate a command of the conventions of standard English grammar and usage.
2. Demonstrate a command of the conventions of capitalization, punctuation, and spelling.
3. Make effective choices about language, punctuation, and sentence structure for meaning and style.

Vocabulary Acquisition and Use

4. Determine the meaning of words and phrases encountered through conversations, reading, and media use.
5. Understand the nuances of and relationships among words.
6. Use grade-appropriate general academic vocabulary and domain-specific words and phrases purposefully acquired as well as gained through conversation and reading and responding to texts.

Note on range and content of student language use

To be college and career ready in language, students must have firm control over the conventions of writing and speaking and have extensive vocabularies built through reading and study. They must have a well-developed understanding of standard written and spoken English, demonstrating command of the conventions of grammar, usage, and mechanics. They also must come to appreciate that language is as much a matter of craft as of rules and be able to use punctuation, words, phrases, clauses, and sentences to achieve particular rhetorical effects and to convey ideas precisely and concisely. They need to become highly skilled in determining the meanings of words they encounter, choosing flexibly from an array of strategies to aid them. They must learn to see an individual word as part of a network of other words—words, for example, that have similar denotations but different connotations. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. They offer a focus for instruction in each year to help ensure that students gain adequate exposure to a range of skills and applications.

Grade 6 students:

Conventions in Writing and Speaking

1. Observe conventions of grammar and usage.
   a. Ensure that pronouns are in the proper case (subjective, objective, possessive).
   b. Recognize and correct inappropriate shifts in pronoun number and person.*
   c. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).*
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements.*
   b. Spell correctly.
3. Make effective language choices.
   a. Vary sentence patterns for meaning, reader/listener interest, and style.*

Grade 7 students:

1. Observe conventions of grammar and usage.
   a. Explain the function of phrases and clauses in general and their functions in specific sentences.
   b. Chose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.
   c. Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers.*
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Use a comma before a coordinating conjunction in a compound sentence.
   b. Spell correctly.
3. Make effective language choices.
   a. Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.*

Grade 8 students:

1. Observe conventions of grammar and usage.
   a. Form and use verbs in the active and passive voice.
   b. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive moods.
   c. Recognize and correct inappropriate shifts in verb voice and mood.*
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Use a comma to separate coordinate adjectives (e.g., *It was a fascinating, enjoyable movie* but not *He wore an old[,] green shirt*).
   b. Use a comma, ellipses, or dash to indicate a pause or break.
   c. Spell correctly.
3. Make effective language choices.
   a. Use verbs in the active and passive voice and in the conditional and subjunctive moods to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

* Conventions standards noted with an asterisk need to be revisited by students in subsequent grades. See page 51 for a complete listing.

Language Standards 6–12

Grade 6 students:

Vocabulary Acquisition and Use

4. Determine word meanings (*based on grade 6 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital.
   b. Use a known root as a clue to the meaning of an unknown word (e.g., *audience*, *auditory*, *audible*).
   c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary).
   d. Interpret various figures of speech (e.g., personification) relevant to particular texts.
5. Understand word relationships.
   a. Trace the network of uses and meanings that different words have and the interrelationships among those meanings and uses.
   b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

Grade 7 students:

4. Determine word meanings (*based on grade 7 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital.
   b. Use a known root as a clue to the meaning of an unknown word (e.g., *belligerent*, *bellicose*, *rebel*).
   c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary).
   d. Interpret various figures of speech (e.g., allegory) relevant to particular texts.
5. Understand word relationships.
   a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses.
   b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

Grade 8 students:

4. Determine word meanings (*based on grade 8 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence and paragraph context, the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; and consulting reference materials, both print and digital.
   b. Use a known root as a clue to the meaning of an unknown word (e.g., *precede*, *recede*, *secede*).
   c. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary).
   d. Interpret various figures of speech (e.g. verbal irony, puns) relevant to particular texts.
5. Understand word relationships.
   a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses.
   b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

Language Standards 6-12

Grades 9–10 students:

Conventions in Writing and Speaking

1. Observe conventions of grammar and usage.
   a. Use parallel structure in writing.*
   b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to add variety and interest to writing or presentations.
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.
   b. Use a colon to introduce a list or quotation.
   c. Spell correctly.
3. Make effective language choices.
   a. Write and edit work so that it conforms to the guidelines in a style manual.

Vocabulary Acquisition and Use

4. Determine word meanings (*based on grades 9–10 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence, paragraph, and whole-text context; the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; understanding the word's etymology; and consulting reference materials, both print and digital.
   b. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary).
   c. Interpret various figures of speech (e.g., hyperbole, paradox) and analyze their role in a text.
5. Understand word relationships.
   a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses.
   b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

Grades 11–12 students:

1. Observe conventions of grammar and usage.
   a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.
   b. Resolve complex usage issues, particularly when the issue involves contested or changing usage; consult references (e.g., *Merriam-Webster's Dictionary of English Usage*) as needed for guidance.
2. Observe conventions of capitalization, punctuation, and spelling.
   a. Observe the conventions concerning using hyphens to join words.
   b. Spell correctly.
3. Make effective language choices.
   a. Write and edit work so that it conforms to the guidelines in a style manual.
4. Determine word meanings (*based on grades 11–12 reading*).
   a. Determine or clarify the meaning of unknown or multiple-meaning words through the use of one or more strategies, such as using semantic clues (e.g., sentence, paragraph, and whole-text context; the organizational pattern of the text); using syntactic clues (e.g., the word's position or function in the sentence); analyzing the word's sounds, spelling, and meaningful parts; understanding the word's etymology; and consulting reference materials, both print and digital.
   b. Verify the preliminary determination of a word's meaning (e.g., by checking the inferred meaning in context or looking up the word in a dictionary).
   c. Interpret various figures of speech (e.g., satire, sarcasm) and analyze their role in a text.
5. Understand word relationships.
   a. Trace the network of uses and meanings different words have and the interrelationships among those meanings and uses.
   b. Distinguish a word from other words with similar denotations but different connotations.
6. Use grade-appropriate general academic vocabulary and English language arts–specific words and phrases taught directly and gained through reading and responding to texts.

* Conventions standards noted with an asterisk need to be revisited by students in subsequent grades as their writing and speak grow in sophistication. See page 51 for a complete listing.

English Language Arts Conventions Progressive Skills, By Standard

The following, marked with an asterisk (*) in the Conventions standards, are skills and understandings that require continued attention in higher grades (after their introduction in the grade listed below) as they are applied to increasingly sophisticated writing and speaking.

Grade	Skills
Grade 3	**1c.** Ensure subject-verb and pronoun-antecedent agreement. **3a.** Choose words for effect.
Grade 4	**1b.** Form and use adjectives and adverbs (including comparative and superlative forms), placing them appropriately within sentences. **1c.** Produce complete sentences, avoiding rhetorically poor fragments and run-ons. **1d.** Correctly use frequently confused words (e.g., *effect/affect*, *to/too/two*). **3a.** Use punctuation for effect. **3b.** Maintain consistency in style and tone. **3c.** Choose words and phrases to convey ideas precisely.
Grade 5	**1b**. Recognize and correct inappropriate shifts in verb tense and aspect. **2a.** Use punctuation to separate items in a series. **3a.** Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.
Grade 6	**1b.** Recognize and correct inappropriate shifts in pronoun number and person. **1c.** Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents). **2a.** Use commas, parentheses, or dashes to set off nonrestrictive/parenthetical elements. **3a.** Vary sentence patterns for meaning, reader/listener interest, and style.
Grade 7	**1c.** Place phrases and clauses within a sentence, avoiding misplaced and dangling modifiers. **3b.** Choose words and phrases that express ideas concisely, eliminating wordiness and redundancy.
Grade 8	**1c.** Recognize and correct inappropriate shifts in verb voice and mood.
Grades 9–10	**1a.** Use parallel structure in writing.

Range of Text Types for 6–12

Students in grades 6–12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

Literature			Informational Text
Stories	**Drama**	**Poetry**	**Literary Nonfiction**
Includes the subgenres of adventure stories, historical fiction, mysteries, myths, science fiction, realistic fiction, allegories, parodies, satire, and graphic novels	Includes one-act and multiact plays, both in written form and on film	Includes the subgenres of narrative poems, lyrical poems, free verse poems, sonnets, odes, ballads, and epics	Includes the subgenres of exposition and argument in the form of personal essays, speeches, opinion pieces, essays about art or literature, biographies, memoirs, journalism, and historical, scientific, or economic accounts (including digital media sources) written for a broad audience

Texts Illustrating the Complexity, Quality, and Range of Student Reading 6–12

Literature: Stories, Drama, Poetry	Informational Texts: Literary Nonfiction
▪ *Little Women* by Louisa May Alcott (1869) ▪ *The Adventures of Tom Sawyer* by Mark Twain (1876) ▪ "The Road Not Taken" by Robert Frost (1915) ▪ *The Dark Is Rising* by Susan Cooper (1973) ▪ *Dragonwings* by Laurence Yep (1975) ▪ *Roll of Thunder, Hear My Cry* by Mildred Taylor (1976)	▪ "Letter on Thomas Jefferson" by John Adams (1776) ▪ *Narrative of the Life of Frederick Douglass, an American Slave* by Frederick Douglass (1845) ▪ *Harriet Tubman: Conductor on the Underground Railroad* by Ann Petry (1955) ▪ *Travels with Charley: In Search of America* by John Steinbeck (1962) ▪ *The Great Fire* by Jim Murphy (1995) ▪ *This Land Was Made for You and Me: The Life and Songs of Woody Guthrie* by Elizabeth Partridge (2002)
▪ *The Tragedy of Romeo and Juliet* by William Shakespeare (1592) ▪ "Ozymandias" by Percy Bysshe Shelley (1817) ▪ "The Raven" by Edgar Allen Poe (1845) ▪ "The Gift of the Magi" by O. Henry (1906) ▪ *The Grapes of Wrath* by John Steinbeck (1939) ▪ *Fahrenheit 451* by Ray Bradbury (1953) ▪ *The Killer Angels* by Michael Shaara (1975)	▪ "Speech to the Second Virginia Convention" by Patrick Henry (1775) ▪ The Declaration of Independence by Thomas Jefferson (1776) ▪ "Second Inaugural Address" by Abraham Lincoln (1865) ▪ "State of the Union Address" by Franklin Delano Roosevelt (1941) ▪ *Cod: A Biography of the Fish That Changed the World* by Mark Kurlansky (1997) ▪ *The Race to Save Lord God Bird* by Phillip Hoose (2004)
▪ "Ode on a Grecian Urn" by John Keats (1820) ▪ *Jane Eyre* by Charlotte Brontë (1848) ▪ "Because I Could Not Stop for Death" by Emily Dickinson (1890) ▪ *The Great Gatsby* by F. Scott Fitzgerald (1925) ▪ *Their Eyes Were Watching God* by Zora Neale Hurston (1937) ▪ *A Raisin in the Sun* by Lorraine Hansberry (1959) ▪ *The Namesake* by Jhumpa Lahiri (2003)	▪ *The Crisis* by Thomas Paine (1776) ▪ *Walden* by Henry David Thoreau (1854) ▪ "Society and Solitude" by Ralph Waldo Emerson (1857) ▪ "Gettysburg Address" by Abraham Lincoln (1863) ▪ "Letter from Birmingham Jail" by Martin Luther King, Jr. (1964) ▪ *Google Hacks: Tips & Tools for Smarter Searching* by Tara Calishain and Rael Dornfest (2004) ▪ *America's Constitution: A Biography* by Akhil Reed Amar (2005)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6–12 text complexity.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study topics in depth.

Standards for Literacy in History/Social Studies & Science

6–12

College and Career Readiness Standards for Reading

The grades 6–12 standards on the following pages define what students need to know and be able to do and build toward the ten College and Career Readiness Standards.

Key Ideas and Details

1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze in detail where, when, why, and how events, ideas, and characters develop and interact over the course of a text.

Craft and Structure

4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and explain how specific word choices shape meaning or tone.
5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section or chapter) relate to each other and the whole.
6. Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

7. Synthesize and apply information presented in diverse ways (e.g., through words, images, graphs, and video) in print and digital sources in order to answer questions, solve problems, or compare modes of presentation.[1]
8. Delineate and evaluate the reasoning and rhetoric within a text, including assessing whether the evidence provided is relevant and sufficient to support the text's claims.
9. Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Range and Level of Text Complexity

10. Read complex texts independently, proficiently, and fluently, sustaining concentration, monitoring comprehension, and, when useful, rereading.[2]

[1]Please see "Research to Build Knowledge" in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.
[2]Proficiency in this standard is measured by students' ability to read a range of appropriately complex text in each grade as defined in Appendix A.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and other technical fields. College- and career-ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational text in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

Reading Standards for History/Social Studies 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. The standards below begin at grade 6; standards for K–5 reading in history/social studies are integrated into the K–5 standards for reading informational text.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	**1.** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the main ideas or information of a primary or secondary source; summarize the source, basing the summary on information in the text rather than on prior knowledge or opinions.	**2.** Determine the main ideas or information of a primary or secondary source; summarize how key events or ideas develop over the course of the text.	**2.** Determine the main ideas or information of a primary or secondary source; provide a summary that makes clear the relationships between the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	**3.** Analyze in detail a series of events described in a text and the causes that link the events; distinguish whether earlier events caused later ones or simply preceded them.	**3.** Analyze how ideas and beliefs emerge, develop, and influence events, based on evidence in the text .
Craft and Structure		
4. Determine the meaning of words and phrases in a text, including vocabulary specific to domains related to history/social studies.	**4.** Determine the meaning of words and phrases in a text, including the vocabulary describing political, economic, or social aspects of history.	**4.** Interpret the meaning of words and phrases in a text, including how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in Federalist No. 10 and No. 51).
5. Identify how a history/social studies text presents information (e.g., sequentially, comparatively, causally).	**5.** Explain how an author chooses to structure information or an explanation in a text to emphasize key points or advance a point of view.	**5.** Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	**6.** Compare the point of view of two or more authors by comparing how they treat the same or similar historical topics, including which details they include and emphasize in their respective accounts.	**6.** Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, evidence, and reasoning.
Integration of Knowledge and Ideas		
7. Integrate graphical information (e.g., pictures, videos, maps, time lines) with other information in a print or digital text.	**7.** Integrate quantitative or technical information presented in maps, time lines, and videos with other information in a print or digital text.	**7.** Synthesize ideas and data presented graphically and determine their relationship to the rest of a print or digital text, noting discrepancies between the graphics and other information in the text.
8. Distinguish among fact, opinion, and reasoned judgment in a historical account.	**8.** Assess the extent to which the evidence n a text supports the author's claims.	**8.** Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other sources of information.
9. Analyze the relationship between a primary and secondary source on the same topic.	**9.** Compare and contrast treatments of the same topic in several primary and secondary sources.	**9.** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 11–12 text complexity band; read "stretch" texts with scaffolding as needed.

Reading Standards for Science 6–12

Following are the standards for grades 6–12, which relate to their College and Career Readiness counterparts by number. The standards below begin at grade 6; standards for K–5 reading in science are integrated into the K–5 standards for reading informational text.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details		
1. Cite specific textual evidence to support analysis of scientific and technical texts.	**1.** Cite specific textual evidence to support analysis of scientific and technical text, including analysis of the precise details of explanations or descriptions.	**1.** Cite specific textual evidence to support analysis of scientific and technical texts, including analysis of important distinctions the author makes between ideas or pieces of information.
2. Summarize the broad ideas and specific conclusions made in a text, basing the summary on textual information rather than on prior knowledge or opinions.	**2.** Analyze the development of a text's explanation of a process or phenomenon, summarizing the central ideas and supporting details.	**2.** Summarize complex information or ideas presented in a text, paraphrasing it in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	**3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the causes of the specific results based on information from the text.
Craft and Structure		
4. Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text.	**4.** Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text, noting relationships among terms pertaining to important ideas or processes (e.g., *force, friction, reaction force, energy*).	**4.** Determine the meaning of key terms, symbols, and domain-specific vocabulary used in a text, attending to the precise meaning of terms as they are used in particular scientific or technical contexts.
5. Analyze how each major part of a text contributes to an understanding of the topic discussed in the text.	**5.** Analyze the relationships among concepts in a text, including developing propositional concept maps to organize and illustrate the ideas.	**5.** Analyze the hierarchical or categorical relationships of concepts or information presented in a text.
6. Analyze the purpose of an experiment or explanation in a text, including defining the problem or question to be resolved.	**6.** Analyze the purpose of an experiment, including defining the possibilities ruled out by the experimental results.	**6.** Analyze the scope and purpose of an experiment or explanation and determine which related issues remain unresolved or uncertain.
Integration of Knowledge and Ideas		
7. Integrate information provided by the words in a text with a version of that information expressed graphically (e.g., in a flowchart, diagram, model, graph, or table).	**7.** Integrate quantitative or technical information presented graphically (e.g., in a flowchart, diagram, model, graph, or table) with other information in a text.	**7.** Synthesize information in different formats by representing complex information in a text in graphical form (e.g., a table or chart) or translating a graphic or equation into words.
8. Distinguish facts or reasoned judgments based on research findings from opinions.	**8.** Assess the extent to which the evidence in a text supports a scientific claim or a recommendation for solving a technical problem.	**8.** Evaluate the hypotheses, data, and conclusions in a scientific text, corroborating or undercutting them with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	**9.** Compare experimental findings presented in a text to information from other sources, noting when the findings support or contradict previous explanations or accounts.	**9.** Integrate information from diverse sources (e.g., video, multimedia sources, experiments, simulations) into a coherent understanding of a concept, process, or phenomenon, noting discrepancies among sources.
Range and Level of Text Complexity		
10. Read informational text independently, proficiently, and fluently in the grades 6–8 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 9–10 text complexity band; read "stretch" texts with scaffolding as needed.	**10.** Read informational text independently, proficiently, and fluently in the grades 11–CCR text complexity band; read "stretch" texts with scaffolding as needed.

Writing Standards for History/Social Studies and Science 6–12

Grades 6–8 students:

Text Types and Purposes (continued)

2. Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they:
   a. Introduce and establish a topic and organize information under concepts or into categories.
   b. Develop a topic that has historical or scientific significance using well-chosen, relevant facts, data, details, quotations, examples, or other information.
   c. Use varied links and sentence structures to create cohesion and clarify information and ideas.
   d. Use precise language and domain-specific vocabulary and sustain a formal, objective style appropriate for a reader seeking information.
   e. Provide a conclusion that follows logically from the information or explanation presented.

3. Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.

Grades 9–10 students:

2. Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they:
   a. Introduce a topic and organize information under concepts and into categories, making clear the connections and distinctions between key ideas; use formatting and graphics (e.g., headings, figures, tables, graphs, illustrations) as useful to clarify ideas.
   b. Develop a topic that has historical or scientific significance using well-chosen, relevant, and sufficient facts, data, details, quotations, examples, extended definitions, or other information.
   c. Use varied transitions and sentence structures to create cohesion, clarify information and ideas, and link major sections in the text.
   d. Use precise language and domain-specific vocabulary to convey a style appropriate to the specific discipline and context as well as to the expertise of likely readers.
   e. Provide a conclusion that follows logically from the information or explanation provided and that articulates the implications or significance of the topic.

3. Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.

Grades 11–12 students:

2. Write informative/explanatory texts, including the narration of historical events or scientific procedures/experiments, in which they:
   a. Introduce a complex topic and organize the information so that each new piece of information builds on that which precedes it to create a unified whole; use formatting and graphics (e.g., headings, figures, tables, graphs, illustrations) as useful to clarify ideas.
   b. Develop a complex topic that has historical and scientific significance using the most significant and relevant facts, data, details, quotations, examples, extended definitions, or other information.
   c. Use varied transitional devices and sentence structures to create cohesion, clarify complex information and ideas, and link the major sections of the text.
   d. Use precise language, domain-specific and technical wording, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the specific discipline and context as well as to the expertise of likely readers.
   e. Provide a well-developed conclusion that follows logically from the information or explanation provided and that articulates the implications or significance of the topic.

3. Students' narrative skills continue to grow in these grades. The *Standards* require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history, students must be able to write narrative accounts about individuals or events of historical import. In science, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations that others can replicate them and (possibly) reach the same results.

Writing Standards for History/Social Studies and Science 6–12

Production and Distribution of Writing

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
4. Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.	**4.** Produce writing in which the organization, development, substance, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach after rethinking how well questions of purpose and context have been addressed.	**5.** Strengthen writing as needed by planning, revising, editing, or trying a new approach, focusing on addressing what is most significant for a specific task and context.	**5.** Strengthen writing as needed by planning, revising, editing, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to present and cite information effectively in a digital format, including when publishing and responding to writing.	**6.** Use technology, including the Internet, to produce, publish, and collaborate on a shared writing product, incorporating diverse and sometimes conflicting feedback.	**6.** Demonstrate command of technology, including the Internet, to produce, publish, and update work in response to ongoing feedback, including fresh arguments or new information.

Research to Build Knowledge

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
7. Perform short, focused research projects in response to a question or problem and generate additional related questions that allow for multiple avenues of exploration.	**7.** Perform short, focused research projects and more sustained research; synthesize multiple sources on a subject to answer a question or solve a problem.	**7.** Perform short, focused research projects and more sustained research; synthesize multiple authoritative sources on a subject to answer a question or solve a problem.
8. Gather relevant information from multiple print and digital sources using effectively tailored searches; assess the credibility and accuracy of each source; and quote or paraphrase the evidence, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources; assess the credibility, accuracy, and strengths and limitations of each source; and integrate selected information into the text, avoiding overreliance on any one source, avoiding plagiarism, and following a standard format for citation.	**8.** Gather relevant information from multiple print and digital sources; assess its credibility and accuracy and its usefulness in terms of purpose, task, and audience; and integrate selected information into the text, avoiding overreliance on any one source, avoiding plagiarism, and following a standard format for citation.
9. Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.	**9.** Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.	**9.** Write in response to informational sources, drawing on textual evidence to support analysis and reflection as well as to describe what they have learned.

Range of Writing

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	**10.** Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

COMMON CORE STATE STANDARDS

FOR Mathematics

Contents

Introduction
Toward greater focus and coherence

The composite standards [of Hong Kong, Korea and Singapore] have a number of features that can inform an international benchmarking process for the development of K–6 mathematics standards in the US. First, the composite standards concentrate the early learning of mathematics on the number, measurement, and geometry strands with less emphasis on data analysis and little exposure to algebra. The Hong Kong standards for grades 1–3 devote approximately half the targeted time to numbers and almost all the time remaining to geometry and measurement.

Ginsburg, Leinwand and Decker, 2009

Mathematics experiences in early childhood settings should concentrate on (1) number (which includes whole number, operations, and relations) and (2) geometry, spatial relations, and measurement, with more mathematics learning time devoted to number than to other topics. The mathematical process goals should be integrated in these content areas. Children should understand the concepts and learn the skills exemplified in the teaching-learning paths described in this report.

National Research Council, 2009

In general, the US textbooks do a much worse job than the Singapore textbooks in clarifying the mathematical concepts that students must learn. Because the mathematics concepts in these textbooks are often weak, the presentation becomes more mechanical than is ideal. We looked at both traditional and non-traditional textbooks used in the US and found this conceptual weakness in both.

Ginsburg et al., 2005

Notable in the research base for these standards are conclusions from TIMSS and other studies of high-performing countries that the traditional US mathematics curriculum must become substantially more coherent and more focused in order to improve student achievement in mathematics. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is 'a mile wide and an inch deep.' The draft Common Core State Standards for Mathematics are a substantial answer to this challenge.

It is important to recognize that "fewer standards" are no substitute for *focused* standards. Achieving "fewer standards" would be easy to do by simply resorting to broad, general statements. Instead, the draft Common Core State Standards for Mathematics aim for clarity and specificity.

Assessing the coherence of a set of standards is more difficult than assessing their focus. William Schmidt and Richard Houang (2002) have said that content standards and curricula are coherent if they are:

> *articulated over time as a sequence of topics and performances that are logical and reflect, where appropriate, the sequential or hierarchical nature of the disciplinary content from which the subject matter derives. That is, what and how students are taught should reflect* not only the topics *that fall within a certain academic discipline,* but also the key ideas *that determine how knowledge is organized and generated within that discipline. This implies that "to be coherent," a set of content standards must evolve from particulars (e.g., the meaning and operations of whole numbers, including simple math facts and routine computational procedures associated with whole numbers and fractions) to deeper structures inherent in the discipline. This deeper structure then serves as a means for connecting the particulars (such as an understanding of the rational number system and its properties).* (emphasis added)

The draft Common Core State Standards for Mathematics endeavor to follow such a design, not only by stressing conceptual understanding of the key ideas, but also by continually returning to organizing principles such as place value or the laws of arithmetic to structure those ideas.

The standards in this draft document define what students should understand and be able to do. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, *why* a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between the student who can summon a mnemonic device such as "FOIL" to expand a product such as $(a + b)(x + y)$ and a student who can explain where that mnemonic comes from. Teachers often observe this difference firsthand, even if large-scale assessments in the year 2010 often do not. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding $(a + b + c)(x + y)$. Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

The draft Common Core State Standards for Mathematics begin on the next page with eight Standards for Mathematical Practice. These are not a list of individual math topics, but rather a list of ways in which developing student-practitioners of mathematics increasingly ought to engage with those topics as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years.

Grateful acknowledgment is here made to Dr. Cathy Kessel for editing the draft standards.

Mathematics | Standards for Mathematical Practice

Proficient students of all ages expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something, and they have the procedural and conceptual tools to continue. They are experimenters and inventors, and can adapt known strategies to new problems. They think strategically.

The practices described below are encouraged in apprentices by expert mathematical thinkers. Students who engage in these practices, individually and with their classmates, discover ideas and gain insights that spur them to pursue mathematics beyond the classroom walls. They learn that effort counts in mathematical achievement. Encouraging these practices in students of all ages should be as much a goal of the mathematics curriculum as the learning of specific content.

1 Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2 Reason abstractly and quantitatively.

Mathematically proficient students make sense of the quantities and their relationships in problem situations. Students bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3 Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

4 Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, 2-by-2 tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer algebra system, statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students interpret graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

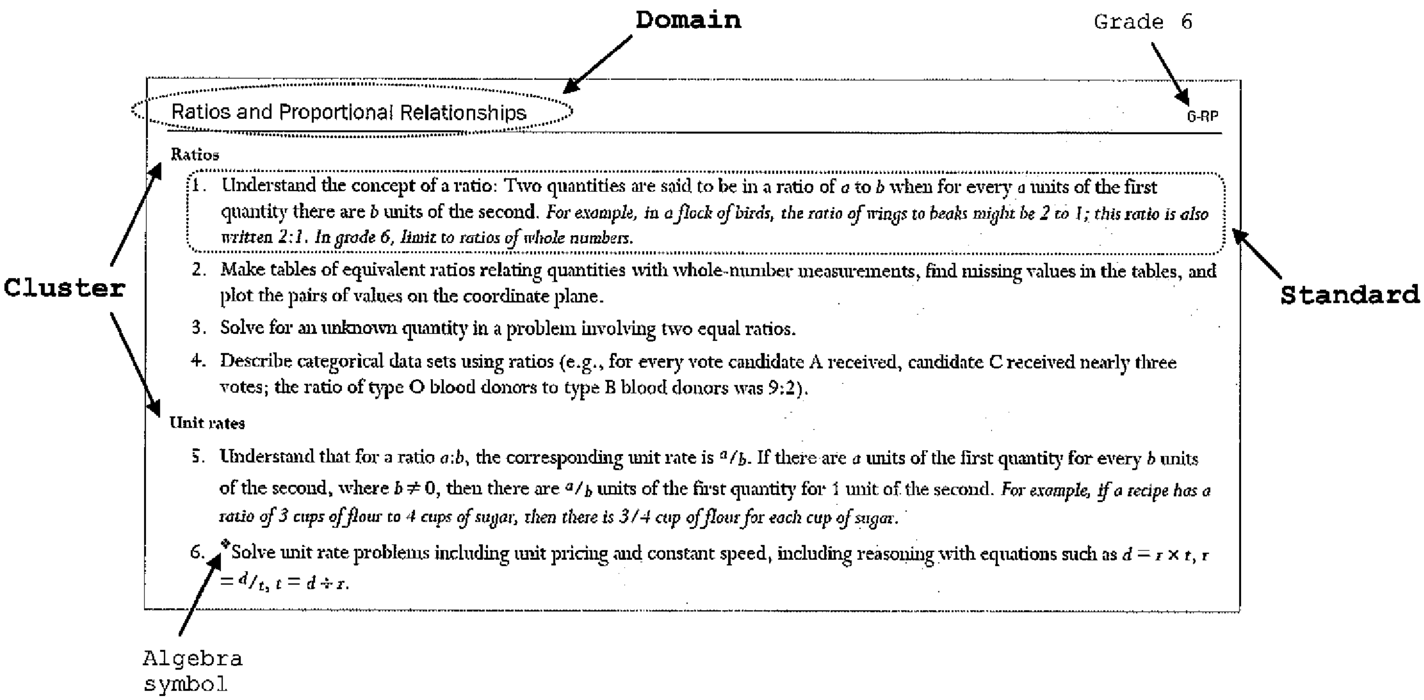
7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8 Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

How to read the grade level standards



Ratios and Proportional Relationships 6-RP

Ratios

1. Understand the concept of a ratio: Two quantities are said to be in a ratio of a to b when for every a units of the first quantity there are b units of the second. *For example, in a flock of birds, the ratio of wings to beaks might be 2 to 1; this ratio is also written 2:1. In grade 6, limit to ratios of whole numbers.*
2. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.
3. Solve for an unknown quantity in a problem involving two equal ratios.
4. Describe categorical data sets using ratios (e.g., for every vote candidate A received, candidate C received nearly three votes; the ratio of type O blood donors to type B blood donors was 9:2).

Unit rates

5. Understand that for a ratio $a{:}b$, the corresponding unit rate is a/b. If there are a units of the first quantity for every b units of the second, where $b \neq 0$, then there are a/b units of the first quantity for 1 unit of the second. *For example, if a recipe has a ratio of 3 cups of flour to 4 cups of sugar, then there is 3/4 cup of flour for each cup of sugar.*
6. ❖Solve unit rate problems including unit pricing and constant speed, including reasoning with equations such as $d = r \times t$, $r = d/t$, $t = d \div r$.

Standards define what students should understand and be able to do. **Clusters** are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject. **Domains** are larger groups of related standards. For each grade level in Grades K–8, the standards are organized into four or five domains. Standards from different domains may sometimes be closely related.

Algebra Symbol: Key standards for the development of algebraic thinking in Grades K–5 are indicated by ❖.

Dotted Underlines: Dotted underlines, for example, decade words, indicate terms that are explained in the Glossary. In each grade, underlining is used for the first occurrence of a defined term, but not in subsequent occurrences.

Note on Grade Placement of Topics. What students can learn at any particular grade level depends upon what they have learned before. Ideally then, each standard in this document might have been phrased in the form, "Students who already know A should next come to learn B." But in the year 2010 this approach is unrealistic—not least because existing education research cannot specify all such learning pathways. Of necessity therefore, grade placements for specific topics have been made on the basis of state and international comparisons and the collective experience and collective professional judgment of educators, researchers and mathematicians. One promise of common state standards is that over time they will allow research on learning progressions to inform and improve the design of standards to a much greater extent than is possible today. Learning opportunities will continue to vary across schools and school systems, and educators should make every effort to meet the needs of individual students based on their current understanding.

Note on Ordering of Topics within a Grade. These standards do not dictate curriculum. In particular, just because topic A appears before topic B in the standards for a given grade, it does not necessarily mean that topic A must be taught before topic B. A teacher might prefer to teach topic B before topic A, or might choose to highlight connections by teaching topic A and topic B at the same time. Or, a teacher might prefer to teach a topic of his or her own choosing that leads, as a byproduct, to students reaching the standards for topics A and B.

Overview of the Mathematics Standards
Grades K–5

This table shows the domains and clusters in each grade K–5

	K	1	2	3	4	5
Number—Counting and Cardinality	• Number names • Counting to tell the number of objects • Comparing and ordering numbers					
Number—Operations and the Problems They Solve	• Composing and decomposing numbers; addition and subtraction	• Addition and subtraction • Describing situations and solving problems with addition and subtraction	• Addition and subtraction • Describing situations and solving problems with addition and subtraction	• Multiplication and division • Describing situations and solving problems with multiplication and division	• Multiplication and Division • Problem solving with the four operations	
Number—Base Ten	• Two-digit numbers • Composing and decomposing ten	• Numbers up to 100 • Adding and subtracting in base ten	• Numbers up to 1000 • Adding and subtracting in base ten	• Numbers up to 10,000 • Adding and subtracting in base ten • Multiplying and dividing in base ten	• Numbers up to 100,000 • Multiplying and dividing in base ten	• Whole numbers in base ten • Decimal concepts • Operations on decimals
Number—Fractions				• Fractions as representations of numbers • Fractional quantities	• Operations on fractions • Decimal concepts	• Fraction equivalence • Operations on fractions
Measurement and Data	• Direct measurement • Representing and interpreting data	• Length measurement • Time measurement • Representing and interpreting data	• Length measurement • Time and money • Representing and interpreting data	• The number line and units of measure • Perimeter and area • Representing and interpreting data	• The number line and units of measure • Perimeter and area • Angle measurement • Representing and interpreting data	• Units of measure • Volume • Representing and interpreting data
Geometry	• Shapes, their attributes, and spatial reasoning	• Shapes, their attributes, and spatial reasoning	• Shapes, their attributes, and spatial reasoning	• Properties of 2-dimensional shapes • Structuring rectangular shapes	• Lines and angles • Line symmetry	• Coordinates • Plane figures

Overview of the Mathematics Standards
Grades 6–8

This table shows the domains and clusters in each grade 6–8.

	Grade 6	Grade 7	Grade 8
Ratios and Proportional Relationships	• Ratios • Unit rates	• Analyzing proportional relationships • Percent	
The Number System	• Operations • The system of rational numbers	• The system of rational numbers • The system of real numbers	• The system of real numbers
Expressions and Equations	• Expressions • Quantitative relationships and the algebraic approach to problems	• Expressions • Quantitative relationships and the algebraic approach to solving problems	• Slopes of lines in the coordinate plane • Linear equations and systems
Functions			• Function concepts • Functional relationships between quantities
Geometry	• Properties of area, surface area, and volume	• Congruence and similarity • Angles	• Congruence and similarity • The Pythagorean Theorem • Plane and solid geometry
Statistics and Probability	• Variability and measures of center • Summarizing and describing distributions	• Situations involving randomness • Random sampling to draw inferences about a population • Comparative inferences about two populations	• Patterns of association in bivariate data

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing, comparing and ordering whole numbers and joining and separating sets; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

(1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; creating a set with a given number of objects; comparing and ordering sets or numerals; and modeling simple joining and separating situations with objects. They choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic shapes, such as squares, triangles, circles, rectangles, (regular) hexagons, and (isosceles) trapezoids, presented in a variety of ways (e.g., with different sizes or orientations), as well as three-dimensional shapes such as spheres, cubes, and cylinders. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Number—Counting and Cardinality K-NCC

Number names

1. Say the number name sequence to 100.
2. Know the decade words to ninety and recite them in order ("ten, twenty, thirty, ...").
3. Say the number name sequence forward or backward beginning from a given number within the known sequence (instead of always beginning at 1).
4. Write numbers from 1 to 20 in base-ten notation.

Counting to tell the number of objects

5. Count to answer "how many?" questions about as many as 20 things. *Objects may be arranged in a line, a rectangular array, a circle, or a scattered configuration.*
6. Understand that when counting objects,
    a. The number names are said in the standard order.
    b. Each object is paired with one and only one number name.
    c. The last number name said tells the number of objects counted.
7. Understand that when counting forward, each successive number name refers to a quantity that is 1 larger.

Comparing and ordering numbers

8. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. *Include groups with up to ten objects.*
9. Compare and put in order numbers between 1 and 10 presented in written symbols: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

Number—Operations and the Problems They Solve K-NOP

Composing and decomposing numbers; addition and subtraction

1. Understand addition as putting together—e.g., finding the number of objects in a group formed by putting two groups together. Understand subtraction as taking apart—e.g., finding the number of objects left when a one group is taken from another.
2. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. *Note that drawings need not show details, but should show the mathematics in the problem. (This note also applies wherever drawings are mentioned in subsequent standards.)*
3. ❖Decompose numbers less than or equal to 10 into pairs in various ways, e.g., using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$). Compose numbers whose sum is less than or equal to 10, e.g., using objects or drawings, and record each composition by a drawing or equation (e.g., $3 + 1 = 4$).❖
4. Compose and decompose numbers less than or equal to 10 in two different ways, and record compositions and decompositions by drawings or equations. *For example, 7 might be composed or decomposed in two different ways by a drawing showing how a group of 2 and a group of 5 together make the same number as do a group of 3 and a group of 4.*
5. ❖Understand that addition and subtraction are related. *For example, when a group of 9 is decomposed into a group of 6 and a group of 3, this means not only $9 = 6 + 3$ but also $9 - 3 = 6$ and $9 - 6 = 3$.*
6. ❖Solve addition and subtraction word problems, and calculate additions and subtractions within 10, e.g., using objects or drawings to represent the problem.
7. Fluently add and subtract, for sums and minuends of 5 or less.

Number—Base Ten K-NBT

Two-digit numbers

1. Understand that 10 can be thought of as a bundle of ones—a unit called a "ten."
2. Understand that a teen number is composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
3. Compose and decompose teen numbers into a ten and some ones, e.g., by using objects or drawings, and record the compositions and decompositions in base-ten notation. *For example, $10 + 8 = 18$ and $14 = 10 + 4$.*
4. Put in order numbers presented in base-ten notation from 1 to 20 (inclusive), and be able to explain the reasoning.
5. Understand that a decade word refers to one, two, three, four, five, six, seven, eight, or nine tens.
6. Understand that the two digits of a two-digit number represent amounts of tens and ones. *In 29, for example, the 2 represents two tens and the 9 represents nine ones.*

Composing and decomposing ten

7. Decompose 10 into pairs of numbers, e.g., by using objects or drawings, and record each decomposition with a drawing or equation.
8. Compose numbers to make 10, e.g., by using objects or drawings, and record each composition with a drawing or equation.
9. ❖For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Measurement and Data K-MD

Direct measurement

1. Understand that objects have measurable attributes, such as length or weight. A single object might have several measurable attributes of interest.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of" the attribute. *For example, directly compare the heights of two books and identify which book is taller.*

Representing and interpreting data

3. Classify objects or people into given categories; count the numbers in each category and sort the categories by count. *Limit category counts to be less than or equal to 10.*

Geometry K-G

Shapes, their attributes, and spatial reasoning

1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind*, and *next to*.
2. Understand that names of shapes apply regardless of the orientation or overall size of the shape. *For example, a square in any orientation is still a square. Students may initially need to physically rotate a shape until it is "level" before they can correctly name it.*
3. Understand that shapes can be two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
4. Understand that shapes can be seen as having parts, such as sides and vertices ("corners"), and that shapes can be put together to compose other shapes.
5. Analyze and compare a variety of two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, component parts (e.g., number of sides and vertices) and other attributes (e.g., having sides of equal length).
6. Combine two- or three-dimensional shapes to solve problems such as deciding which puzzle piece will fit into a place in a puzzle.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for additions and subtractions within 20; (2) developing understanding of whole number relationships, including grouping in tens and ones, (3) developing understanding of linear measurement and measuring lengths, and (4) composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model "put together/take apart," "add to," "take from," and "compare" situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (i.e., adding two is the same as counting on two). They use properties of addition (commutativity and associativity) to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the inverse relationship between addition and subtraction.

(2) Students compare and order whole numbers (at least to 100), to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). They understand the sequential order of the counting numbers and their relative magnitudes through activities such as representing numbers on paths of numbered things.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as partitioning (the mental activity of decomposing the length of an object into equal-sized units) and transitivity (e.g., in terms of length, if object A is longer than object B and object B is longer than object C, then object A is longer than object C). They understand linear measure as an iteration of units, and use rulers and other measurement tools with that understanding.

(4) Students compose and decompose plane and solid figures (e.g., put two congruent isosceles triangles together to make a rhombus), building understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine solid and plane figures, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Addition and subtraction

1. ❖Understand the properties of addition.
   a. Addition is commutative. *For example, if 3 cups are added to a stack of 8 cups, then the total number of cups is the same as when 8 cups are added to a stack of 3 cups; that is, $8 + 3 = 3 + 8$.*
   b. Addition is associative. *For example, $4 + 3 + 2$ can be found by first adding $4 + 3 = 7$ then adding $7 + 2 = 9$, or by first adding $3 + 2 = 5$ then adding $4 + 5 = 9$.*
   c. 0 is the additive identity.
2. ❖Explain and justify properties of addition and subtraction, e.g., by using representations such as objects, drawings, and story contexts. Explain what happens when:
   a. The order of addends in a sum is changed in a sum with two addends.
   b. 0 is added to a number.
   c. A number is subtracted from itself.
   d. One addend in a sum is increased by 1 and the other addend is decreased by 1. *Limit to two addends.*
3. ❖Understand that addition and subtraction have an inverse relationship. *For example, if $8 + 2 = 10$ is known, then $10 - 2 = 8$ and $10 - 8 = 2$ are also known.*
4. ❖Understand that when all but one of three numbers in an addition or subtraction equation are known, the unknown number can be found. *Limit to cases where the unknown number is a whole number.*
5. Understand that addition can be recorded by an expression (e.g., $6 + 3$), or by an equation that shows the sum (e.g., $6 + 3 = 9$). Likewise, subtraction can be recorded by an expression (e.g., $9 - 5$), or by an equation that shows the difference (e.g., $9 - 5 = 4$).

Describing situations and solving problems with addition and subtraction

6. Understand that addition and subtraction apply to situations of adding-to, taking-from, putting together, taking apart, and comparing. *See Glossary, Table 1.*
7. ❖Solve word problems involving addition and subtraction within 20, e.g., by using objects, drawings and equations to represent the problem. *Students should work with all of the addition and subtraction situations shown in the Glossary, Table 1, solving problems with unknowns in all positions, and representing these situations with equations that use a symbol for the unknown (e.g., a question mark or a small square). Grade 1 students need not master the more difficult problem types.*
8. Solve word problems involving addition of three whole numbers whose sum is less than or equal to 20.

Number—Base Ten 1-NBT

Numbers up to 100

1. Read and write numbers to 100.
2. Starting at any number, count to 100 or beyond.
3. Understand that when comparing two-digit numbers, if one number has more tens, it is greater; if the amount of tens is the same in each number, then the number with more ones is greater.
4. Compare and order two-digit numbers based on meanings of the tens and ones digits, using > and < symbols to record the results of comparisons.

Adding and subtracting in base ten

5. Calculate mentally, additions and subtractions within 20.
   a. Use strategies that include counting on; making ten (for example, $7 + 6 = 7 + 3 + 3 = 10 + 3 = 13$); and decomposing a number (for example, $17 - 9 = 17 - 7 - 2 = 10 - 2 = 8$).
6. Demonstrate fluency in addition and subtraction within 10.
7. Understand that in adding or subtracting two-digit numbers, one adds or subtracts like units (tens and tens, ones and ones) and sometimes it is necessary to compose or decompose a higher value unit.
8. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count.
9. Add one-digit numbers to two-digit numbers, and add multiples of 10 to one-digit and two-digit numbers.
10. Explain addition of two-digit numbers using concrete models or drawings to show composition of a ten or a hundred.
11. ❖Add two-digit numbers to two-digit numbers using strategies based on place value, properties of operations, and/or the inverse relationship between addition and subtraction; explain the reasoning used.

Length measurement

1. Order three objects by length; compare the length of two objects indirectly by using a third object.
2. Understand that the length of an object can be expressed numerically by using another object as a length unit (such as a paper-clip, yardstick, or inch length on a ruler). The object to be measured is partitioned into as many equal parts as possible with the same length as the length unit. The length measurement of the object is the number of length units that span it with no gaps or overlaps. *For example, "I can put four paperclips end to end along the pencil, so the pencil is four paperclips long."*
3. Measure the length of an object by using another object as a length unit.

Time measurement

4. Tell time from analog clocks in hours and half- or quarter-hours.

Representing and interpreting data

5. Organize, represent, and interpret data with several categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry

Shapes, their attributes, and spatial reasoning

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) for a wide variety of shapes.
2. Understand that shapes can be joined together (composed) to form a larger shape or taken apart (decomposed) into a collection of smaller shapes. Composing multiple copies of some shapes creates tilings. *In this grade, "circles," "rectangles," and other shapes include their interiors as well as their boundaries.*
3. Compose two-dimensional shapes to create a unit, using cutouts of rectangles, squares, triangles, half-circles, and quarter-circles. Form new shapes by repeating the unit.
4. Compose three-dimensional shapes to create a unit, using concrete models of cubes, right rectangular prisms, right circular cones, and right circular cylinders. Form new shapes by repeating the unit. *Students do not need to learn formal names such as "right rectangular prism."*
5. Decompose circles and rectangles into two and four equal parts. Describe the parts using the words *halves*, *fourths*, and *quarters*, and using the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the parts. Understand that decomposing into more equal shares creates smaller shares.
6. Decompose two-dimensional shapes into rectangles, squares, triangles, half-circles, and quarter-circles, including decompositions into equal shares.

Mathematics | Grade 2

In Grade 2, instructional time should focus on three critical areas: (1) developing understanding of base-ten notation; (2) developing fluency with additions and subtractions within 20 and fluency with multi-digit addition and subtraction; and (3) describing and analyzing shapes.

(1) Students develop an understanding of the base-ten system (at least to 1000). Their understanding of the base-ten system includes ideas of counting in units (twos, fives, and tens) and multiples of hundreds, tens, and ones, as well as number relationships, including comparing and ordering. They understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with additions and subtractions within 20. They solve arithmetic problems by applying their understanding of models for addition and subtraction (such as combining or separating sets or using number lines that begin with zero), relationships and properties of numbers, and properties of addition. They develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of two-digit whole numbers. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences. They develop fluency with efficient procedures, including standard algorithms, for adding and subtracting whole numbers; understand and explain why the procedures work based on their understanding of base-ten notation and properties of operations; and use them to solve problems.

(3) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding attributes of two- and three-dimensional space such as area and volume, and properties such as congruence and symmetry that they will learn about in later grades.

Addition and subtraction

1. ❖Explain and justify properties of addition and subtraction, e.g., by using representations such as objects, drawings, and story contexts. Include properties such as:
   a. Changing the order of addends does not change their sum.
   b. Subtracting one addend from a sum of two numbers results in the other addend.
   c. If more is subtracted from a number, the difference is decreased, and if less is subtracted the difference is increased.
   d. In an addition equation, each addend can be decomposed and the parts can be recombined in any order without changing the sum. *For example, $5 + 3 = 8$. Because 5 decomposes as $4 + 1$, the first addend can be replaced by $4 + 1$, yielding $(4 + 1) + 3 = 8$. Recombining in two different orders: $4 + 4 = 8$, also $7 + 1 = 8$.*

Describing situations and solving problems with addition and subtraction

2. ❖Solve word problems involving addition and subtraction within 100, e.g., by using drawings or equations to represent the problem. *Students should work with all of the addition and subtraction situations shown in the Glossary, Table 1, solving problems with unknown sums, addends, differences, minuends, and subtrahends, and representing these situations with equations that use a symbol for the unknown (e.g., a question mark or a small square). Focus on the more difficult problem types.*
3. Solve two-step word problems involving addition and subtraction within 100, e.g., by using drawings or equations to represent the problem.

Number—Base Ten 2-NBT

Numbers up to 1000

1. Understand that 100 can be thought of as a bundle of tens—a unit called a "hundred."
2. Read and write numbers to 1000 using base-ten notation, number names, and expanded form.
3. Count within 1000; skip count by 2s, 5s, 10s, and 100s.
4. Understand that when comparing three-digit numbers, if one number has more hundreds, it is greater; if the amount of hundreds is the same in each number, then the number with more tens is greater. If the amount of tens and hundreds is the same in each number, then the number with more ones is greater.
5. Compare and order three-digit numbers based on meanings of the hundreds, tens, and ones digits.

Adding and subtracting in base ten

6. Fluently add and subtract within 20. By end of Grade 2, know from memory sums of one-digit numbers.
7. Mentally compute sums and differences of multiples of 10. *For example, mentally calculate $130 - 80$.*
8. Understand that in adding or subtracting three-digit numbers, one adds or subtracts like units (hundreds and hundreds, tens and tens, ones and ones) and sometimes it is necessary to compose or decompose a higher value unit.
9. Given a number from 100 to 900, mentally find 10 more or 10 less than the number, and mentally find 100 more or 100 less than the number, without counting.
10. Understand that algorithms are predefined steps that give the correct result in every case, while strategies are purposeful manipulations that may be chosen for specific problems, may not have a fixed order, and may be aimed at converting one problem into another. *For example, one might mentally compute $503 - 398$ as follows: $398 + 2 = 400$, $400 + 100 = 500$, $500 + 3 = 503$, so the answer is $2 + 100 + 3$, or 105.*
11. ❖ Compute sums and differences of one-, two-, and three-digit numbers using strategies based on place value, properties of operations, and/or the inverse relationship between addition and subtraction; explain the reasoning used.
12. ❖Explain why addition and subtraction strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings or objects. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
13. Compute sums of two three-digit numbers, and compute sums of three or four two-digit numbers, using the standard algorithm; compute differences of two three-digit numbers using the standard algorithm.

Measurement and Data 2-MD

Length measurement

1. Understand that 1 inch, 1 foot, 1 centimeter, and 1 meter are conventionally defined lengths used as standard units.
2. Measure lengths using measurement tools such as rulers, yardsticks and measuring tapes; understand that these tools are used to find out how many standard length units span an object with no gaps or overlaps, when the 0 mark of the tool is aligned with an end of the object.

3. Understand that when measuring a length, if a smaller unit is used, more copies of that unit are needed to measure the length than would be necessary if a larger unit were used.
4. Understand that units can be decomposed into smaller units, e.g., 1 foot can be decomposed into 12 inches and 1 meter can be decomposed into 100 centimeters. A small number of long units might compose a greater length than a large number of small units.
5. Understand that lengths can be compared by placing objects side by side, with one end lined up. The difference in lengths is how far the longer extends beyond the end of the shorter.
6. Understand that a sum of two whole numbers can represent a combination of two lengths; a difference of two whole numbers can represent a difference in length; find total lengths and differences in lengths using addition and subtraction.

Time and money

7. Find time intervals between hours in one day.
8. Solve word problems involving dollar bills, quarters, dimes, nickels and pennies. *Do not include dollars and cents in the same problem.*

Representing and interpreting data

9. Generate measurement data by measuring whole-unit lengths of several objects, or by making repeated measurements of the same object. Show the measurements by making a dot plot, where the horizontal scale is marked off in whole-number units.
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with several categories. Connect representations on bar graph scales, rulers, and number lines that begin with zero. Solve simple Put Together/Take Apart and Compare problems using information presented in a bar graph. *See Glossary, Table 1.*

Geometry 2G

Shapes, their attributes, and spatial reasoning

1. Understand that different categories of shapes (e.g., rhombuses, trapezoids, rectangles, and others) can be united into a larger category (e.g., quadrilaterals) on the basis of shared attributes (e.g., having four straight sides).
2. Identify and name polygons of up to six sides by the number of their sides or angles.
3. Recognize rectangles, rhombuses, squares and trapezoids as examples of quadrilaterals; draw examples of quadrilaterals that do not belong to any of these subcategories.
4. Draw and identify shapes that have specific attributes, such as number of equal sides or number of equal angles. *Sizes of lengths and angles are compared directly or visually, not compared by measuring.*
5. Recognize objects as resembling spheres, right circular cylinders, and right rectangular prisms. *Students do not need to learn formal names such as "right rectangular prism."*
6. Decompose circular and rectangular objects into two, three, or four equal parts. Describe the parts using the words *halves*, *thirds*, *half of*, *a third of*, etc.; describe the wholes as two halves, three thirds, four fourths. Recognize that a half, a third, or a fourth of a circular or rectangular object—a graham cracker, for example—is the same size regardless of its shape.

Mathematics | Grade 3

In Grade 3, instructional time should focus on four critical areas: (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, starting with unit fractions; (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes. Multiplication, division, and fractions are the most important developments in Grade 3.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through the use of representations such as equal-sized groups, arrays, area models, and equal jumps on number lines for multiplication; and successive subtraction, partitioning, and sharing for division. Through this process, numbers themselves take on new meaning and are no longer only counters for single objects. They represent groups, a number of groups (for example, 3 teams of 6 people), or a comparative factor (3 times as long).

Students use properties of operations to calculate products of whole numbers. They use increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students learn the inverse relationship between multiplication and division.

(2) Students develop an understanding of a definition of a fraction, beginning with unit fractions. They use fractions to represent parts of a whole or distances on a number line that begins with zero. Students understand that the size of a fractional part is relative to the size of the whole (for example, ¼ of a mile is longer than ¾ of a foot, even though ¼ < ¾), and they are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing and ordering fractions using by models or strategies based on noticing common numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They understand that area can be quantified by finding the total number of same-size units of area required to cover the shape without gaps or overlaps. They understand that a 1-unit by 1-unit square is the standard unit for measuring area. Students understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students connect area measure to the area model used to represent multiplication, and they use this connection to justify using multiplication to determine the area of a rectangle. Students contrast area with perimeter.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify the shapes by their sides and angles, and connect these with definitions of shapes. Students investigate, describe, and reason about decomposing and combining polygons to make other polygons. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of attributes and properties of two-dimensional objects.

Multiplication and division

1. Understand that multiplication of whole numbers is repeated addition. *For example, 5×7 means 7 added to itself 5 times. Products can be represented by rectangular arrays, with one factor the number of rows and the other the number of columns.*
2. *Understand the properties of multiplication.
   a. Multiplication is commutative. *For example, the total number in 3 groups with 6 things each is the same as the total number in 6 groups with 3 things each, that is, $3 \times 6 = 6 \times 3$.*
   b. Multiplication is associative. *For example, $4 \times 3 \times 2$ can be calculated by first calculating $4 \times 3 = 12$ then calculating $12 \times 2 = 24$, or by first calculating $3 \times 2 = 6$ then calculating $4 \times 6 = 24$.*
   c. 1 is the multiplicative identity.
   d. Multiplication distributes over addition (the distributive property). *For example, $5 \times (3 + 4) = (5 \times 3) + (5 \times 4)$.*
3. *Explain and justify properties of multiplication and division, e.g., by using representations such as objects, drawings, and story contexts. Include properties such as:
   a. Changing the order of two factors does not change their product.
   b. The product of a number and 1 is the number.
   c. Dividing a nonzero number by itself yields 1.
   d. Multiplying a quantity by a nonzero number, then dividing by the same number, yields the original quantity.
   e. When one factor in a product is multiplied by a number and another factor divided by the same number, the product is unchanged. *Limit to multiplying and dividing by numbers that result in whole-number quotients.*
   f. Products where one factor is a one-digit number can be computed by decomposing one factor as the sum of two numbers, multiplying each number by the other factor, and adding the two products.
4. *Understand that multiplication and division have an inverse relationship. *For example, if $5 \times 7 = 35$ is known, then $35 \div 5 = 7$ and $35 \div 7 = 5$ are also known. The division $35 \div 5$ means the number which yields 35 when multiplied by 5; because $5 \times 7 = 35$, then $35 \div 5 = 7$.*
5. *Understand that when all but one of three numbers in a multiplication or division equation are known, the unknown number can be found. *Limit to cases where the unknown number is a whole number.*

Describing situations and solving problems with multiplication and division

6. Understand that multiplication and division apply to situations with equal groups, arrays or area, and comparing. *See Glossary, Table 2.*
7. *Solve word problems involving multiplication and division within 100, using an equation with a symbol for the unknown to represent the problem. *This standard is limited to problems with whole-number quantities and whole-number quotients. Focus on situations described in the Glossary, Table 2.*
8. *Solve one- or two-step word problems involving the four operations. *This standard is limited to problems with whole-number quantities and whole-number quotients.*
9. Understand that multiplication and division can be used to compare quantities (see Glossary, Table 2); solve multiplicative comparison problems with whole numbers (problems involving the notion of "times as much").

Number—Base Ten 3-NBT

Numbers up to 10,000

1. Understand that 1000 can be thought of as a bundle of hundreds—a unit called a "thousand."
2. Read and write numbers to 10,000 using base-ten notation, number names, and expanded form.
3. Count within 10,000; skip count by 10s, 100s and 1000s.
4. Understand that when comparing four-digit numbers, if one number has more thousands, it is greater; if the amount of thousands is the same in each number, then the number with more hundreds is greater; and so on. Compare and order four-digit numbers based on meanings of the digits.

Adding and subtracting in base ten

5. Mentally calculate sums and differences of multiples of 10, 100, and 1000. *For example, mentally calculate $1300 - 800$*
6. Given a number from 1000 to 9000, mentally find 100 more or 100 less than the number, and mentally find 1000 more or 1000 less than the number, without counting.

Multiplying and dividing in base ten

7. ❖Understand that the distributive property is at the heart of strategies and algorithms for multiplication and division computations with numbers in base-ten notation; use the distributive property and other properties of operations to explain patterns in the multiplication table and to derive new multiplication and division equations from known ones. *For example, the distributive property makes it possible to multiply* 4×7 *by decomposing* 7 *as* $5 + 2$ *and using* $4 \times 7 = 4 \times (5 + 2) = (4 \times 5) + (4 \times 2) = 20 + 8 = 28$.
8. Fluently multiply one-digit numbers by 10.
9. Use a variety of strategies for multiplication and division within 100. By end of Grade 3, know from memory products of one-digit numbers where one of the factors is 2, 3, 4, or 5.

Number—Fractions 3-NF

Fractions as representations of numbers

1. Understand that a unit fraction corresponds to a point on a number line. *For example, 1/3 represents the point obtained by decomposing the interval from 0 to 1 into three equal parts and taking the right-hand endpoint of the first part. In Grade 3, all number lines begin with zero.*
2. Understand that fractions are built from unit fractions. *For example, 5/4 represents the point on a number line obtained by marking off five lengths of ¼ to the right of 0.*
3. Understand that two fractions are equivalent (represent the same number) when both fractions correspond to the same point on a number line. Recognize and generate equivalent fractions with denominators 2, 3, 4, and 6 (e.g., $1/2 = 2/4$, $4/6 = 2/3$), and explain the reasoning.
4. Understand that whole numbers can be expressed as fractions. *Three important cases are illustrated by the examples* $1 = 4/4$, $6 = 6/1$, *and* $7 = (4 \times 7)/4$. *Expressing whole numbers as fractions can be useful for solving problems or making calculations.*

Fractional quantities

5. Understand that fractions apply to situations where a whole is decomposed into equal parts; use fractions to describe parts of wholes. *For example, to show 1/3 of a length, decompose the length into 3 equal parts and show one of the parts.*
6. Compare and order fractional quantities with equal numerators or equal denominators, using the fractions themselves, tape diagrams, number line representations, and area models. Use > and < symbols to record the results of comparisons.

Measurement and Data 3-MD

The number line and units of measure

1. Understand that a number line has an origin (0) and a unit (1), with whole numbers one unit distance apart. Use number lines to represent problems involving distances, elapsed time, amounts of money and other quantities. *In such problems, the interval from 0 to 1 may represent a unit of distance, time, money, etc.*
2. Understand that a unit of measure can be decomposed into equal-sized parts, whose sizes can be represented as fractions of the unit. Convert measurements in one unit to measurements in a smaller or a larger unit, and solve problems involving such mixed units (e.g., feet and inches, weeks and days).

Perimeter and area

3. Understand and use concepts of area measurement.
   a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
   b. A plane figure which can be covered without gaps or overlaps by n unit squares has an area of n square units. Areas of some other figures can be measured by using fractions of unit squares or using figures whose areas have been found by decomposing other figures.
   c. When measuring an area, if a smaller unit of measurement is used, more units must be iterated to measure the area in those units.
   d. Determine and compare areas by counting square units. *Use* cm^2, m^2, in^2, ft^2, *and improvised units.*
4. Understand that multiplication of whole numbers can be represented by area models; a rectangular region that is a length units by b length units (where a and b are whole numbers) and tiled with unit squares illustrates why the rectangle encloses an area of $a \times b$ square units.
5. Solve problems involving perimeters of polygons.
   a. Add given side lengths, and multiply for the case of equal side lengths.
   b. ❖Find an unknown length of a side in a polygon given the perimeter and all other side lengths; represent these problems with equations involving a letter for the unknown quantity.
   c. Exhibit rectangles with the same perimeter and different area, and with the same area and different perimeter.

Representing and interpreting data

6. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *Include single-unit scales and multiple-unit scales; for example, each square in the bar graph might represent 1 pet, 5 pets, or 10 pets.*
7. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a dot plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometry

3.G

Properties of 2-dimensional shapes

1. Understand that a given category of plane figures (e.g., triangles) has subcategories (e.g., isosceles triangles) defined by special properties.
2. Describe, analyze, compare and classify two-dimensional shapes by their properties and connect these properties to the classification of shapes into categories and subcategories (e.g., squares are "special rectangles" as well as "special rhombuses"). *Focus on triangles and quadrilaterals.*

Structuring rectangular shapes

3. Understand that rectangular regions can be tiled with squares in rows and columns, or decomposed into such arrays.
4. Structure a rectangular region spatially by decomposing it into rows and columns of squares. Determine the number of squares in the region using that spatial structure (e.g., by multiplication or skip counting).
5. Understand that shapes can be decomposed into parts with equal areas; the area of each part is a unit fraction of the whole. *For example, when a shape is partitioned into 4 parts with equal area, the area of each part is ¼ of the area of the shape.*

Mathematics | Grade 4

In Grade 4, instructional time should focus on four critical areas: (1) continuing to develop understanding and fluency with whole number multiplication, and developing understanding of multi-digit whole number division; (2) developing an understanding of addition and subtraction of fractions with like denominators, multiplication of fractions by whole numbers, and division of whole numbers with fractional answers; (3) developing an understanding of area; and (4) understanding that geometric figures can be analyzed and classified using properties such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students use understandings of multiplication to develop fluency with multiplication and division within 100. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models, equal intervals on a number line), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate products or mentally calculate products. They develop fluency with efficient procedures, including the standard algorithm, for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate quotients and mentally calculate quotients, depending upon the context and the numbers involved.

(2) Students develop understanding of operations with fractions. They apply their understandings of fractions as built from unit fractions, and use fraction models to represent the addition and subtraction of fractions with like denominators. Students use the meaning of fractions and the meaning of multiplication to understand and explain why the procedure for multiplying a fraction by a whole number makes sense. They understand and explain the connection between division and fractions.

(3) Students develop their understanding of area. They understand and apply the area formula for rectangles and also find areas of shapes that can be decomposed into rectangles. They select appropriate units, strategies (e.g., decomposing shapes), and tools for solving problems that involve estimating and measuring area.

(4) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Multiplication and division

1. Find the factor pairs for a given whole number less than or equal to 100; recognize prime numbers as numbers greater than 1 with exactly one factor pair. *Example: The factor pairs of 42 are {42, 1}, {21, 2}, {14, 3}, {7, 6}.*

Problem solving with the four operations

2. ❖Solve multistep word problems involving the four operations with whole numbers.
3. ❖Solve problems posed with both whole numbers and fractions. Understand that while quantities in a problem might be described with whole numbers, fractions, or decimals, the operations used to solve the problem depend on the relationships between the quantities regardless of which number representations are involved.
4. Assess the reasonableness of answers using mental computation and estimation strategies including rounding to the nearest 10 or 100.

Number—Base Ten 4.NBT

Numbers up to 100,000

1. Understand that a digit in one place represents ten times what it represents in the place to its right. *For example, 7 in the thousands place represents 10 times as many as than 7 in the hundreds place.*
2. Read, write and compare numbers to 100,000 using base-ten notation, number names, and expanded form.

Multiplying and dividing in base ten

3. Understand how the distributive property and the expanded form of a multi-digit number can be used to calculate products of multi-digit numbers.
   a. ❖The product of a one-digit number times a multi-digit number is the sum of the products of the one-digit number with the summands in the expanded form of the multi-digit number. Illustrate this numerically and visually using equations, rectangular arrays, area models, and tape diagrams.
   b. Algorithms for multi-digit multiplication can be derived and explained by writing multi-digit numbers in expanded form and applying the distributive property.
4. Fluently multiply and divide within 100. By end of Grade 4, know from memory products of one-digit numbers where one of the factors is 6, 7, 8, or 9.
5. Mentally calculate products of one-digit numbers and one-digit multiples of 10, 100, and 1000 (e.g., 7×6000). Mentally calculate whole number quotients with divisors of 10 and 100.
6. Compute products and whole number quotients of two-, three- or four-digit numbers and one-digit numbers, and compute products of two two-digit numbers, using strategies based on place value, the properties of operations, and/or the inverse relationship between multiplication and division; explain the reasoning used.
7. Explain why multiplication and division strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithms.*
8. Compute products of two-digit numbers using the standard algorithm, and check the result using estimation.
9. Given two whole numbers, find an equation displaying the largest multiple of one which is less than or equal to the other. *For example, given 325 and 7, the equation $325 = 46 \times 7 + 3$ shows the largest multiple of 7 less than or equal to 325.*

Number—Fractions 4.NF

Operations on fractions

1. Understand addition of fractions:
   a. Adding or subtracting fractions with the same denominator means adding or subtracting copies of unit fractions. *For example, 2/3 + 4/3 is 2 copies of 1/3 plus 4 copies of 1/3, or 6 copies of 1/3 in all, that is 6/3.*
   b. Sums of related fractions can be computed by replacing one with an equivalent fraction that has the same denominator as the other. *For example, the sum of the related fractions 2/3 and 1/6 can be computed by rewriting 2/3 as 4/6 and computing 4/6 + 1/6 = 5/6.*
2. Compute sums and differences of fractions with like denominators, add and subtract related fractions within 1 (e.g., $^1/_2 + {}^1/_4$, $^3/_{10} + {}^4/_{100}$, $^7/_8 - {}^1/_4$), and solve word problems involving these operations.
3. ❖ Understand that the meaning of multiplying a fraction by a whole number comes from interpreting multiplication by a whole number as repeated addition. *For example, $3 \times 2/5 = 6/5$ because $3 \times 2/5 = 2/5 + 2/5 + 2/5 = 6/5$.*

4. Solve word problems that involve multiplication of fractions by whole numbers; represent multiplication of fractions by whole numbers using tape diagrams and area models that explain numerical results.
5. ❖Understand that fractions give meaning to the quotient of any whole number by any non-zero whole number. *For example, $3 \div 4 = 3/4$, because $3/4$ multiplied by 4 equals 3. (The division $3 \div 4$ means the number which yields 3 when multiplied by 4.)*
6. Solve word problems that involve non-whole number quotients of whole numbers; represent quotients of whole numbers using tape diagrams and area models that explain numerical results.

Decimal concepts

7. Understand that a two-digit decimal is a sum of fractions with denominators 10 and 100. *For example, 0.34 is $3/10 + 4/100$.*
8. Use decimals to hundredths to describe parts of wholes; compare and order decimals to hundredths based on meanings of the digits; and write fractions of the form $a/10$ or $a/100$ in decimal notation. *Use > and < symbols to record the results of comparisons.*

Measurement and Data — 4-MD

The number line and units of measure

1. Understand that the unit length on a number line (interval from 0 to 1) can be divided into parts of equal fractional length. Draw number line representations of problem situations involving length, height, and distance including fractional or decimal units. *For example, show distances along a race course to tenths of a mile on a number line, by dividing the unit length into 10 equal parts to get parts of length 1/10; the endpoint of the segment of 1/10 length from 0 represents 1/10 of a mile from the starting point of the race. In Grade 4, all numbers lines begin with zero.*

Perimeter and area

2. Understand that if a region is decomposed into several disjoint pieces, then the area of the region can be found by adding the areas of the pieces (when these areas are expressed in the same units).
3. ❖Apply the formulas for area of squares and rectangles. Measure and compute whole-square-unit areas of objects and regions enclosed by geometric figures which can be decomposed into rectangles. *Limit to situations requiring products of one-or two-digit numbers.*
4. ❖Find one dimension of a rectangle, given the other dimension and the area or perimeter; find the length of one side of a square, given the area or perimeter. Represent these problems using equations involving a letter for the unknown quantity.

Angle measurement

5. Understand what an angle is and how it is measured:
   a. An angle is formed by two rays with a common endpoint.
   b. An angle is measured by reference to a circle with its center at the common endpoint of the rays. The measure of an angle is based on the fraction of the circle between the points where the two rays intersect the circle.
   c. A one-degree angle turns through 1/360 of a circle, where the circle is centered at the common endpoint of its rays; the measure of a given angle is the number of one-degree angles turned with no gaps or overlaps.
6. Measure angles in whole-number degrees using a protractor; sketch angles of specified measure; ❖find the measure of a missing part of an angle, given the measure of the angle and the measure of a part of it, representing these problems with equations involving a letter for the unknown quantity.

Representing and interpreting data

7. Make a dot plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in dot plots. *For example, from a dot plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometry — 4-G

Lines and angles

1. Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines; identify these in plane figures.
2. Identify right angles, and angles smaller than or greater than a right angle in geometric figures; recognize right triangles.
3. Classify shapes based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size.

Line symmetry

4. Understand that a line of symmetry for a geometric figure is a line across the figure such that the figure can be folded along the line into matching parts

5. Identify line-symmetric figures; given a horizontal or vertical line and a drawing that is not a closed figure, complete the drawing to create a figure that is symmetric with respect to the given line.

Mathematics | Grade 5

In Grade 5, instructional time should focus on four critical areas: (1) developing fluency with addition and subtraction of fractions, developing understanding of the multiplication of fractions and of division of fractions in limited cases (fractions divided by whole numbers and whole numbers divided by unit fractions); (2) developing understanding of and fluency with division of multi-digit whole numbers; (3) developing understanding of and fluency with addition, subtraction, multiplication, and division of decimals; and (4) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the inverse relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop fluency with division of whole numbers; understand why procedures work based on the meaning of base-ten notation and properties of operations; and use these procedures to solve problems. Based on the context of a problem situation, they select the most useful form of the quotient for the answer and interpret it appropriately.

(3) Students apply their understandings of models for decimals, decimal notation, and properties of operations to compute sums and differences of finite decimals. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of finite decimals efficiently and accurately.

(4) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be quantified by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve problems.

Whole numbers in base ten

1. Compute quotients of two-, three-, and four-digit whole numbers and two-digit whole numbers using strategies based on place value, the properties of operations, and/or the inverse relationship between multiplication and division; explain the reasoning used.
2. Explain why division strategies and algorithms work, using place value and the properties of operations. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
3. Use the standard algorithm to compute quotients of two-, three- and four-digit whole numbers and two-digit whole numbers, expressing the results as an equation (e.g., $145 = 11 \times 13 + 2$ or $120 \div 7 = 17\ 1/7$).
4. Fluently add, subtract and multiply whole numbers using the standard algorithm for each operation.

Decimal concepts

5. Read, write, and compare numbers expressed as decimals. Understand that a digit in one place represents ten times what it represents in the place to its right. *For example, 7 in the hundredths place represents 10 times as many as 7 in the thousandths place.*
6. Round decimals (to hundredths) to the nearest whole number.
7. Write fractions in decimal notation for fractions with denominators 2, 4, 5, 8, 10, and 100.

Operations on decimals

8. Understand that in adding or subtracting finite decimals, one adds or subtracts like units (tenths and tenths, hundredths and hundredths, etc.) and sometimes it is necessary to compose or decompose a higher value unit.
9. Fluently find 0.1 more than a number and less than a number; 0.01 more than a number and less than a number; and 0.001 more than a number and less than a number, for numbers expressed as finite decimals.
10. Compute sums and differences of finite decimals by expressing the decimals as fractions and adding the fractions. *For example,* $0.05 + 0.91 = 5/100 + 91/100 = 96/100$ *or* 0.96.
11. Compute sums, differences, products, and quotients of finite decimals using strategies based on place value, the properties of operations, and/or the inverse relationships between addition and subtraction and between multiplication and division; explain the reasoning used. *For example, transform* $1.5 \div 0.3$ *into* $15 \div 3 = 5$.
12. Explain why strategies and algorithms for computations with finite decimals work. *Include explanations supported by drawings, equations, or both. A range of reasonably efficient algorithms may be covered, not only the standard algorithm.*
13. Use the standard algorithm for each of the four operations on decimals (to hundredths).
14. Solve word problems involving operations on decimals.

Number—Fractions 5-NF

Fraction equivalence

1. ❖Understand fraction equivalence:
   a. Multiplying the numerator and denominator of a fraction by the same nonzero whole number produces an equivalent fraction. *For example,* $2/3 = (2 \times 4)/(3 \times 4) = 8/12$. *(1/3 is 4 copies of 1/12, so 2/3 is 8 copies of 1/12.)*
   b. Equivalent fractions correspond to the same point on a number line. *In Grade 5, all numbers lines begin with zero.*
   c. When the numerators of equivalent fractions are divided by their denominators, the resulting quotients are the same.
2. Identify pairs of equivalent fractions; given two fractions with unlike denominators, find two fractions with the same denominator and equivalent to each.
3. Compare and order fractions with like or unlike denominators, e.g., by finding equivalent fractions with the same denominator, and describe the sizes of fractional quantities from a context with reference to the context. *Compare using the fractions themselves, tape diagrams or number line representations, and area models.*

Operations on fractions

4. Understand that sums and differences of fractions with unlike denominators can be computed by replacing each with an equivalent fraction so that the resulting fractions have the same denominator. *For example,* $2/3 + 5/4 = 8/12 + 15/12 = 23/12$.
5. Compute sums and differences of fractions with like or unlike denominators, and solve word problems involving addition and subtraction of fractions. Estimate fraction sums and differences to assess the reasonableness of results.
6. ❖ Understand that multiplying a fraction by a/b means taking a parts of a decomposition of the fraction into b equal parts. *For example, to multiply* $2/3 \times 4/5 = 8/15$, *one may decompose a whole of size 4/5 into 3 equal parts; each part has size 4/15. Two*

of these parts then make 8/15, so 2/3 × 4/5 = 8/15. (In general, a/b × p/q = ap/bq.) This standard includes multiplication of a whole number by a fraction, by writing the whole number as fraction with denominator 1.

7. Understand that the area of a rectangle with side lengths a/b and c/d is the product $a/b \times p/q$. This extends the area formula for rectangles to fractional side lengths, and also allows products of fractions to be represented visually as areas of rectangles.
8. ✤Explain and justify the properties of operations with fractions, e.g., by using equations, number line representations, area models, and story contexts.
9. Understand division of unit fractions by whole numbers and division of whole numbers by unit fractions:
   a. Dividing a unit fraction 1/b by a whole number a results in a smaller unit fraction 1/a × b. *For example, 1/3 ÷ 2 = 1/6 because when 1/3 is divided into 2 equal parts, the size of each part is 1/6; a third of a pound of cheese shared between two people will give each person a sixth of a pound. (Using the inverse relationship between multiplication and division: 1/3 ÷ 2 = 1/6 because 1/6 × 2 = 1/3.)*
   b. Dividing a whole number a by a unit fraction 1/b results in a greater whole number a × b. *For example, 2 ÷ 1/3 = 6 because 6 is the number of 1/3s in 2; two pounds of cheese will make six portions of a third of a pound each. (Using the inverse relationship between multiplication and division: 2 ÷ 1/3 = 6 because 6 × 1/3 = 2.)*
10. Calculate products of fractions, and quotients of unit fractions and nonzero whole numbers (with either as divisor), and solve word problems involving these operations. Represent these operations using equations, area models and length models.
11. Understand that a mixed number such as 3 2/5 represents the sum of a whole number and a fraction less than one. Because a whole number can be represented as a fraction (3 = 3/1), and the sum of two fractions is also a fraction, a mixed number also represents a fraction (3 2/5 = 3 + 2/5 = 15/5 + 2/5 = 17/5). Write fractions as equivalent mixed numbers and vice versa.

Measurement and Data 5-MD

Units of measure

1. Understand that quantities expressed in like units can be added or subtracted giving a sum or difference with the same unit; different quantities may be multiplied to obtain a new kind of quantity (e.g., as when two lengths are multiplied to compute an area, or when an area and a length are multiplied to compute a volume).
2. Understand that when measuring a quantity, if a smaller unit is used, more units must be iterated to measure the quantity in those units.
3. Convert among different-sized standard measurement units within a given measurement system (e.g., feet to yards, centimeters to meters) and use conversion in solving multi-step word problems.

Volume

4. Understand concepts of volume measurement:
   a. A cube with side length 1 unit (a unit cube) is said to have "one cubic unit" of volume, and can be used to measure volume.
   b. The volume of a right rectangular prism with whole-unit side lengths can be found by packing it with unit cubes and using multiplication to count their number. *For example, decomposing a right rectangular prism 3 length units wide by 5 units deep by 2 units tall shows that its volume is 3 × 5 × 2 cubic units. The base of the prism has area 3 × 5 square units, so the volume can also be expressed as the height times the area of the base.*
   c. When measuring a volume, if a smaller unit is used, more units must be iterated to measure the volume in those units.
   d. If a solid figure is decomposed into several disjoint pieces, then the volume enclosed by the figure can be found by adding the volumes of the pieces (when these volumes are expressed in the same units).
5. Decompose right rectangular prisms into layers of arrays of cubes; determine and compare volumes of right rectangular prisms, and objects well described as right rectangular prisms, by counting cubic units (using cm^3, m^3, in^3, ft^3, and improvised units).

Representing and interpreting data

6. Make a dot plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in dot plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometry 5-G

Coordinates

1. Understand that a pair of perpendicular number lines, called axes, defines a coordinate system.
   a. Their intersection is called the origin, usually arranged to coincide with the 0 on each line.
   b. A given point in the plane can be located by using an ordered pair of numbers, called its coordinates. The first number indicates how far to travel from the origin in the direction of one axis, the second number indicates how far to travel in the direction of the second axis.
   c. To avoid ambiguity, conventions dictate that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
2. Graph points in the first quadrant of the coordinate plane, and identify the coordinates of graphed points. Where ordered pairs arise in a problem situation, interpret the coordinate values in the context of the situation.

Plane figures

3. Understand that properties belonging to a category of plane figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*
4. Classify plane figures in a hierarchy based on properties.

Mathematics | Grade 6

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division; (2) developing understanding of and fluency with division of fractions and developing fluency with multiplication of fractions; (3) developing understanding of and using formulas to determine areas of two-dimensional shapes and distinguishing between volume and surface area of three-dimensional shapes; and (4) writing, interpreting, and using expressions and equations.

(1) Students use reasoning about multiplication and division with quantities to solve ratio and rate problems. By viewing equivalent ratios and rates as deriving from, and extending, pairs of rows (or columns) in the multiplication table, and by analyzing simple drawings that indicate the relative size of quantities, students extend whole number multiplication and division to ratios and rates. Thus students expand their repertoires of problems in which multiplication and division can be used to solve problems, and they build on their understanding of fractions to understand ratios. Students solve a wide variety of problems involving ratios and rates.

(2) Students use the meaning of fractions, the meanings of multiplication and division, and the inverse relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students are able to add, subtract, multiply, and divide fractions fluently, and use these operations to solve problems, including multi-step problems and problems involving measurement.

(3) Students reason about relationships among shapes to determine area and surface area. They find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. Using these methods, students discuss, develop, and justify formulas for areas of triangles and parallelograms. Students find areas of polygons and surface areas of prisms and pyramids by decomposition into pieces whose area they can determine.

(4) Students write mathematical expressions and equations that correspond to given situations, they evaluate expressions, and they use expressions and formulas to solve problems. Students understand that a variable is a letter standing for a number, where the number is unknown, or where, for the purpose at hand, it can be any number in the domain of interest. Students understand that expressions in different forms can be equivalent, and they use the laws of arithmetic to rewrite expressions to represent a total quantity in a different way (such as to represent it more compactly or to feature different information). Students know that the solutions of an equation are the values of the variables that make the equation true. Students use properties of operations and the idea of maintaining the equality of both sides of an equation to solve simple one-step equations. Students construct and analyze tables, such as tables of quantities that are in equivalent ratios, and they use equations (such as $3x = y$) to describe relationships in a table.

Having represented and analyzed data in Grades K–5, students in Grade 6 begin a serious engagement with statistics. The study of variability in data distinguishes statistics from mathematics. Students beginning their study of variability must first recognize statistical questions as those that anticipate variability in the answers. From this conceptual beginning, they learn to describe and summarize distributions of data—an activity that goes beyond merely computing summary statistics to include assessing the shape of a distribution and considering other issues as described in the standards.

Ratios

1. Understand the concept of a ratio: Two quantities are said to be in a ratio of a to b when for every a units of the first quantity there are b units of the second. *For example, in a flock of birds, the ratio of wings to beaks might be 2 to 1; this ratio is also written 2:1. In Grade 6, limit to ratios of whole numbers.*
2. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.
3. Solve for an unknown quantity in a problem involving two equal ratios.
4. Describe categorical data sets using ratios (e.g., for every vote candidate A received, candidate C received nearly three votes; the ratio of type O blood donors to type B blood donors was 9:2).

Unit rates

5. Understand that for a ratio $a{:}b$, the corresponding unit rate is $^a/_b$. If there are a units of the first quantity for every b units of the second, where $b \neq 0$, then there are $^a/_b$ units of the first quantity for 1 unit of the second. *For example, if a recipe has a ratio of 3 cups of flour to 4 cups of sugar, then there is 3/4 cup of flour for each cup of sugar.*
6. ❖Solve unit rate problems including unit pricing and constant speed, including reasoning with equations such as $d = r \times t$, $r = {}^d/_t$, $t = d \div r$.

The Number System

Operations

1. Understand that the properties of operations apply to, and can be used with, addition and multiplication of fractions.
2. Understand that division of fractions is defined by viewing a quotient as the solution for an unknown-factor multiplication problem. *For example, $(2/3) \div (5/7) = 14/15$ because $(5/7) \times (14/15) = (2/3)$.*
3. Solve word problems requiring arithmetic with fractions, using the properties of operations and converting between forms as appropriate; estimate to check reasonableness of answers.
4. Fluently divide whole numbers using the standard algorithm.

The system of rational numbers

5. Understand that a number is a point on the number line.
6. Understand that some quantities have opposite directions, such as elevation above and below sea level or money received and spent. These quantities can be described using positive and negative numbers.
7. Understand that number lines familiar from previous grades can be extended to represent negative numbers to the left of zero. *Number lines can also be vertically oriented, as when a coordinate system is formed. Then the conventional terms "to the right of 0" and "to the left of 0" conventionally become "above 0" and "below 0."*
   a. Two different numbers, such as 7 and –7, that are equidistant from zero on a number line are said to be opposites of one another. The opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$. The opposite of 0 is 0.
   b. The absolute value of a number q, written $|q|$, is its distance from zero, and is always positive or zero.
   c. Fractions and their opposites form a system of numbers called the rational numbers, represented by points on a number line. Whole numbers and their opposites form the integers, which are contained in the rational numbers.
   d. Previous ways of comparing positive numbers can be extended to the rational numbers. The statement $p > q$ means that p is located to the right of q on a number line, while $p < q$ means that p is located to the left of q on a number line. Comparisons can also be made by reasoning appropriately about signed quantities (e.g, $-3 > -7$ makes sense because –3°C is a higher temperature than –7°C). The way two numbers compare does not always agree with the way their absolute values compare; for example, $-3 > -7$, but $|-3| < |-7|$.
8. Find and position rational numbers, including integers, on a number line.
9. Use rational numbers to describe quantities such as elevation, temperature, account balance and so on. Compare these quantities, recording the results of comparisons using > and < symbols.
10. Graph points and identify coordinates of points on the coordinate plane in all four quadrants. Where ordered pairs arise in a problem situation, interpret the coordinate values in the context of the situation.

Expressions

1. Understand that an expression records operations with numbers or with letters standing for numbers. *For example, the expression $2 \cdot (8 + 7)$ records adding 8 and 7 then multiplying by 2; the expression $5 - y$ records subtracting y from 5. Focus on the operations of addition, subtraction, multiplication and division, with some attention to square or cube roots.*
2. Understand the use of variables in expressions and algebraic conventions:
   a. A letter is used to stand for a number in an expression in cases where the number is unknown, or where, for the purpose at hand, it can be any number in a domain of interest. Such a letter is called a variable.
   b. If a variable appears in an expression more than once (e.g., as in $t + 3t$), that variable is understood to refer to the same number in each instance.
   c. The multiplication symbol can be omitted when writing products of two or more variables or of a number and a variable. *For example, the expressions xy and $2a$ indicate $x \times y$ and $2 \times a$, respectively.*
3. Describe the structure and elements of simple expressions using correct terminology (sum, term, product, factor, quotient, coefficient); describe an expression by viewing one or more of its parts as a single entity. *For example, describe the expression $2 \cdot (8 + 7)$ as a product of two factors, by viewing $(8 + 7)$ as a single entity. The second factor is itself a sum of two terms.*
4. Understand and generate equivalent expressions:
   a. Understand that two expressions are equivalent if they name the same number regardless of which numbers the variables in them stand for. *For example, the expressions $x + 3$ and $4x$ are not equivalent, even though they happen to name the same number in the case when x stands for 1.*
   b. Understand that applying the laws of arithmetic to an expression results in an equivalent expression. *For example, applying the distributive law to the expression $3 \cdot (2 + x)$ leads to the equivalent expression $6 + 3x$. Applying the distributive law to $y + y + y$ leads to the equivalent expression $y \times (1 + 1 + 1)$, i.e., $y \times 3$ and then the commutative law of multiplication leads to the equivalent expression $3y$.*
   c. Generate equivalent expressions to reinterpret the meaning of an expression. *For example, $2t + 3t$ records the addition of twice a quantity to three times itself; applying the distributive law leads to the equivalent expression $5t$, so that the original expression can be reinterpreted as recording five times the quantity.*

Quantitative relationships and the algebraic approach to problems

5. Understand that an equation is a statement that two expressions are equal, and a solution to an equation is a replacement value of the variable (or replacement values for all the variables if there is more than one) that makes the equation true.
6. Using the idea of maintaining equality between both sides of the equation, solve equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
7. Choose variables to represent quantities in a word problem, and construct simple expressions or equations to solve the problem by reasoning about the quantities.
8. Understand that a variable can be used to represent a quantity that can change, often in relationship to another changing quantity, and an equation can express one quantity, thought of as the dependent variable, in terms of other quantities, thought of as the independent variables; represent a relationship between two quantities using equations, graphs, and tables; translate between any two of these representations. *For example, describe the terms in a sequence $t = 3, 6, 9, 12, \ldots$ of multiples of 3 by writing the equation $t = 3n$ for $n = 1, 2, 3, 4, \ldots$.*

Properties of area, surface area, and volume

1. Understand that plane figures can be decomposed, reassembled, and completed into new figures; use this technique to derive area formulas.
2. Find the areas enclosed by right triangles, other triangles, special quadrilaterals, and polygons (by composing into rectangles or decomposing into triangles and other shapes).
3. Understand that three-dimensional figures can be formed by joining rectangles and triangles along their edges to enclose a solid region with no gaps or overlaps. The surface area is the sum of the areas of the enclosing rectangles and triangles.
4. Find the surface area of cubes, prisms and pyramids (include the use of nets to represent these figures).
5. Solve problems involving area, volume and surface area of objects.
6. Give examples of right rectangular prisms with the same surface area and different volumes, and with the same volume and different surface areas.

7. ❖Use exponents and symbols for square roots and cube roots to express the area of a square and volume of a cube in terms of their side lengths, and to express their side lengths in terms of their area or volume.

Statistics and Probability 6.SP

Variability and measures of center

1. Understand that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question , but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
2. Understand that a set of data generated by answers to a statistical question typically shows variability—not all of the values are the same—and yet often the values show an overall pattern, often with a tendency to cluster.
   a. A measure of center for a numerical data set summarizes all of its values using a single number. The median is a measure of center in the sense that approximately half the data values are less than the median, while approximately half are greater. The mean is a measure of center in the sense that it is the value that each data point would take on if the total of the data values were redistributed fairly, and in the sense that it is the balance point of a data distribution shown on a dot plot.
   b. A measure of variation for a numerical data set describes how its values vary using a single number. The interquartile range and the mean absolute deviation are both measures of variation.

Summarizing and describing distributions

3. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
4. Summarize numerical data sets, such as by:
   a. Reporting the number of observations.
   b. Describing the nature of the variable, including how it was measured and its units of measurement. *Data sets can include fractional values at this grade but not negative values.*
   c. Describing center and variation, as well as describing any overall pattern and any striking deviations from the overall pattern.
5. Relate the choice of the median or mean as a measure of center to the shape of the data distribution being described and the context in which it is being used. Do the same for the choice of interquartile range or mean average deviation as a measure of variation. *For example, why are housing prices often summarized by reporting the median selling price, while students' assigned grades are often based on mean homework scores?*

Mathematics | Grade 7

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and solving linear equations; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence; and (4) drawing inferences about populations based on samples.

(1) Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about similar objects (including geometric figures) by using scale factors that relate corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.

(2) Students develop a unified understanding of number, recognizing fractions, decimals, and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division and their properties to all rational numbers, including integers and numbers represented by complex fractions and negative fractions. By applying the laws of arithmetic, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain why the rules for adding, subtracting, multiplying, and dividing with negative numbers make sense. They use the arithmetic of rational numbers as they formulate and solve linear equations in one variable and use these equations to solve problems.

(3) Students use ideas about distance and angles, how they behave under dilations, translations, rotations and reflections, and ideas about congruence and similarity to describe and analyze figures and situations in two- and three-dimensional space and to solve problems, including multi-step problems. Students prove that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. Students apply this reasoning about similar triangles to solve problems, such as finding heights and distances. Students see the plausibility of the formulas for the circumference and area of a circle. For example, in the case of area, they may do so by reasoning about how lengths and areas scale in similar figures or by decomposing a circle or circular region and rearranging the pieces.

(4) Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

Analyzing proportional relationships

1. Form ratios of nonnegative rational numbers and compute corresponding unit rates. *For example, a person might walk ½ mile in each ¼ hour; the unit rate for this ratio is (1/2)/(1/4) miles per hour, equivalently 2 miles per hour. Include ratios of lengths, areas and other quantities, including when quantities being compared are measured in different units.*
2. Recognize situations in which two quantities covary and have a constant ratio. (The quantities are then said to be in a proportional relationship and the unit rate is called the constant of proportionality.) Decide whether two quantities that covary are in a proportional relationship, e.g., by testing for equivalent ratios or graphing on a coordinate plane.
3. Compute unit rates and solve proportional relationship problems in everyday contexts, such as shopping, cooking, carpentry, party planning, etc. Represent proportional relationships by equations that express how the quantities are related via the constant of proportionality or unit rate. *For example, total cost, t, is proportional to the number, n, purchased at a constant price, p; this relationship can be expressed as $t = pn$.*
4. Plot proportional relationships on a coordinate plane where each axis represents one of the two quantities involved, observe that the graph is a straight line through the origin, and find unit rates from a graph. Explain what a point (x, y) means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
5. Compare tables, graphs, formulas, diagrams, and verbal descriptions that represent or partially represent proportional relationships; explain correspondences among the representations including how the unit rate is shown in each.

Percent

6. Understand that percentages are rates per 100. For example, 30% of a quantity means $^{30}/_{100}$ times the quantity. A percentage can be a complex fraction, as in 3.75% = $^{3.75}/_{100}$.
7. Find a percentage of a quantity; solve problems involving finding the whole given a part and the percentage.
8. Solve multistep percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error, expressing monthly rent as a percentage of take-home pay.*

The Number System 7-NS

The system of rational numbers

1. Understand that the rules for manipulating fractions extend to complex fractions.
2. Understand and perform addition and subtraction with rational numbers:
   a. Understand that on a number line, the sum $p + q$ is the number located a distance $|q|$ from p, to the right of p if q is positive and to the left of p if q is negative. A number and its opposite are additive inverses (i.e., their sum is zero).
   b. Compute sums of signed numbers using the laws of arithmetic. *For example, $7 + (-3) = 4$ because $7 + (-3) = (4 + 3) + (-3) = 4 + [3 + (-3)] = 4 + [0] = 4$.*
   c. Understand that subtraction of rational numbers is defined by viewing a difference as the solution of an unknown-addend addition problem. Subtraction of a rational number gives the same answer as adding its additive inverse.
   d. Explain and justify rules for adding and subtracting rational numbers, using a number line and practical contexts. *For example, relate $r + (-s) = r - s$ to a bank transaction; explain why $p - (q + r) = p - q - r$.*
   e. Understand that the additive inverse of a sum is the sum of the additive inverses, that is $-(p + q) = -p + -q$. *For example, $-(6 + -2) = (-6) + 2$ because $[6 + (-2)] + [(-6) + 2] = [6 + (-6)] + [(-2) + 2] = [0] + [0] = 0$.*
3. Understand and perform multiplication and division with rational numbers:
   a. Understand that the extension of multiplication from fractions to rational numbers is determined by the requirement that multiplication and addition satisfy the laws of arithmetic, particularly the distributive law, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers.
   b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p/q is a rational number, then $-(p/q) = (-p)/q = p/(-q)$.
   c. Calculate products and quotients of rational numbers, and use multiplication and division to solve word problems. *Include signed quantities.*

The system of real numbers

4. Understand that there are numbers that are not rational numbers, called irrational numbers, e.g., π and $\sqrt{2}$. Together the rational and irrational numbers form the real number system. In school mathematics, the real numbers are assumed to satisfy the laws of arithmetic.

Expressions and Equations 7 EE

Expressions

1. Interpret numerical expressions at a level necessary to calculate their value using a calculator or spreadsheet. For expressions with variables, use and interpret conventions of algebraic notation, such as $y/2$ is $y \div 2$ or $1/2 \times y$; $(3 \pm y)/5$ is $(3 \pm y) \div 5$ or $1/5 \times (3 \pm y)$; a^2 is $a \times a$, a^3 is $a \times a \times a$, a^2b is $a \times a \times b$.
2. Generate equivalent expressions from a given expression using the laws of arithmetic and conventions of algebraic notation. Include:
   a. Adding and subtracting linear expressions, as in $(2x + 3) + x + (2 - x) = 2x + 5$.
   b. Factoring, as in $4x + 4y = 4(x + y)$ or $5x + 7x + 10y + 14y = 12x + 24y = 12(x + 2y)$.
   c. Simplifying, as in $-2(3x - 5) + 4x = 10 - 2x$ or $x/3 + (x - 2)/4 = 7x/12 - 1/2$.

Quantitative relationships and the algebraic approach to problems

3. Choose variables to represent quantities in a word problem, and construct simple equations to solve the problem by reasoning about the quantities.
   a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are nonnegative rational numbers and the solution is a nonnegative rational number. Fluently solve equations of these forms, e.g., by undoing the operations involved in producing the expression on the left.
   b. Solve the same word problem arithmetically and algebraically. *For example, "J. has 4 packages of balloons and 5 single balloons. In all, he has 21 balloons. How many balloons are in a package?" Solve this problem arithmetically (using a sequence of operations on the given numbers), and also solve it by using a variable to stand for the number of balloons in a package, constructing an equation such as $4b + 5 = 21$ to describe the situation then solving the equation.*
   c. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, $P + 0.05P = 1.05P$ means that "increase by 5%" is the same as "multiply by 1.05."*

Geometry

7-G

Congruence and similarity

1. Verify experimentally the fact that a rigid motion (a sequence of rotations, reflections, and translations) preserves distance and angle, e.g., by using physical models, transparencies, or dynamic geometry software:
   a. Lines are taken to lines, and line segments to line segments of the same length.
   b. Angles are taken to angles of the same measure.
   c. Parallel lines are taken to parallel lines.
2. Understand the meaning of congruence: a plane figure is congruent to another if the second can be obtained from the first by a rigid motion.
3. Verify experimentally that a dilation with scale factor k preserves lines and angle measure, but takes a line segment of length L to a line segment of length kL.
4. Understand the meaning of similarity: a plane figure is similar to another if the second can be obtained from the first by a similarity transformation (a rigid motion followed by a dilation).
5. Solve problems involving similar figures and scale drawings. *Include computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.*
6. Use informal arguments involving approximation by lines, squares, and cubes to see that a similarity transformation with a scale factor of k leaves angle measures unchanged, changes lengths by a factor of k, changes areas by a factor of k^2, and changes volumes by a factor of k^3.
7. Know the formulas relating the area, radius and circumference of a circle and solve problems requiring the use of these formulas; give an informal derivation of the relationship between the circumference and area of a circle.

Angles

8. Justify facts about the angle sum of triangles, exterior angles, and alternate interior angles created when parallel lines are cut by a transversal, e.g., by using physical models, transparencies, or dynamic geometry software to make rigid motions and give informal arguments. *For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.*
9. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

Situations involving randomness

1. Simulate situations involving randomness using random numbers generated by a calculator or a spreadsheet or taken from a table. *For example, if you guess at all ten true/false questions on a quiz, how likely are you to get at least seven answers correct?*
2. Use proportional reasoning to predict relative frequencies of outcomes for situations involving randomness, but for which a theoretical answer can be determined. For *example, when rolling a number cube 600 times, one would predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. How far off might your prediction be? Use technology to generate multiple samples to approximate a distribution of sample proportions. Repeat the process for smaller sample sizes.*

Random sampling to draw inferences about a population

3. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
4. Understand the importance of measures of variation in sample quantities (like means or proportions) in reasoning about how well a sample quantity estimates or predicts the corresponding population quantity.
5. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*

Comparative inferences about two populations

6. Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean average deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*
7. Use measures of center and measures of variability for numerical data from uniform random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade book are generally longer than the words in a chapter of a sixth-grade book.*

Mathematics | Grade 8

In Grade 8, instructional time should focus on three critical areas: (1) solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) understanding and applying the Pythagorean Theorem.

(1) Students use linear equations, and systems of linear equations to represent, analyze, and solve a variety of problems. Students recognize proportions ($y/x = m$ or $y = mx$) as a special case of linear equations, $y = mx + b$, understanding that the constant of proportionality (m) is the slope and the graphs are lines through the origin. They understand that the slope (m) of a line is a constant rate of change, so that if the input or x-coordinate changes by an amount A, the output or y-coordinate changes by the amount mA. Students also formulate and solve linear equations in one variable and use these equations to solve problems. Students also use a linear equation to describe the association between two quantities in a data set (such as arm span vs. height for students in a classroom). At this grade, fitting the model, and assessing its fit to the data are done informally. Interpreting the model in the context of the data requires students to express a relationship between the two quantities in question.

Students strategically choose and efficiently implement procedures to solve linear equations in one variable, understanding that when they use the properties of equality and the concept of logical equivalence, they maintain the solutions of the original equation. Students solve systems of two linear equations in two variables and relate the systems to pairs of lines in the plane; these intersect, are parallel, or are the same line. Students use linear equations, systems of linear equations, linear functions, and their understanding of slope of a line to analyze situations and solve problems.

(2) Students grasp the concept of a function as a rule that assigns to each element of its domain exactly one element of its range. They use function notation and understand that functions describe situations where one quantity determines another. They can translate among verbal, tabular, graphical, and algebraic representations of functions (noting that tabular and graphical representations are usually only partial representations), and they describe how aspects of the function are reflected in the different representations.

(3) Students understand the statement of the Pythagorean Theorem and its converse, and can explain why the Pythagorean Theorem is valid, for example, by decomposing a square in two different ways. They apply the Pythagorean Theorem to find distances between points on the coordinate plane, to find lengths, and to analyze polygons.

The Number System 8.NS

The system of real numbers

1. Understand informally that every number on a number line has a decimal expansion, which can be found for rational numbers using long division. Rational numbers are those with repeating decimal expansions (this includes finite decimals which have an expansion that ends in a sequence of zeros).
2. Informally explain why $\sqrt{2}$ is irrational.
3. Use rational approximations (including those obtained from truncating decimal expansions) to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions (e.g., π^2). *For example, show that the square root of 2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*

Expressions and Equations 8.EE

Linear equations in one variable

1. Understand that a linear equation in one variable might have one solution, infinitely many solutions, or no solutions. Which of these possibilities is the case can be determined by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
2. Solve linear equations with rational number coefficients, including equations that require expanding expressions using the distributive law and collecting like terms.

Linear equations in two variables

3. Understand that the slope of a non-vertical line in the coordinate plane has the same value for any two distinct points used to compute it. This can be seen using similar triangles.
4. Understand that two lines with well-defined slopes are parallel if and only if their slopes are equal.
5. Understand that the graph of a linear equation in two variables is a line, the set of pairs of numbers satisfying the equation. If the equation is in the form $y = mx + b$, the graph can be obtained by shifting the graph of $y = mx$ by b units (upwards if b is positive, downwards if b is negative). The slope of the line is m.
6. Understand that a proportional relationship between two variable quantities y and x can be represented by the equation $y = mx$. The constant m is the unit rate, and tells how much of y per unit of x.
7. Graph proportional relationships and relationships defined by a linear equation; find the slope and interpret the slope in context.
8. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*

Systems of linear equations

9. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
10. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because the quantity $3x + 2y$ cannot simultaneously be 5 and 6.*
11. Solve and explain word problems leading to two linear equations in two variables.
12. Solve problems involving lines and their equations. *For example, decide whether a point with given coordinates lies on the line with a given equation; construct an equation for a line given two points on the line or one point and the slope; given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

Functions 8.F

Function concepts

1. Understand that a function from one set (called the domain) to another set (called the range) is a rule that assigns to each element of the domain (an input) exactly one element of the range (the corresponding output). The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. *Function notation is not required in Grade 8.*
2. Evaluate expressions that define functions, and solve equations to find the input(s) that correspond to a given output.
3. Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*

4. Understand that a function is linear if it can be expressed in the form $y = mx + b$ or if its graph is a straight line. *For example, the function $y = x^2$ is not a linear function because its graph contains the points (1,1), (–1,1) and (0,0), which are not on a straight line.*

Functional relationships between quantities

5. Understand that functions can describe situations where one quantity determines another.
6. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship; from two (x, y) values, including reading these from a table; or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
7. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Geometry 8-G

Congruence and similarity

1. Use coordinate grids to transform figures and to predict the effect of dilations, translations, rotations and reflections.
2. Explain using rigid motions the meaning of congruence for triangles as the equality of all pair of sides and all pairs of angles.
3. Give an informal explanation using rigid motions of the SAS and ASA criteria for triangle congruence, and use them to prove simple theorems.
4. Explain using similarity transformations the meaning of similarity for triangles as the equality of all pairs of angles and the proportionality of all pairs of sides.
5. Give an informal explanation using similarity transformations of the AA and SAS criteria for triangle similarity, and use them to prove simple theorems.

The Pythagorean Theorem

6. The side lengths of a right triangle are related by the Pythagorean Theorem. Conversely, if the side lengths of a triangle satisfy the Pythagorean Theorem, it is a right triangle.
7. Explain a proof of the Pythagorean Theorem and its converse.
8. Use the Pythagorean Theorem to determine unknown side lengths in right triangles and to solve problems in two and three dimensions.
9. Use the Pythagorean Theorem to find the distance between two points in a coordinate system.

Plane and solid geometry

10. Draw (freehand, with ruler and protractor, and with technology) geometric shapes from given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the triangle is uniquely defined, ambiguously defined or nonexistent.
11. Understand that slicing a three-dimensional figure with a plane produces a two-dimensional figure. Describe plane sections of right rectangular prisms and right rectangular pyramids.
12. Use hands-on activities to demonstrate and describe properties of: parallel lines in space, the line perpendicular to a given line through a given point, lines perpendicular to a given plane, lines parallel to a given plane, the plane or planes passing through three given points, and the plane perpendicular to a given line at a given point.

Statistics and Probability 8-SP

Patterns of association in bivariate data

1. Understand that scatter plots for bivariate measurement data may reveal patterns of association between two quantities.
2. Construct and interpret scatter plots for bivariate measurement data. Describe patterns such as clustering, outliers, positive or negative association, linear association, nonlinear association.
3. Understand that a straight line is a widely used model for exploring relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
4. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
5. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables

collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Mathematics Standards for High School

Where is the College-and-Career-Readiness line drawn?

The high school standards specify the mathematics that all students should learn in order to be college and career ready. The high school standards also describe additional mathematics that students should learn to pursue careers and majors in science, technology, engineering and mathematics (STEM) fields. Other forms of advanced work are possible (for example in discrete mathematics or advanced statistics) and can be eventually added to the standards.

Standards beyond the college and career readiness level that are necessary for STEM careers are prefixed with a symbol STEM, as in this example:

> STEM Graph complex numbers in polar form and interpret arithmetic operations on complex numbers geometrically.

Any standard without this tag is understood to be in the common core mathematics curriculum for all students.

How are the high school standards organized?

The high school standards are listed in conceptual categories, as shown in the Table below. **Appendix A (online) contains drafts of model course descriptions based on these standards**. Conceptual categories portray a coherent view of core high school mathematics; a student's work with Functions, for example, crosses a number of traditional course boundaries, potentially up through and including Calculus.

Conceptual Organization of the High School Standards

CCRS **Draft September 17th**	**High School Standards** **Draft March 10**
Number Quantity	Number and Quantity
Expressions Equations Coordinates	Algebra
Functions	Functions
Geometry	Geometry
Statistics Probability	Statistics and Probability
Modeling	Modeling**

* Standards formerly appearing under Coordinates now appear under other headings.

** Making mathematical models is now a Standard for Mathematical Practice. Standards formerly appearing under Modeling are now distributed under other major headings. High school standards with relevance to modeling are flagged with a (★) symbol. A narrative description of modeling remains in the high school standards, but there are no specific standard statements in that narrative description.

Mathematics | High School—Number and Quantity

Numbers and Number Systems. During the years from kindergarten to eighth grade, students must repeatedly extend their conception of number. At first, "number" means "counting number": 1, 2, 3, ... Soon after that, 0 is used to represent "none" and the whole numbers are formed by the counting numbers together with zero. The next extension is fractions. At first, fractions are barely numbers and tied strongly to pictorial representations. Yet by the time students understand division of fractions, they have a strong concept of fractions as numbers and have connected them, via their decimal representations, with the base-ten system used to represent the whole numbers. During middle school, fractions are augmented by negative fractions to form the rational numbers. In Grade 7, students extend this system once more, augmenting the rational numbers with the irrational numbers to form the real numbers. In high school, students will be exposed to yet another extension of number, when the real numbers are augmented by the imaginary numbers to form the complex numbers.

Students sometimes have difficulty accepting new kinds of numbers when these differ in appearance and properties from those of a familiar system. For example, students might decide that complex numbers are not numbers because they are not written with numerical digits, or because they do not describe positive or negative quantities. Indeed, this ascent through number systems makes it fair to ask: what does the word *number* mean that it can mean all of these things? One possible answer is that a number is something that can be used to do mathematics: calculate, solve equations, or represent measurements. Historically, number systems have been extended when there is an intellectual or practical benefit in using the new numbers to solve previously insoluble problems.[1]

Although the referent of "number" changes, the four operations stay the same in important ways. The commutative, associative, and distributive laws extend the properties of operations to the integers, rational numbers, real numbers, and complex numbers. The inverse relationships between addition and subtraction, and multiplication and division are maintained in these larger systems.

Calculators are useful in this strand to generate data for numerical experiments, to help understand the workings of matrix, vector, and complex number algebra, and to experiment with non-integer exponents.

Quantities. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, volume, and so forth. In high school, students encounter novel situations in which they themselves must conceive the attributes of interest. Such a conceptual process might be called quantification. Quantification is important for science, as when surface area suddenly "stands out" as an important variable in evaporation. Quantification is also important for companies, who must conceptualize relevant attributes and create or choose suitable metrics by which to measure them.

Content Outline

The Real Number System

Quantities

The Complex Number System

Vector Quantities and Matrices

[1] See Harel, G., "A Standpoint of Research on Middle/Higher Number and Quantity," a research review provided for the Common Core State Standards Initiative.

The Real Number System N-RN

1. Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.
2. Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, since* $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ *is a cube root of* 5.
3. Understand that sums and products of rational numbers are rational.
4. Understand that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational.
5. Rewrite expressions using the laws of exponents. *For example,* $(5^{1/2})^3 = 5^{3/2}$ *and* $1/5 = 5^{-1}$.

Quantities★ N-Q

1. Understand that the magnitude of a quantity is independent of the unit used to measure it. *For example, the density of a liquid does not change when it is measured in another unit. Rather, its measure changes. The chosen unit "measures" the quantity by giving it a numerical value ("the density of lead is 11.3 times that of water").*
2. Use units as a way to understand problems and to guide the solution of multi-step problems, involving, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game.
3. Define metrics for the purpose of descriptive modeling. *For example, find a good measure of overall highway safety; propose and debate measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled.*
4. Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
5. Use and interpret quantities and units correctly in algebraic formulas.
6. Use and interpret quantities and units correctly in graphs and data displays (function graphs, data tables, scatter plots, and other visual displays of quantitative information). Generate graphs and data displays using technology.

The Complex Number System N-CN

1. Understand that the relation $i^2 = -1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.
2. STEM Understand that polynomials can be factored over the complex numbers, e.g., as in $x^2 + 4 = (x + 2i)(x - 2i)$.
3. STEM Understand that complex numbers can be visualized on the complex plane. Real numbers correspond to points on the horizontal (real) axis, and imaginary numbers to points on the vertical axis.
4. STEM Understand that on the complex plane, arithmetic of complex numbers can be interpreted geometrically: addition is analogous to vector addition, and multiplication can be understood as rotation and dilation about the origin. Complex conjugation is reflection across the real axis.
5. STEM Understand that on the complex plane, as on the real line, the distance between numbers is the absolute value of the difference, and the midpoint of a segment is the average of the numbers at its endpoints.
6. Add, subtract, and multiply complex numbers.
7. STEM Find the conjugate of a complex number; use conjugates to find absolute values and quotients of complex numbers.
8. STEM Solve quadratic equations with real coefficients that have complex solutions using a variety of methods.
9. STEM Graph complex numbers in rectangular form.
10. STEM Graph complex numbers in polar form and interpret arithmetic operations on complex numbers geometrically.
11. STEM Explain why the rectangular and polar forms of a complex number represent the same number.

★ Standard with close connection to modeling.

1. STEM Understand that vector quantities have both magnitude and direction. Vector quantities are typically represented by directed line segments. The magnitude of a vector **v** is commonly denoted $|\mathbf{v}|$ or $||\mathbf{v}||$.
2. STEM Understand that vectors are determined by the coordinates of their initial and terminal points, or by their components.
3. STEM Understand that vectors can be added end-to-end, component-wise, or by the parallelogram rule. The magnitude of a sum of two vectors is typically not the sum of the magnitudes.
4. STEM Understand that a vector **v** can be multiplied by a real number c (called a scalar in this context) to form a new vector $c\mathbf{v}$ with magnitude $|c|v$. When $|c|v \neq 0$, the direction of $c\mathbf{v}$ is either along **v** (for $c > 0$) or against **v** (for $c < 0$). Scalar multiplication can be shown graphically by scaling vectors and possibly reflecting them in the origin; scalar multiplication can also be performed component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
5. STEM Understand that vector subtraction $\mathbf{v} - \mathbf{w}$ is defined as $\mathbf{v} + (-\mathbf{w})$. Two vectors can be subtracted graphically by connecting the tips in the appropriate order.
6. STEM Understand that matrices can be multiplied by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled. Matrices of the same dimensions can be added or subtracted. Matrices with compatible dimensions can be multiplied. Unlike multiplication of numbers, matrix multiplication is not a commutative operation, but still satisfies the associative and distributive laws.
7. STEM Understand that a vector, when regarded as a matrix with one column, can be multiplied by a matrix of suitable dimensions to produce another vector. A 2×2 matrix can be viewed as a transformation of the plane.
8. STEM Understand that a system of linear equations can be represented as a single matrix equation in a vector variable.
9. STEM Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
10. STEM Perform basic vector operations (addition, subtraction, scalar multiplication) both graphically and algebraically.
11. STEM Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
12. STEM Solve problems involving velocity and quantities that can be represented by vectors.★
13. STEM Add, subtract, and multiply matrices of appropriate dimensions.
14. STEM Use matrices to store and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
15. STEM Represent systems of linear equations as matrix equations.
16. STEM Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension greater than 3×3).

★ Standard with close connection to modeling.

Mathematics | High School—Algebra

Expressions. An expression is a description of a computation on numbers and symbols that represent numbers, using arithmetic operations and the operation of raising a number to rational exponents. Conventions about the use of parentheses and the order of operations assure that each expression is unambiguous. Creating an expression that describes a computation involving a general quantity requires the ability to express the computation in general terms, abstracting from specific instances.

Reading an expression with comprehension involves analysis of its underlying structure. This may suggest a different but equivalent way of writing the expression that exhibits some different aspect of its meaning. For example, $p + 0.05p$ can be interpreted as the addition of a 5% tax to a price p. Rewriting $p + 0.05p$ as $1.05p$ shows that adding a tax is the same as multiplying the price by a constant factor.

Algebraic manipulations are governed by deductions from the commutative, associative, and distributive laws and the inverse relationships between the four operations, and the conventions of algebraic notation. These extend what students have learned about arithmetic expressions in K–8 to expressions that involve exponents, radicals, and representations of real numbers, and, for STEM-intending students, complex numbers.

At times, an expression is the result of applying operations to simpler expressions. Viewing such an expression by singling out these simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a CAS environment can be used to experiment with algebraic expressions, perform complex algebraic manipulations,and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement that two expressions are equal. Solutions to an equation are numbers that make the equation true when assigned to the variables in it. If the equation is true for all numbers, then it is called an identity; identities are often discovered by using the laws of arithmetic or the laws of exponents to transform one expression into another.

The solutions of an equation in one variable form a set of numbers; the solutions of an equation in two variables form a set of ordered pairs of numbers, which can be graphed in the coordinate plane. Two or more equations and/or inequalities form a system. A solution for such a system must satisfy every equation and inequality in the system.

An equation can often be solved by successively transforming it into one or more simpler equations. The process is governed by deductions based on the properties of equality. For example, one can add the same constant to both sides without changing the solutions, but squaring both sides might lead to extraneous solutions. Strategic competence in solving includes looking ahead for productive manipulations and anticipating the nature and number of solutions.

Some equations have no solutions in a given number system, stimulating the extension of that system. For example, the solution of $x + 1 = 0$ is an integer, not a whole number; the solution of $2x + 1 = 0$ is a rational number, not an integer; the solutions of $x^2 - 2 = 0$ are real numbers, not rational numbers; and the solutions of $x^2 + 2 = 0$ are complex numbers, not real numbers.

The same solution techniques used to solve equations can be used to rearrange formulas. For example, the formula for the area of a trapezoid, $A = ((b_1+b_2)/2)h$, can be solved for h using the same deductive process.

Inequalities can be solved by reasoning about the properties of inequality. Many, but not all, of the properties of equality continue to hold for inequalities and can be useful in solving them.

Connections to Functions and Modeling. Expressions can define functions, and equivalent expressions define the same function. Equations in two variables may also define functions. Asking when two functions have the same value leads to an equation; graphing the two functions allows for the approximate solution of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Content Outline

Seeing Structure in Expressions

Arithmetic with Polynomials and Rational Expressions

Creating Equations that Describe Numbers or Relationships

Reasoning with Equations and Inequalities

Seeing Structure in Expressions A-SSE

1. Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. *Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
2. Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.
3. Interpret an expression that represents a quantity in terms of the context. *Include interpreting parts of an expression, such as terms, factors and coefficients.* ★
4. Factor, expand, and complete the square in quadratic expressions.
5. See expressions in different ways that suggest ways of transforming them. *For example, see* $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, *thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$.
6. Rewrite expressions using the laws of exponents. *For example,* $(x^{1/2})^3 = x^{3/2}$ *and* $1/x = x^{-1}$.
7. Use the laws of exponents to interpret expressions for exponential functions, recognizing positive rational exponents as indicating roots of the base and negative exponents as indicating the reciprocal of a power. *For example, identify the per unit percentage change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and conclude whether it represents exponential growth or decay. Recognize that any nonzero number raised to the zero power is 1, for example,* $12(1.05)^0 = 12$. *Avoid common errors such as confusing* $6(1.05)^t$ *with* $(6 \cdot 1.05)^t$ *and* $5(0.03)^t$ *with* $5(1.03)^t$.
8. STEM Prove the formula for the sum of a geometric series, and use the formula to solve problems.

Arithmetic with Polynomials and Rational Expressions A-APR

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.
2. Understand that polynomial identities become true statements no matter which real numbers are substituted. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*
3. Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
4. STEM Understand that the Binomial Theorem gives the expansion of $(x + a)^n$ in powers of x for a positive integer n and a real number a, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.
5. STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.
6. Add, subtract and multiply polynomials.
7. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.
8. Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.
9. Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.
10. STEM Identify zeros and asymptotes of rational functions, when suitable factorizations are available, and use the zeros and asymptotes to construct a rough graph of the function.
11. STEM Divide polynomials, using long division for linear divisors and long division or a computer algebra system for higher degree divisors.

Creating Equations That Describe Numbers or Relationships A-CED★

1. Understand that equations in one variable are often created to describe properties of a specific but unknown number.
2. Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.
3. Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

★ Standard with close connection to modeling.

4. Rearrange formulas to highlight a quantity of interest. *For example, transform Ohm's law $V = IR$ to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$.*

Reasoning with Equations and Inequalities

A-REI

1. Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one.
2. Understand that the method of completing the square can transform any quadratic equation in x into an equivalent equation of the form $(x - p)^2 = q$. This leads to the quadratic formula.
3. Understand that given a system of two linear equations in two variables, adding a multiple of one equation to another produces a system with the same solutions. This principle, combined with principles already encountered with equations in one variable, allows for the simplification of systems.
4. Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.
5. Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
6. Understand that the solutions to a linear inequality in two variables can be graphed as a half-plane (excluding the boundary in the case of a strict inequality).
7. Understand that solutions to several linear inequalities in two variables correspond to points in the intersection of the regions in the plane defined by the solutions to the inequalities.
8. Understand that equations and inequalities can be viewed as constraints in a problem situation, e.g., inequalities describing nutritional and cost constraints on combinations of different foods.★
9. STEM Understand that the relationship between an invertible function f and its inverse function can be used to solve equations of the form $f(x) = c$.
10. Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.
11. Solve linear equations in one variable, including equations with coefficients represented by letters.
12. Solve quadratic equations in one variable. *Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.*
13. Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. *Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, exponential, and logarithmic functions.*
14. Solve linear inequalities in one variable and graph the solution set on a number line.
15. Solve systems of linear equations algebraically and graphically, focusing on pairs of linear equations in two variables.
16. Solve algebraically a simple system consisting of one linear equation and one quadratic equation in two variables; for example, find points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.
17. Graph the solution set of a system of linear inequalities in two variables.
18. In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context.★
19. In the context of exponential models, solve equations of the form $a\,b^{ct} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.★
20. STEM Relate the properties of logarithms to the laws of exponents and solve equations involving exponential functions.
21. STEM Use inverse functions to solve equations of the form $a\sin(bx + c) = d$, $a\cos(bx + c) = d$, and $a\tan(bx + c) = d$.

★ Standard with close connection to modeling.

Mathematics | High School—Functions

Functions describe situations where one quantity determines another. For example, the return on \$10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because nature and society are full of dependencies between quantities, functions are important tools in the construction of mathematical models.

In school mathematics, functions usually have numerical inputs and outputs and are often defined by an algebraic expression. For example, the time in hours it takes for a car to drive 100 miles is a function of the car's speed in miles per hour, v; the rule $T(v) = 100/v$ expresses this relationship algebraically and defines a function whose name is T.

The set of inputs to a function is called its domain. We often infer the domain to be all inputs for which the expression defining a function has a value, or for which the function makes sense in a given context.

A function can be described in various ways, such as by a graph (e.g., the trace of a seismograph); by a verbal rule, as in, "I'll give you a state, you give me the capital city"; or by an algebraic expression like $f(x) = a + bx$. The graph of a function is often a useful way of visualizing the relationship the function models, and manipulating a mathematical expression for a function can throw light on the function's properties. Graphing technology and spreadsheets are also useful tools in the study of functions.

Functions presented as expressions can model many important phenomena. Two important families of functions characterized by laws of growth are linear functions, which grow at a constant rate, and exponential functions, which grow at a constant percent rate. Linear functions with a constant term of zero describe proportional relationships.

A graphing utility or a CAS can be used to experiment with properties of the functions and their graphs and to build computational models of functions, including recursively defined functions.

Connections to Expressions, Equations, Modeling and Coordinates. Determining an output value for a particular input involves evaluating an expression; finding inputs that yield a given output involves solving an equation. Questions about when two functions have the same value lead to equations, whose solutions can be visualized from the intersection of their graphs. Because functions describe relationships between quantities, they are frequently used in modeling. Sometimes functions are defined by a recursive process, which can be displayed effectively using a spreadsheet or other technology.

Content Outline

Interpreting Functions

Building Functions

Linear, Quadratic, and Exponential Models

Trigonometric Functions

Limits and Continuity†

Differential Calculus†

Applications of Derivatives†

Integral Calculus†

Applications of Integration†

Infinite Series†

† Specific standards for calculus domains are not listed.

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.
2. Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.
3. Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.
4. Use function notation and evaluate functions for inputs in their domains.
5. Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★
6. Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★
7. Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, draw conclusions about the graph of a quadratic function from its algebraic expression.*
8. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* ★
9. Describe the qualitative behavior of functions presented in graphs and tables. *Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* ★
10. Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value, and step functions. ★
11. Transform quadratic polynomials algebraically to reveal different features of the function they define, such as zeros, extreme values, and symmetry of the graph.

Building Functions A-BF

1. Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.
2. Understand that sequences are functions whose domain is a subset of the nonnegative integers.
3. STEM Understand that composing a function f with a function g creates a new function called the composite function—for an input number x, the output of the composite function is $f(g(x))$.
4. STEM Understand that the inverse of an invertible function "undoes" what the function does; that is, composing the function with its inverse in either order returns the original input. One can sometimes produce an invertible function from a non-invertible function by restricting the domain (e.g., squaring is not an invertible function on the real numbers, but squaring is invertible on the nonnegative real numbers).
5. Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Use technology to experiment with parameters and to illustrate an explanation of the behavior of the function when parameters vary. ★
6. Solve problems involving linear, quadratic, and exponential functions. ★
7. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
8. Generate an arithmetic or geometric sequence given a recursive rule for the sequence. ★
9. As a way to describe routine modeling situations, write arithmetic and geometric sequences both recursively and in closed form, and translate between the two forms. ★
10. STEM Evaluate composite functions and compose functions symbolically.
11. STEM Read values of an inverse function from a graph or a table, given that the function has an inverse.
12. STEM For linear or simple exponential functions, find a formula for an inverse function by solving an equation.
13. STEM Verify symbolically by composition that one function is the inverse of another.

Linear, Quadratic, and Exponential Models A-LQE

1. Understand that a linear function, defined by $f(x) = mx + b$ for some constants m and b, models a situation in which a quantity changes at a constant rate, m, relative to another.★
2. Understand that quadratic functions have maximum or minimum values and can be used to model problems with optimum solutions.★
3. Understand that an exponential function, defined by $f(x) = ab^x$ or by $f(x) = a(1 + r)^x$ for some constants a, $b > 0$ and $r > -1$, models a situation where a quantity grows or decays by a constant factor or a constant percentage change over each unit interval.★
4. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.★
5. Understand that in an arithmetic sequence, differences between consecutive terms form a constant sequence, and second differences are zero. Conversely, if the second differences are zero, the sequence is arithmetic. Arithmetic sequences can be seen as linear functions.★
6. Understand that in a sequence that increases quadratically (e.g., $a_n = 3n^2 + 2n + 1$), differences between consecutive terms form an arithmetic sequence, and second differences form a constant sequence. Conversely, if the second differences form a constant sequence with nonzero value, the sequence increases quadratically.★
7. Understand that in a geometric sequence, ratios of consecutive terms are all the same.★
8. Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.★
9. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★
10. Construct a function to describe a linear relationship between two quantities. Determine the rate of change and constant term of a linear function from a graph, a description of a relationship, or from two (x, y) values (include reading these from a table).★
11. Use quadratic functions to model problems, e.g., in situations with optimum solutions.★
12. Construct an exponential function in the form $f(x) = a(1 + r)^x$ or $f(x) = ab^x$ to describe a relationship in which one quantity grows with respect to another at a constant percent growth rate or a with a constant growth factor.★
13. Interpret the rate of change and constant term of a linear function or sequence in terms of the situation it models, and in terms of its graph or a table of values.★
14. Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed interval. Estimate the growth factor from a graph.★
15. Recognize a quantitative relationship as linear, exponential, or neither from description of a situation.★
16. Compare quantities increasing exponentially to quantities increasing linearly or as a polynomial function.★

Trigonometric Functions F-TF

1. STEM Understand that the unit circle in the coordinate plane enables one to define the sine, cosine, and tangent functions for real numbers.
2. STEM Understand that trigonometric functions are periodic by definition, and sums and products of functions with the same period are periodic.
3. STEM Understand that restricting trigonometric functions to a domain on which they are always increasing or always decreasing allows for the construction of an inverse function.
4. STEM Revisit trigonometric functions and their graphs in terms of radians.
5. STEM Use the unit circle to determine geometrically the values of sine, cosine, tangent for integer multiples of $\pi/4$ and $\pi/6$.
6. STEM Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
7. STEM Solve simple trigonometric equations formally using inverse trigonometric functions and evaluate the solutions numerically using technology. *Solving trigonometric equations by means of the quadratic formula is optional.*

Limits and Continuity† F-LC

★ Standard with close connection to modeling.

† Specific standards for calculus domains are not listed.

Differential Calculus† F-DC

Applications of Derivatives† F-AD

Integral Calculus† F-IC

Applications of Integration† F-AI

Infinite Series† F-IS

† Specific standards for calculus domains are not listed.

Mathematics | High School—Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

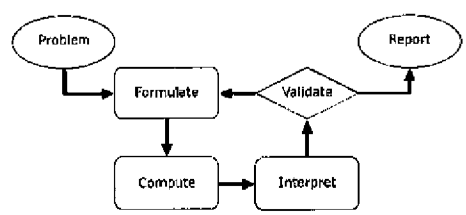
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player.
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car.
- Modeling savings account balance, bacterial colony growth, or investment growth.
- Critical path analysis, e.g., applied to turnaround of an aircraft at an airport.
- Risk situations, like extreme sports, pandemics and terrorism.
- Relating population statistics to individual predictions.

In situations like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those than represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then, either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO_2 over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, CAS environments, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Modeling Standards

Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★).

Mathematics | High School—Statistics and Probability★

Decisions or predictions are often based on data—numbers in context. These decisions or predictions would be easy if the data always sent a clear message, but the message is often obscured by variability. Statistics provides tools for describing variability in data and for making informed decisions that take it into account.

Data are gathered, displayed, summarized, examined, and interpreted to discover patterns and deviations from patterns. Quantitative data can be described in terms of key characteristics: measures of shape, center, and spread. The shape of a data distribution might be described as symmetric, skewed, flat, or bell shaped, and it might be summarized by a statistic measuring center (such as mean or median) and a statistic measuring spread (such as standard deviation or interquartile range). Different distributions can be compared numerically using these statistics or compared visually using plots. Knowledge of center and spread are not enough to describe a distribution. Which statistics to compare, which plots to use, and what the results of a comparison might mean, depend on the question to be investigated and the real-life actions to be taken.

Randomization has two important uses in drawing statistical conclusions. First, collecting data from a random sample of a population makes it possible to draw valid conclusions about the whole population, taking variability into account. Second, randomly assigning individuals to different treatments allows a fair comparison of the effectiveness of those treatments. A statistically significant outcome is one that is unlikely to be due to chance alone, and this can be evaluated only under the condition of randomness. The conditions under which data are collected are important in drawing conclusions from the data; in critically reviewing uses of statistics in public media and other reports it is important to consider the study design, how the data were gathered, and the analyses employed as well as the data summaries and the conclusions drawn.

Random processes can be described mathematically by using a probability model. One begins to make a probability model by listing or describing the possible outcomes (the sample space) and assigning probabilities. In situations such as flipping a coin, rolling a number cube, or drawing a card, it might be reasonable to assume various outcomes are equally likely. In a probability model, sample points represent outcomes and combine to make up events; probabilities of events can be computed by applying the additive and multiplicative laws of probability. Interpreting these probabilities relies on an understanding of independence and conditional probability, which can be approached through the analysis of two-way tables.

Technology plays an important role in statistics and probability by making it possible to generate plots, functional models, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. Functional models may be used to approximate data; if the data are approximately linear, the relationship may be modeled with a regression line and the strength and direction of such a relationship may be expressed through a correlation coefficient.

Content Outline

Summarizing Categorical and Measurement Data

Probability Models

Independently Combined Probability Models

Making Inferences and Justifying Conclusions Drawn from Data

Conditional Probability and the Laws of Probability

Experimenting and Simulating to Model Probabilities

Using Probability to Make Decisions

★ Most or all of the standards in Statistics and Probability have a close connection to modeling.

Summarizing Categorical and Quantitative Data S-SI

1. Understand that statistical methods take variability into account to support making informed decisions based on data collected to answer specific questions.
2. Understand that visual displays and summary statistics condense the information in data sets into usable knowledge.
3. Understand that patterns of association or relationships between variables may emerge through careful analysis of multi-variable data.
4. Summarize comparative or bivariate categorical data in two-way frequency tables. Interpret joint, marginal and conditional relative frequencies in the context of the data, recognizing possible associations and trends in bivariate categorical data.
5. Compare data on two or more count or measurement variables by using plots on the real number line (dot plots, histograms, and box plots). Use statistics appropriate to the shape of the data distribution to summarize center (median, mean) and spread (interquartile range, standard deviation) of the data sets. Interpret changes in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
6. Represent bivariate quantitative data on a scatter plot and describe how the variables are related.
7. Fit a linear function for scatter plots that suggest a linear association. Informally assess the fit of the model function by plotting and analyzing residuals.
8. Use a model function fitted to the data to solve problems in the context of the data, interpreting the slope (rate of change) and the intercept (constant term).
9. Compute (using technology) and interpret the correlation coefficient for a linear relationship between variables.
10. Distinguish between correlation and causation.

Probability Models S-PM

1. Understand that in a probability model, individual outcomes have probabilities that sum to 1. When outcomes are categorized, the probability of a given type of outcome is the sum of the probabilities of all the individual outcomes of that type.
2. Understand that uniform probability models are useful models for processes such as (i) the selection of a person from a population; (ii) the selection of a number in a lottery; (iii) any physical situation in which symmetry suggests that different individual outcomes are equally likely.
3. Understand that two different empirical probability models for the same process will rarely assign exactly the same probability to a given type of outcome. But if the data sets are large and the methods used to collect the data for the two data sets are consistent, the agreement between the models is likely to be reasonably good.
4. Understand that a (theoretical) uniform probability model may be judged by comparing it to an empirical probability model for the same process. If the theoretical assumptions are appropriate and the data set is large, then the two models should agree approximately. If the agreement is not good, then it may be necessary to modify the assumptions underlying the theoretical model or look for factors that might have affected the data used to create the empirical model.
5. Use a uniform probability model to compute probabilities for a process involving uncertainty, including the random selection of a person from a population and physical situations where symmetry suggests that different individual outcomes are equally likely.
   a. List the individual outcomes to create a sample space.
   b. Label the individual outcomes in the sample space to reflect important characteristics or quantities associated with them.
   c. Determine probabilities of individual outcomes, and determine the probability of a type or category of outcome as the fraction of individual outcomes it includes.
6. Generate data by sampling, repeated experimental trials, and simulations. Record and appropriately label such data, and use them to construct an empirical probability model. Compute probabilities in such models.
7. Compare probabilities from a theoretical model to probabilities from a corresponding empirical model for the same situation. If the agreement is not good, explain possible sources of the discrepancies.

Independently Combined Probability Models S-IPM

1. Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model.

a. The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model.

b. The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.

2. Understand that when two probability models are combined independently, the probability that one type of outcome in the first model occurs together with another type of outcome in the second model is the product of the two corresponding probabilities in the original models (the Multiplication Rule).

3. Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes).

   a. Use organized lists, tables and tree diagrams to represent the combined sample space.

   b. Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.

4. For two independently combined uniform models, use the Multiplication Rule to determine probabilities.

Making Inferences and Justifying Conclusions S-IC

1. Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.
2. Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.
3. Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.
4. Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)
5. Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.
6. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
7. Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.
8. Evaluate reports based on data.

Conditional Probability and the Laws of Probability S-CP

1. Understand that events are subsets of a sample space; often, events of interest are defined by using characteristics (or categories) of the sample points, or as unions, intersections, or complements thereof ("and," "or," "not"). A sample point may belong to several events (categories).
2. Understand that if A and B are two events, then in a uniform model the conditional probability of A given B, denoted by $P(A \mid B)$, is the fraction of B's sample points that also lie in A.
3. Understand that the laws of probability allow one to use known probabilities to determine other probabilities of interest.
4. Compute probabilities by constructing and analyzing sample spaces, representing them by tree diagrams, systematic lists, and Venn diagrams.
5. Use the laws of probability to compute probabilities.
6. Apply concepts such as intersections, unions and complements of events, and conditional probability and independence to define or analyze events, calculate probabilities and solve problems.
7. Construct and interpret two-way tables to show probabilities when two characteristics (or categories) are associated with each sample point. Use a two-way table to determine conditional probabilities.★
8. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.★
9. Use permutations and combinations to compute probabilities of compound events and solve problems.

★ Standard with close connection to modeling.

Experimenting and Simulating to Model Probabilities S-ES

1. Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.
2. Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome's occurrence if the random experiment is repeated a large number of times.
3. Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.
4. Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.
5. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Using Probability to Make Decisions S-MD

1. Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.
2. Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g., of an investment.
3. Calculate expected value, e.g. to determine the fair price of an investment.
4. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
5. Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.
6. Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.
7. Analyze decisions and strategies using probability concepts (e.g. product testing, medical testing, pulling a hockey goalie at the end of a game).

Mathematics | High School—Geometry

An understanding of the attributes and relationships of geometric objects can be applied in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material.

Understanding the attributes of geometric objects often relies on measurement: a circle is a set of points in a plane at a fixed distance from a point; a cube is bounded by six squares of equal area; when two parallel lines are crossed by a transversal, pairs of corresponding angles are congruent.

The concepts of congruence, similarity and symmetry can be united under the concept of geometric transformation. Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. Applying a scale transformation to a geometric figure yields a similar figure. The transformation preserves angle measure, and lengths are related by a constant of proportionality.

The definitions of sine, cosine and tangent for acute angles are founded on right triangle similarity, and, with the Pythagorean theorem, are fundamental in many real-world and theoretical situations.

Coordinate geometry is a rich field for exploration. How does a geometric transformation such as a translation or reflection affect the coordinates of points? How is the geometric definition of a circle reflected in its equation? Coordinates can describe locations in three dimensions and extend the use of algebraic techniques to problems involving the three-dimensional world we live in.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same was as CAS environments allow them to experiment with algebraic phenomena.

Connections to Equations and Inequalities. The correspondence between numerical coordinates and geometric points allows methods from algebra to be applied to geometry and vice versa. The solution set of an equation becomes a geometric curve, making visualization a tool for doing and understanding algebra. Geometric shapes can be described by equations, making algebraic manipulation into a tool for geometric understanding, modeling and proof.

Content Outline

Congruence

Similarity, Right Triangles, and Trigonometry

Circles

Expressing Geometric Properties with Equations

Trigonometry of General Triangles

Geometric Measurement and Dimension

Modeling with Geometry

Congruence G CO

1. Understand that two geometric figures are congruent if there is a sequence of rigid motions (rotations, reflections, translations) that carries one onto the other. This is the principle of superposition.
2. Understand that criteria for triangle congruence are ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent.
3. Understand that criteria for triangle congruence (ASA, SAS, and SSS) can be established using rigid motions.
4. Understand that geometric diagrams can be used to test conjectures and identify logical errors in fallacious proofs.
5. Know and use (in reasoning and problem solving) definitions of angles, polygons, parallel, and perpendicular lines, rigid motions, parallelograms and rectangles.
6. Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints.*
7. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180^{o}, base angles of isosceles triangles are congruent, the triangle inequality, the longest side of a triangle faces the angle with the greatest measure and vice-versa, the exterior-angle inequality, and the segment joining midpoints of two sides of a triangle parallel to the third side and half the length.*
8. Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.
9. Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.
10. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*
11. Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.
12. Use two-dimensional representations to transform figures and to predict the effect of translations, rotations, and reflections.
13. Use two-dimensional representations to transform figures and to predict the effect of dilations.

Similarity, Right Triangles, and Trigonometry G-SRT

1. Understand that dilating a line produces a line parallel to the original. (In particular, lines passing through the center of the dilation remain unchanged.)
2. Understand that the dilation of a given segment is parallel to the given segment and longer or shorter in the ratio given by the scale factor. A dilation leaves a segment unchanged if and only if the scale factor is 1.
3. Understand that the assumed properties of dilations can be used to establish the AA, SAS, and SSS criteria for similarity of triangles.
4. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of sine, cosine, and tangent.
5. Understand that a line parallel to one side of a triangle divides the other two proportionally, and conversely.
6. Use triangle similarity criteria to solve problems and to prove relationships in geometric figures. *Include a proof of the Pythagorean theorem using triangle similarity.*
7. Use and explain the relationship between the sine and cosine of complementary angles.
8. Use sine, cosine, tangent, and the Pythagorean Theorem to solve right triangles[2] in applied problems.
9. STEM Give an informal explanation using successive approximation that a dilation of scale factor r changes the length of a curve by a factor of r and the area of a region by a factor of r^2.

Circles G-C

1. Understand that dilations can be used to show that all circles are similar.
2. Understand that there is a unique circle through three non-collinear points, and four circles tangent to three non-concurrent lines.

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[2] A right triangle has five parameters, its three lengths and two acute angles. Given a length and any other parameter, "solving a right triangle" means finding the remaining three parameters.

3. Identify and define radius, diameter, chord, tangent, secant, and circumference.
4. Identify and describe relationships among angles, radii, and chords. *Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
5. Determine the arc lengths and the areas of sectors of circles, using proportions.
6. STEM Construct a tangent line from a point outside a given circle to the circle.
7. STEM Prove and use theorems about circles, and use these theorems to solve problems involving:
   a. Symmetries of a circle
   b. Similarity of a circle to any other
   c. Tangent line, perpendicularity to a radius
   d. Inscribed angles in a circle, relationship to central angles, and equality of inscribed angles
   e. Properties of chords, tangents, and secants as an application of triangle similarity.

Expressing Geometric Properties with Equations G-GPE

1. Understand that two lines with well-defined slopes are perpendicular if and only if the product of their slopes is equal to –1.
2. Understand that the equation of a circle can be found using its definition and the Pythagorean Theorem.
3. Understand that transforming the graph of an equation by reflecting in the axes, translating parallel to the axes, or applying a dilation in one of the coordinate directions corresponds to substitutions in the equation.
4. STEM Understand that an ellipse is the set of all points whose distances from two fixed points (the foci) are a constant sum. The graph of $x^2/a^2 + y^2/b^2 = 1$ is an ellipse with foci on one of the axes.
5. STEM Understand that a parabola is the set of points equidistant from a fixed point (the focus) and a fixed line (the directrix). The graph of any quadratic function is a parabola, and all parabolas are similar.
6. STEM Understand that the formula $A = \pi ab$ for the area of an ellipse can be derived from the formula for the area of a circle.★
7. Use the slope criteria for parallel and perpendicular lines to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).
8. Find the point on the segment between two given points that divides the segment in a given ratio.
9. Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.★
10. Decide whether a point with given coordinates lies on a circle defined by a given equation.
11. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.
12. Complete the square to find the center and radius of a circle given by an equation.
13. STEM Find an equation for an ellipse given in the coordinate plane with major and minor axes parallel to the coordinate axes.
14. STEM Calculate areas of ellipses to solve problems.★

Trigonometry of General Triangles G-TGT

1. STEM Understand that the formula $A = ½\, ab \sin(C)$ for the area of a triangle can be derived by drawing an auxiliary line from a vertex perpendicular to the opposite side. Applying this formula in three different ways leads to the Law of Sines.
2. STEM Understand that the Law of Cosines generalizes the Pythagorean Theorem.
3. STEM Understand that the sine, cosine and tangent of the sum or difference of two angles can be expressed in terms of sine, cosine, and tangent of the angles themselves using the addition formulas.
4. STEM Understand that the Laws of Sines and Cosines embody the triangle congruence criteria, in that three pieces of information are usually sufficient to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that "Side-Side-Angle" is not a congruence criterion.
5. STEM Explain proofs of the Law of Sines and the Law of Cosines.

★ Standard with close connection to modeling.

6. STEM Use the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Geometric Measurement and Dimension G-GMD

1. Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.
2. STEM Understand that lengths of curves and areas of curved regions can be defined using the informal notion of limit.
3. STEM Understand that Cavalieri's principle allows one to understand volume formulas informally by visualizing volumes as stacks of thin slices.
4. Find areas of polygons by dissecting them into triangles.
5. Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.
6. For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.
7. Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.
8. STEM Identify cross-sectional shapes of slices of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.
9. STEM Use the behavior of length and area under dilations to show that the circumference of a circle is proportional to the radius and the area of a circle is proportional to the square of the radius. Identify the relation between the constants of proportionality with an informal argument involving dissection and recomposition of a circle into an approximate rectangle.

Modeling with Geometry G-MG

1. Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects.★
2. Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder).★
3. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★
4. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typographic grid systems based on ratios).★

★ Standard with close connection to modeling.

Glossary

Addition and subtraction within 10, 20, or 100. Addition or subtraction of whole numbers with whole number answers, and with sum or minuend at most 10, 20, or 100. Example: $8 + 2 = 10$ is an addition within 10, $14 - 5 = 9$ is a subtraction within 20, and $55 - 18 = 37$ is a subtraction within 100.

Additive inverses. Two numbers whose sum is 0 are additive inverses of one another. Example: $3/4$ and $-3/4$ are additive inverses of one another because $3/4 + (-3/4) = (-3/4) + 3/4 = 0$.

Box plot. A method of visually displaying a distribution of data values by using the median, quartiles, and extremes of the data set. A box shows the middle 50% of the data.[3]

Complex fraction. A fraction A/B where A and/or B are fractions.

Congruent. Two plane or solid figures are congruent if one can be obtained from the other by a sequence of rigid motions (rotations, reflections, and translations).

Counting on. A strategy for finding the number of objects in a group without having to count every member of the group. For example, if a stack of books is known to have 8 books and 3 more books are added to the top, it is not necessary to count the stack all over again; one can find the total by *counting on*—pointing to the top book and saying "eight," following this with "nine, ten, eleven. There are eleven books now."

Decade word. A word referring to a single-digit multiple of ten, as in *twenty, thirty, forty*, etc.

Dot plot. A method of visually displaying a distribution of data values where each data value is shown as a dot or mark above a number line. Also known as a line plot.[4]

Dilation. A transformation that moves each point along the ray through the point emanating from a fixed center, and multiplies distances from the center by a common scale factor.

Empirical probability model. A probablity model based on a data set for a random process in which the probability of a particular type or category of outcome equals the percentage of data points included in the category. Example: If a coin is tossed 10 times and 4 of the tosses are Heads, then the empirical probability of Heads in the empirical probability model is $4/10$ (equivalently 0.4 or 40%).

Equivalent fractions. Two fractions a/b and c/d that represent the same number.

Expanded form. A multidigit number is expressed in expanded form when it is written as a sum of single-digit multiples of powers of ten. For example, $643 = 600 + 40 + 3$.

First quartile. For a data set with median M, the first quartile is the median of the data values less than M. Example: For the data set $\{1, 3, 6, 7, 10, 12, 14, 15, 22, 120\}$, the first quartile is 6.[5] *See also* median, third quartile, interquartile range.

Fraction. A number expressible in the form a/b where a is a whole number and b is a positive whole number. (The word *fraction* in these standards always refers to a nonnegative number.) *See also* rational number.

Independently combined probability models. Two probability models are said to be combined independently if the probability of each ordered pair in the combined model equals the product of the original probabilities of the two individual outcomes in the ordered pair.

Integer. A number expressible in the form a or $-a$ for some whole number a.

Interquartile Range. A measure of variation in a set of numerical data, the interquartile range is the distance between the first and third quartiles of the data set. Example: For the data set $\{1, 3, 6, 7, 10, 12, 14, 15, 22, 120\}$, the interquartile range is $15 - 6 = 9$. *See also* first quartile, third quartile.

Laws of arithmetic. See Table 3 in this Glossary.

Line plot. See dot plot.

Mean. A measure of center in a set of numerical data, computed by adding the values in a list and then dividing by the number of values in the list.[6] Example: For the data set $\{1, 3, 6, 7, 10, 12, 14, 15, 22, 120\}$, the mean is 21.

Mean absolute deviation. A measure of variation in a set of numerical data, computed by adding the distances between each data value and the mean, then dividing by the number of data values. Example: For the data set $\{2, 3, 6, 7, 10, 12, 14, 15, 22, 120\}$, the mean absolute deviation is 20.

Median. A measure of center in a set of numerical data. The median of a list of values is the value appearing at the center of a sorted version of the list—or the mean of the two central values, if the list contains an even number of values. Example: For the data set $\{2, 3, 6, 7, 10, 12, 14, 15, 22, 90\}$, the median is 11.

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3 Adapted from Wisconsin Department of Public Instruction, http://dpi.wi.gov/standards/mathglos.html, accessed March 2, 2010.

4 Adapted from Wisconsin Department of Public Instruction, *op. cit.*.

5 Many different methods for computing quartiles are in use. The method defined here is sometimes called the Moore and McCabe method. See Langford, E., "Quartiles in Elementary Statistics," *Journal of Statistics Education* Volume 14, Number 3 (2006),

6 To be more precise, this defines the *arithmetic mean*.

Multiplication and division within 100. Multiplication or division of whole numbers with whole number answers, and with product or dividend at most 100. Example: $72 \div 8 = 9$.

Multiplicative inverses. Two numbers whose product is 1 are multiplicative inverses of one another. Example: $^3/_4$ and $^4/_3$ are multiplicative inverses of one another because $^3/_4 \times {}^4/_3 = {}^4/_3 \times {}^3/_4 = 1$.

Properties of equality. See Table 4 in this Glossary.

Properties of inequality. See Table 5 in this Glossary.

Properties of operations. Associativity and commutativity of addition and multiplication, distributivity of multiplication over addition, the additive identity property of 0, and the multiplicative identity property of 1.See Table 3 in this Glossary.

Probability. A number between 0 and 1 used to quantify likelihood for processes that have uncertain outcomes (such as tossing a coin, selecting a person at random from a group of people, tossing a ball at a target, testing for a medical condition).

Rational number. A number expressible in the form $^a/_b$ or $-{}^a/_b$ for some fraction $^a/_b$. The rational numbers include the integers.

Related fractions. Two fractions are said to be related if one denominator is a factor of the other.

Rigid motion. A transformation of points in space consisting of one or more translations, reflections, and/or rotations. Rigid motions are here assumed to preserve distances and angle measures.

Sample space. In a probability model for a random process, a list of the individual outcomes that are to be considered.

Scatter plot. A graph in the coordinate plane representing a set of bivariate data. For example, the heights and weights of a group of people could be displayed on a scatter plot.[8]

Similarity transformation. A rigid motion followed by a dilation.

Tape diagrams. Drawings that look like a segment of tape, used to illustrate number relationships. Also known as strip diagrams, bar models or graphs, fraction strips, or length models.

Teen number. A whole number that is greater than or equal to 11 and less than or equal to 19.

Third quartile. For a data set with median M, the third quartile is the median of the data values greater than M. Example: For the data set {2, 3, 6, 7, 10, 12, 14, 15, 22, 120}, the third quartile is 15. *See also* median, first quartile, interquartile range.

Uniform probability model. A probability model in which the individual outcomes all have the same probability ($^1/_N$ if there are N individual outcomes in the sample space). If a given type of outcome consists of M individual outcomes, then the probability of that type of outcome is $^M/_N$. Example: if a uniform probability model is used to model the process of randomly selecting a person from a class of 32 students, and if 8 of the students are left-handed, then the probability of randomly selecting a left-handed student is $^8/_{32}$ (equivalently $^1/_4$, 0.25 or 25%).

Whole numbers. The numbers 0, 1, 2, 3, ...

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[7] See Ginsburg, Leinwand and Decker (2009), *Informing Grades 1-6 Mathematics Standards Development: What Can Be Learned from High-Performing Hong Kong, Korea, and Singapore?*, Table A1, p. A-5, grades 3 and 4.

[8] Adapted from Wisconsin Department of Public Instruction, *op. cit.*.

TABLE 1. Common addition and subtraction situations.[9]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$

	Total Unknown	Addend Unknown	Both Addends Unknown[10]
Put Together/ Take Apart[11]	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[12]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

[9] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

[10] These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes* or *results in* but always does mean *is the same number as*.

[11] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.

[12] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

TABLE 2. Common multiplication and division situations.[13]

	Unknown Product	Group Size Unknown ("How many in each group?" Division)	Number of Groups Unknown ("How many groups?" Division)
	$3 \times 6 = ?$	$3 \times ? = 18$ and $18 \div 3 = ?$	$? \times 6 = 18$ and $18 \div 6 = ?$
Equal Groups	There are 3 bags with 6 plums in each bag. How many plums are there in all? *Measurement example.* You need 3 lengths of string, each 6 inches long. How much string will you need altogether?	If 18 plums are shared equally into 3 bags, then how many plums will be in each bag? *Measurement example.* You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?	If 18 plums are to be packed 6 to a bag, then how many bags are needed? *Measurement example.* You have 18 inches of string, which you will cut into pieces that are 6 inches long. How many pieces of string will you have?
Arrays,[14] Area[15]	There are 3 rows of apples with 6 apples in each row. How many apples are there? *Area example.* What is the area of a 3 cm by 6 cm rectangle?	If 18 apples are arranged into 3 equal rows, how many apples will be in each row? *Area example.* A rectangle has area 18 square centimeters. If one side is 3 cm long, how long is a side next to it?	If 18 apples are arranged into equal rows of 6 apples, how many rows will there be? *Area example.* A rectangle has area 18 square centimeters. If one side is 6 cm long, how long is a side next to it?
Compare	A blue hat costs \$6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? *Measurement example.* A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs \$18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? *Measurement example.* A rubber band is stretched to be 18 cm long and that is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs \$18 and a blue hat costs \$6. How many times as much does the red hat cost as the blue hat? *Measurement example.* A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
General	$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

[13] The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.

[14] The language in the array examples shows the easiest form of array problems. A harder form is to use the terms rows and columns: The apples in the grocery window are in 3 rows and 6 columns. How many apples are in there? Both forms are valuable.

[15] Area involves arrays of squares that have been pushed together so that there are no gaps or overlaps, so array problems include these especially important measurement situations.

TABLE 3. The laws of arithmetic, including the properties of operations (identified with °). Here a, b and c stand for arbitrary numbers in a given number system. The laws of arithmetic apply to the rational number system, the real number system, and the complex number system.

°*Associative law of addition*	$(a + b) + c = a + (b + c)$
°*Commutative law of addition*	$a + b = b + a$
°*Additive identity property of 0*	$a + 0 = 0 + a = a$
Existence of additive inverses	For every a there exists $-a$ so that $a + (-a) = (-a) + a = 0$.
°*Associative law of multiplication*	$(a \times b) \times c = a \times (b \times c)$
°*Commutative law of multiplication*	$a \times b = b \times a$
°*Multiplicative identity property of 1*	$a \times 1 = 1 \times a = a$
Existence of multiplicative inverses	For every $a \neq 0$ there exists $1/a$ so that $a \times 1/a = 1/a \times a = 1$.
°*Distributive law of multiplication over addition*	$a \times (b + c) = a \times b + a \times c$

TABLE 4. The properties of equality. Here a, b and c stand for arbitrary numbers in the rational, real, or complex number systems.

Reflexive property of equality	$a = a$
Symmetric property of equality	If $a = b$, then $b = a$.
Transitive property of equality	If $a = b$ and $b = c$, then $a = c$.
Addition property of equality	If $a = b$, then $a + c = b + c$.
Subtraction property of equality	If $a = b$, then $a - c = b - c$.
Multiplication property of equality	If $a = b$, then $a \times c = b \times c$.
Division property of equality	If $a = b$ and $c \neq 0$, then $a \div c = b \div c$.
Substitution property of equality	If $a = b$, then b may be substituted for a in any expression containing a.

TABLE 5. The properties of inequality. Here a, b and c stand for arbitrary numbers in the rational or real number systems.

Exactly one of the following is true: $a < b$, $a = b$, $a > b$.

If $a > b$ and $b > c$ then $a > c$.

If $a > b$, then $b < a$.

If $a > b$, then $-a < -b$.

If $a > b$, then $a \pm c > b \pm c$.

If $a > b$ and $c > 0$, then $a \times c > b \times c$.

If $a > b$ and $c < 0$, then $a \times c < b \times c$.

If $a > b$ and $c > 0$, then $a \div c > b \div c$.

If $a > b$ and $c < 0$, then $a \div c < b \div c$.

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Appendix A
Designing High School Mathematics Courses Based on the Common Core Standards

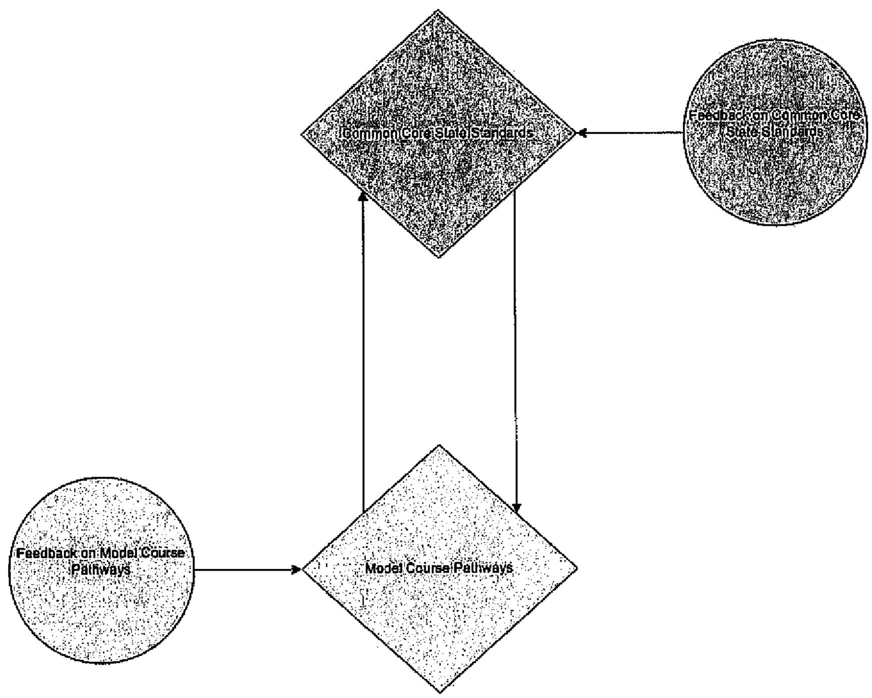
Overview:

The Common Core State Standards (CCSS) for Mathematics are organized by grade level in Grades K–8. At the high school level, the standards are organized by strand, showing a logical progression of content within those strands. As states consider how to implement the high school standards, a number have requested a model (or several models) that indicate how the CCSS content might be parsed into courses that provide a strong foundation for, and pathways to, college and work readiness and college credit bearing courses during the high school years. To address this request, Achieve (in partnership with the Common Core writing team) has convened a small team of experts, including state mathematics experts, teachers, mathematics faculty from two and four year institutions, and representatives from the workforce to develop Model Mathematics Course Pathways based on the Common Core State Standards.

The draft pathways and courses shown here are in an early stage of development. The public review period therefore provides a valuable opportunity for a wide range of stakeholders and experts to provide input on how to improve them.

This is an iterative process. As the Common Core State Standards undergo revisions, so do the courses. As the courses have been drafted, new insights about the standards have emerged, which has led to further refinements to the standards, which in turn has suggested new ways of thinking about the courses. In other words, the two processes have been iterative, and mutually reinforcing, and will continue to inform one another, as shown in the following flowchart.

For example, after a draft of the CCSS was produced in February, the Pathways underwent revision. These revisions led to additional changes to the CCSS, which will be included in the next draft of the Pathways. After the March public review period, feedback will inform additional edits to both the CCSS and the Pathways, where revisions to each will inform the other.



Three things are important to note:

1. The pathways and courses are models, not mandates. They illustrate possible approaches to organizing the content of the CCSS into coherent and rigorous courses that lead to college and work readiness as well as college credit bearing courses during the high school years.
2. The working documents shown here should not be regarded as final. They are included in this draft in order to promote a transparent process and provide opportunity for broad input and engagement. The final versions of these courses will change, as we receive feedback on them and on the standards upon which they are based.
3. The course descriptions are standards for what mathematics is covered in a course; they are not prescriptions for curriculum or pedagogy.

Appendix A
Designing High School Mathematics Courses Based on the Common Core Standards

Desired Feedback:
Readers are invited to submit feedback on the following questions:

- For each course:
  - Is it coherent? Is it logically ordered and is the focus clear?
  - Is each course manageable? In other words, would it seem to take one year or less to complete?
- For each sequence of courses:
  - Are the courses vertically articulated well? Is each sequence as a whole coherent?
- General Questions:
  - The reader will note that the courses and pathways have not been given titles. Should the typical terms such as "integrated" or "traditional" or "Algebra II" continue to be used, or is now the time to create new titles?
  - With respect to Pathway A, probability and statistics have been placed in each course. Should these standards exist in their own semester-long course, or continue to exist in each course throughout the pathway?
  - Do the expectations in the courses effectively balance the demands of:
    - Preparation for the workforce (Level 3 jobs);
    - Preparation for college (non-quantitative majors, STEM, and in-between);
    - International benchmarking;
    - The need to help students keep their options open for as long as possible?
  - What other changes could be made to make these sets of course standards stronger?

The Pathways:
At this time, two model course pathways are under construction:

- One an approach typically seen in the U.S. (Pathway A) that consists of two algebra courses and a geometry course, with some data, probability and statistics infused throughout each course (in the current design);
- The other an approach typically seen internationally (Pathway B) that consists of a sequence of 3 courses each of which treats aspects of algebra, geometry and data, probability, and statistics.

Both pathways assume four years of high school mathematics. Both pathways contain one course in each of years one and two, and then each pathway provides two options – or branches –for the third course, each of which leads to a variety of fourth year courses (see Chart 1). Many students, even most, should and will reach college and career readiness with time remaining for additional mathematics courses.

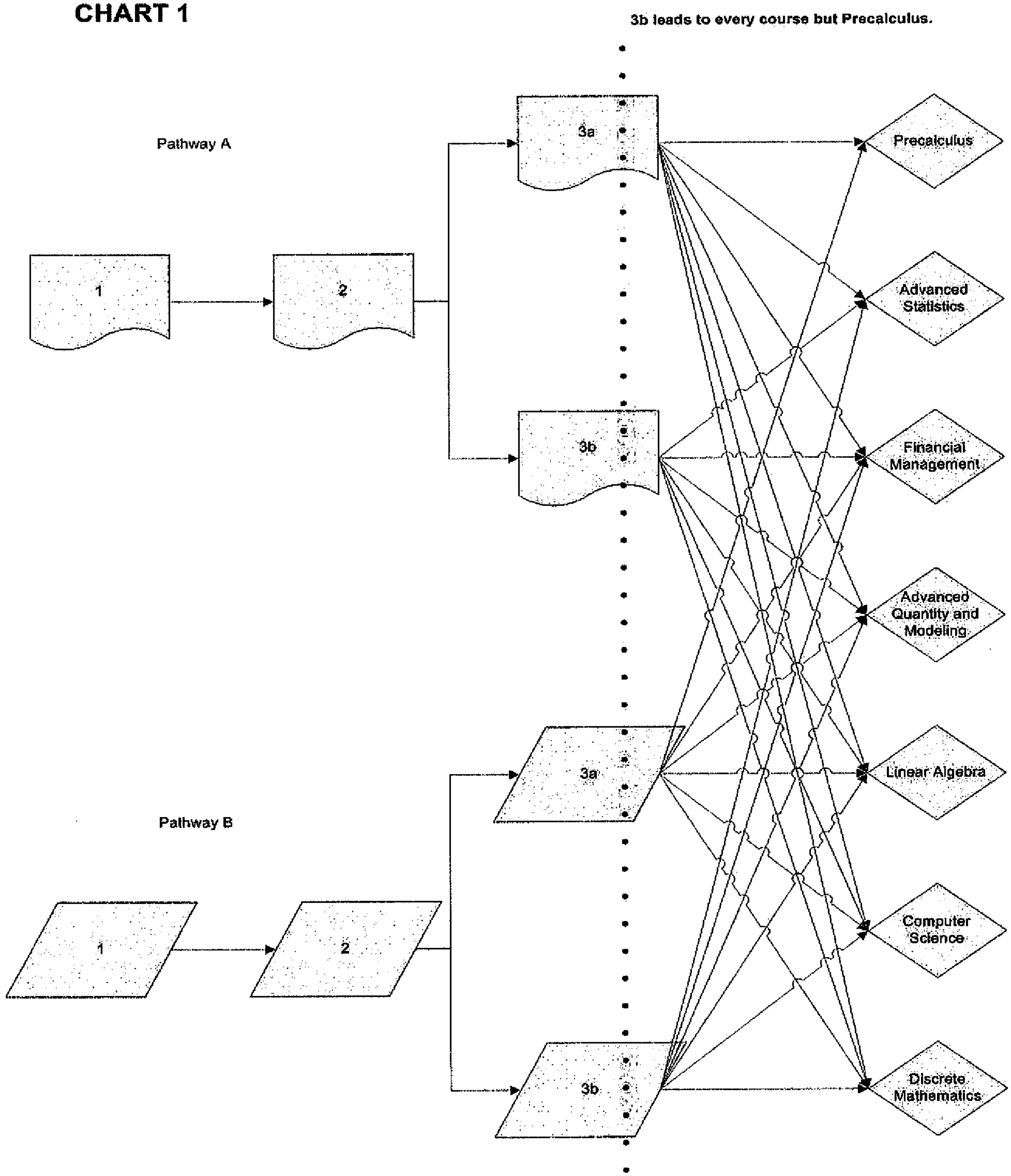
Both pathways lead directly to college opportunity, although students who know at an early age that they are interested in STEM majors and careers should endeavor to take even higher levels of mathematics in high school (e.g. Calculus by the senior year), and meet the college and career readiness level by the end of tenth grade. Those who reach the readiness level by the end of eleventh grade should take an additional mathematics course as seniors, with a subset of possibilities listed on the next page.

Each pathway should get the same attention to quality and resources including class sizes, teacher assignments and professional development, and materials. Indeed, these and other pathways should be avenues for students to pursue interests and aspirations. The following flow chart shows how the draft courses in the two pathways are sequenced, where the dotted line indicates the college and career readiness level.

Appendix A

Designing High School Mathematics Courses Based on the Common Core Standards

CHART 1



Pathway A
Course 1

Building on their work with proportionality and linear equations in middle school, students turn their attention to the idea of function in this course. Students work closely with the expressions that define the functions, their graphs, domain, and function notation. Work with the functions is grounded in logical reasoning, where manipulations to the expressions are accomplished with intent and based on properties of arithmetic and the laws of equality. Students continue to expand and hone their abilities to model situations, including through the use of statistics, and to solve equations.

There are many unifying threads which wind their way throughout the course, offering greater focus and coherence. These threads are captured in the Unifying Standards, and should be applied appropriately to each instructional unit: Linear expressions, equations, and functions; Quadratic expressions, equations, and functions; and Exponential expressions, equations and functions. The final algebra unit in the course provides an opportunity to synthesize the year's work with functions by comparing and contrasting them.

Through this course, students continue to improve in their Mathematical Practices by attending to precision, constructing viable arguments and critiquing the reasoning of others, making sense of problems and persevering in solving them, looking for and making use of structure, looking for and expressing regularity in repeated reasoning, reasoning abstractly and quantitatively, modeling with mathematics, and using appropriate tools strategically. Teachers should look for opportunities to encourage student demonstration of their improvement of these practices.

Unifying Standards

Quantities★ N.Q

N.Q.5	Use and interpret quantities and units correctly in algebraic formulas.
N.Q.6	Use and interpret quantities and units correctly in graphs and data displays (function graphs, data tables, scatter plots, and other visual displays of quantitative information). Generate graphs and data displays using technology. *This standard should be considered whenever a graph or data display is discussed.*[1]

Seeing Structure in Expressions A-SSE

A.SSE.1	Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.
A.SSE.2	Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.
A.SSE.3	Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★
A.SSE.5	See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

★ Standard with close connection to modeling

1 Italicized text following a standard is an "instructional note" to the teacher.

Appendix A
Designing High School Mathematics Courses Based on the Common Core Standards

Creating Equations That Describe Numbers or Relationships — A-CED*

A.CED.1 Understand that equations in one variable are often created to describe properties of a specific but unknown number.

A.CED.2 Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.

A.CED.3 Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
Note that "simple rational functions" in this course refers to functions of the form $f(x)=k/x$ $(x \neq 0)$, unless otherwise noted. This function bears close connections to the linear function and is thus included in this course.

A.CED.4 Rearrange formulas to highlight a quantity of interest. For example, transform Ohm's law V = IR to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$.
Focus on formula involving linear and quadratic expressions in this course. Emphasize the use of logical arguments based on the properties of equality and rules of arithmetic.

Reasoning with Equations and Inequalities — A-REI

A.REI.1 Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one.
Emphasize the use of logical arguments based on the properties of equality and rules of arithmetic.

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

A.REI.8 Understand that equations and inequalities can be viewed as constraints in a problem situation, (e.g., inequalities describing nutritional and cost constraints on combinations of different foods.) ★

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.
In this course, focus on linear, simple rational, quadratic, and exponential functions. Include the use of technology to approximate intersections.

Interpreting Functions — A-IF

The following standards support the introduction of each major function in this course.

A.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

A.IF.4 Use function notation and evaluate functions for inputs in their domains.

★ Standard with close connection to modeling

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic).★

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

A.IF.7 Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, draw conclusions about the graph of a quadratic function from its algebraic expression.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★
In this course, include linear, quadratic, simple rational functions of the form $f(x) = \frac{a}{(x-h)} + k$ *and* $f(x) = \frac{a}{(x-h)^2} + k$, *exponential and absolute value functions.*

Building Functions — A-BF

A.BF.1 Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology.★

A.BF.6 Solve problems involving linear, quadratic, and exponential functions.★

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Focus on the linear (including absolute value), quadratic, and exponential functions.

Linear, Quadratic, and Exponential Models — A-LQE

A.LQE.9 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.★

Unit 1: Linear Expressions, Equations, and Functions

Quantities★ — NQ

N.Q.1 Understand that the magnitude of a quantity is independent of the unit used to measure it. For example, the density of a liquid does not change when it is measured in another unit. Rather, its measure changes. The chosen unit "measures" the quantity by giving it a numerical value ("the density of lead is 11.3 times that of water").

N.Q.2 Use units as a way to understand problems and to guide the solution of multi-step problems, involving, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game.

★ Standard with close connection to modeling

N.Q.3 Define metrics for the purpose of descriptive modeling. For example, find a good measure of overall highway safety; propose and debate measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled.

Reasoning with Equations and Inequalities A-REI

A.REI.3 Understand that given a system of two linear equations in two variables, adding a multiple of one equation to another produces a system with the same solutions. This principle, combined with principles already encountered with equations in one variable, allows for the simplification of systems.

Note that on the coordinate plane, the graph of a linear combination of two linear equations whose graphs intersect produces a third equation whose graph intersects the two original ones at their point of intersection.

A.REI.6 Understand that the solutions to a linear inequality in two variables can be graphed as a half-plane (excluding the boundary in the case of a strict inequality).

Include a variety of examples.

A.REI.7 Understand that solutions to several linear inequalities in two variables correspond to points in the intersection of the regions in the plane defined by the solutions to the inequalities.

G.GPE.1 Understand that two lines with well-defined slopes are perpendicular if and only if the product of their slopes is equal to -1.

A proof of this could be demonstrated using rotations of lines.

A.REI.11 Solve linear equations in one variable, including equations with coefficients represented by letters.

A.REI.14 Solve linear inequalities in one variable and graph the solution set on a number line.

A.REI.15 Solve systems of linear equations algebraically and graphically, focusing on pairs of linear equations in two variables.

Include situations where the two lines are perpendicular, and connect to the following standard.

G.GPE.7 Use the slope criteria for parallel and perpendicular lines to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

A.REI.17 Graph the solution set of a system of linear inequalities in two variables.

A.REI.18 In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context.★

Focus on linear models in this unit.

Building Functions A-BF

A.BF.2 Understand that sequences are functions whose domain is a subset of the nonnegative integers.

Focus on linear/arithmetic sequences in this unit.

A.BF.8 Generate an arithmetic or geometric sequence given a recursive rule for the sequence.★

Focus on arithmetic sequences in this unit.

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.1 Understand that a linear function, defined by $f(x) = mx + b$ for some constants m and b, models a situation in which a quantity changes at a constant rate, m, relative to another.★

A.LQE.5 Understand that in an arithmetic sequence, differences between consecutive terms form a constant sequence, and second differences are zero. Conversely, if the second differences are zero, the sequence is arithmetic. Arithmetic sequences can be seen as linear functions.★

A.LQE.10 Construct a function to describe a linear relationship between two quantities. Determine the rate of change and constant term of a linear function from a graph, a description of a relationship, or from two (x, y) values (including reading these from a table).★

A.LQE.13 Interpret the rate of change and constant term of a linear function or sequence in terms of the situation it models, and in terms of its graph or a table of values.★

Unit 2: Statistical Analysis of Data

Summarizing Categorical and Quantitative Data S-SI

S.SI.1 Understand that statistical methods take variability into account to support making informed decisions based on data collected to answer specific questions.

S.SI.2 Understand that visual displays and summary statistics condense the information in data sets into usable knowledge.

S.SI.3 Understand that patterns of association or relationships between variables may emerge through careful analysis of multi-variable data.

Focus on determining whether potential linear or exponential relationships are suggested by the data. Connections should be made to understanding variability and how one might find useful patterns in it.

S.SI.6 Represent bivariate quantitative data on a scatter plot and describe how the variables are related.

Focus on bivariate data that exhibit linear or exponential relationships.

S.SI.7 Fit a linear function for scatter plots that suggest a linear association. Informally assess the fit of the model function by plotting and analyzing residuals.

Explain that one common measure of goodness of fit is the sum of squared vertical distances from the points to the line. The least squares line minimizes this sum. When the residuals (the vertical deviations from the line) are plotted against x, a pattern in the plot suggests that a linear function may not be the best way to describe the relationship between x and y.

S.SI.8 Use a model function fitted to the data to solve problems in the context of the data, interpreting the slope (rate of change) and the intercept (constant term).

S.SI.9 Compute (using technology) and interpret the correlation coefficient for a linear relationship between variables.

S.SI.10 Distinguish between correlation and causation.

Unit 3: Quadratic Expressions, Equations, and Functions

The Real Number System N-RN

N.RN.3 Understand that sums and products of rational numbers are rational.

N.RN.4 Understand that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational

Include definition of rational numbers as infinite and periodic decimals and definition of irrational numbers as infinite but non-periodic decimals.

Seeing Structure in Expressions A-SSE

A.SSE.4 Factor, expand, and complete the square in quadratic expressions.

Reasoning with Equations and Inequalities A-REI

A.REI.2 Understand that the method of completing the square can transform any quadratic equation in x into an equivalent equation of the form $(x-p)^2 = q$. This leads to the quadratic formula.

A.REI.12 Solve quadratic equations in one variable. Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as a $\pm$ bi for real numbers a and b.

Exclude complex solutions in this course.

A.REI.16 Solve algebraically a simple system consisting of one linear equation and one quadratic equation in two variables; for example, find points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.

Exclude quadratics that graph as circles in this course.

A.REI.18 In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context.★

Include situations with one quadratic and one line.

Interpreting Functions A-IF

A.IF.2 Understand that [quadratic] functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

A.IF.9 Describe the qualitative behavior of [quadratic] functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Note that quadratics have one absolute maximum or one absolute minimum. Exclude notions of periodicity in this course.

A.IF.11 Transform quadratic polynomials algebraically to reveal different features of the function they define, such as zeros, extreme values, and symmetry of the graph.

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.2 Understand that quadratic functions have maximum or minimum values and can be used to model problems with optimum solutions.★

A.LQE.6 Understand that in a sequence that increases quadratically (e.g., $a_n = 3n^2 + 2n + 1$), differences between consecutive terms form an arithmetic sequence, and second differences form a constant sequence. Conversely, if the second differences form a constant sequence with non-zero value, the sequence increases quadratically.★

A.LQE.11 Use quadratic functions to model problems, e.g. in situations with optimum solutions.★

Unit 4: Exponential Expressions, Equations, and Functions

The Real Number System N-RN

N.RN.1 Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.

N.RN.2 Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, since $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ is a cube root of 5.

N.RN.5 Rewrite expressions using the laws of exponents. For example $(5^{1/2})^3 = 5^{3/2}$ *and* $1/5 = 5^{-1}$.

Quantities★ NQ

N.Q.4 Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Make connection between scientific notation's use of base 10 to the use of base 10 in solving exponential equations.

Seeing Structure in Expressions A-SSE

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.

★ Standard with close connection to modeling

★ Standard with close connection to modeling

A.SSE.7 Use the laws of exponents to interpret expressions for exponential functions, recognizing positive rational exponents as indicating roots of the base and negative exponents as indicating the reciprocal of a power. For example, identify the per unit percentage change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and conclude whether it represents exponential growth or decay. Recognize that any non-zero number raised to the 0 power is 1 (for example, $12(1.05)^0 = 12$). Avoid common errors such as confusing $6(1.05)^t$ with $(6 \cdot 1.05)^t$ and $5(0.03)^t$ with $5(1.03)^t$.

Reasoning with Equations and Inequalities A-REI

A.REI.19 In the context of exponential models, solve equations of the form $a\,b^{ct} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.★

In this course, use graphical methods or focus on equations having exact, integral solutions. For example, solve $2^x = 32$.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

In this unit on exponential functions, focus on average rates of change (over intervals), whether the function is always increasing or always decreasing, and end behavior.

Building Functions A-BF

A.BF.9 As a way to describe routine modeling situations, write arithmetic and geometric sequences both recursively and in closed form, and translate between the two forms.★

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.3 Understand that an exponential function, defined by $f(x) = ab^x$ or by $f(x) = a(1 + r)^x$ for some constants a, $b > 0$ and $r > -1$, models a situation where a quantity grows or decays by a constant factor or a constant percentage change over each unit interval.★

A.LQE.4 Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.★

A.LQE.7 Understand that in a geometric sequence, ratios of consecutive terms are all the same.★

A.LQE.8 Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically or (more generally) as a polynomial function.★

Verify graphically and restrict polynomials to quadratics in this unit.

A.LQE.12 Construct an exponential function in the form $f(x) = a(1 + r)^x$ or $f(x) = ab^x$ to describe a relationship in which one quantity grows with respect to another at a constant percent growth rate or a with a constant growth factor.★

Make connection to compound interest, here.

A,LQE.14 Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed time interval. Estimate the growth factor from a graph.★

A.LQE.15 Recognize a quantitative relationship as linear, exponential or neither from description of a situation.★

A.LQE.16 Compare quantities increasing exponentially to quantities increasing linearly or as a polynomial function.★

Restrict polynomials to quadratics in this part of the course.

Appendix A
Designing High School Mathematics Courses Based on the Common Core Standards

Pathway A
Course 2

Building on their work with lines, angles, and triangles in middle school, students turn their attention to a more formal treatment of geometry. The concepts of congruence, similarity and symmetry are developed through the concept of geometric transformation. Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent. Applying a scale transformation to a geometric figure yields a similar figure. The transformation preserves angle measure, and lengths are related by a constant of proportionality. If the constant of proportionality is 1, distances are also preserved (so the transformation is a rigid transformation) and the figures are congruent.

Students move quickly to establish the triangle congruence theorems, and then apply them to other polygons. With congruence in hand, students examine the idea of similarity with a particular emphasis on triangles. Students then see additional applications of similarity including the definitions of sine, cosine and tangent for acute angles, which are founded on right triangle similarity. With the Pythagorean theorem, sine, cosine, and tangent are fundamental in many real-world and theoretical situations. With a strong understanding of the properties, attributes and relationships of triangles and polygons, students examine the geometry of circles, quickly bringing in connections to coordinate geometry.

Modeling continues to be an important activity in this course. With the knowledge of a rich body of theorems about geometric objects, their attributes and relationships, students can apply them in diverse contexts—interpreting a schematic drawing, estimating the amount of wood needed to frame a sloping roof, rendering computer graphics, or designing a sewing pattern for the most efficient use of material. Another application of geometry is to probability, where area models are provide additional insight and lead to a deeper study of probability concepts.

Students continue to improve in their Mathematical Practices by attending to precision, constructing viable arguments and critiquing the reasoning of others, making sense of problems and persevering in solving them, looking for and making use of structure, looking for and expressing regularity in repeated reasoning, reasoning abstractly and quantitatively, modeling with mathematics, and using appropriate tools strategically. Teachers should look for opportunities to encourage student demonstration of their improvement of these practices.

<u>Unit 1: Triangles and Polygons — *Congruence*</u>

Congruence	G-CO
G.CO.1	Understand that two geometric figures are congruent if there is a sequence of rigid motions (rotations, reflections, translations) that carries one onto the other. This is the principle of superposition.
G.CO.2	Understand that criteria for triangle congruence are ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent.
G.CO.3	Understand that criteria for triangle congruence (ASA, SAS, and SSS) can be established using rigid motions.
G.CO.4	Understand that geometric diagrams can be used to test conjectures and identify logical errors in fallacious proofs.
G.CO.5	Know and use (in reasoning and problem solving) definitions of angles, polygons, parallel and perpendicular lines, rigid motions, parallelograms and rectangles.

G.CO.6 Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints.*

G.CO.7 Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°, base angles of isosceles triangles are congruent, the triangle inequality, the longest side of a triangle faces the angle with the greatest measure and vice-versa, the exterior-angle inequality, and the segment joining midpoints of two sides of a triangle parallel to the third side and half the length.*

Connect back to logical reasoning about expressions and equations covered in previous course.

G.CO.8 Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.

G.CO.9 Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.

G.CO.10 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

G.CO.11 Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.

G.CO.12 Use two-dimensional representations to transform figures and to predict the effect of translations, rotations and reflections.

G.CO.13 Use two-dimensional representations to transform figures and to predict the effect of dilations.

Unit 2: Triangles and Polygons — *Similarity, Right Triangles and Trigonometry*

Similarity, Right Triangles, and Trigonometry G-SRT

G.SRT.1 Understand that dilating a line produces a line parallel to the original. (In particular, lines passing through the center of the dilation remain unchanged.)

G.SRT.2 Understand that the dilation of a given segment is parallel to the given segment and longer or shorter in the ratio given by the scale factor. A dilation leaves a segment unchanged if and only if the scale factor is 1.

G.SRT.3 Understand that the assumed properties of dilations can be used to establish the AA, SAS, and SSS criteria for similarity of triangles.

G.SRT.4 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of sine, cosine and tangent.

G.SRT.5 Understand that a line parallel to one side of a triangle divides the other two proportionally, and conversely.

G.SRT.6 Use triangle similarity criteria to solve problems and to prove relationships in geometric figures. Include a proof of the Pythagorean Theorem using triangle similarity.

G.SRT.7 Use and explain the relationship between the sine and cosine of complementary angles.

G.SRT.8 Use sine, cosine, tangent and the Pythagorean Theorem to solve right triangles[2] in applied problems.

G.SRT.9 STEM Give an informal explanation using successive approximation that a dilation of scale factor r changes the length of a curve by a factor of r and the area of a region by a factor of r^2.

Trigonometry of General Triangles G-TGT

G.TGT.1 STEM Understand that the formula $A = ½ ab \sin(C)$ for the area of a triangle can be derived by drawing an auxiliary line from a vertex perpendicular to the opposite side. Applying this formula in three different ways leads to the Law of Sines.

G.TGT.2 STEM Understand that the Law of Cosines generalizes the Pythagorean Theorem.

[2] A right triangle has five parameters, its three lengths and two acute angles. Given a length and any other parameter, "solving a right triangle" means finding the remaining three parameters.

G.TGT.4 STEM Understand that the Laws of Sines and Cosines embody the triangle congruence criteria, in that three pieces of information are usually sufficient to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that "Side-Side-Angle" is not a congruence criterion.

Do not emphasize ambiguous case in this course. Constrain to a discussion of its existence.

G.TGT.5 STEM Explain proofs of the Law of Sines and the Law of Cosines.

For proof, emphasize explanation.

G.TGT.6 STEM Use the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Do not include ambiguous case.

Unit 3: Circles

Circles — G-C

G.CO.11 Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.

Include the construction of a circle, a circle inscribed in a triangle, and circumscribed by a triangle.

G.C.1 Understand that dilations can be used to show that all circles are similar.

G.C.2 Understand that here is a unique circle through three non-collinear points, or tangent to three non-concurrent lines.

Connect to the construction of a circle.

G.C.3 Identify and define radius, diameter, chord, tangent, secant and circumference.

G.C.4 Identify and describe relationships among angles, radii, and chords. *Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

G.C.5 Determine the arc lengths and the areas of sectors of circles, using proportions.

G.C.6 STEM Construct a tangent line from a point outside a given circle to the circle.

G.C.7 STEM Prove and use theorems about circles, and use these theorems to solve problems. *Include:*

- *Symmetries of a circle*
- *Similarity of a circle to any other*
- *Tangent line, perpendicularity to a radius*
- *Inscribed angles in a circle, relationship to central angles, and equality of inscribed angles*
- *Properties of chords, tangents and secants as an application of triangle similarity.*

Unit 4: Expressing Geometric Properties with Equations

Expressing Geometric Properties with Equations — G-GPE

G.GPE.2 Understand that the equation of a circle can be found using its definition and the Pythagorean Theorem.

G.GPE.3 Understand that transforming the graph of an equation by reflecting in the axes, translating parallel to the axes, or applying a dilation to one of the axes correspond to substitutions in the equation. *For example, reflection in the y axis corresponds to* $(x,y) \rightarrow (-x,y)$*, translation vertically down by three units corresponds to* $(x,y) \rightarrow (x,y+3)$*, and dilating by a factor of 2 parallel to the x-axis corresponds to* $(x, y) \rightarrow (x/2, y)$*.*

G.GPE.8 Find the point on the segment between two given points that divides the segment in a given ratio.

G.GPE.9 Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.★

G.GPE.10 Decide whether a point with given coordinates lies on a circle defined by a given equation.

G.GPE.11 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point (0, 2).

G.GPE.12 Complete the square to find the center and radius of a circle given by an equation.

Include the case where the radius is 1 with center at the origin, and an introductory discussion of the unit circle.

Unit 5: Geometric Measurement, Dimension, and Modeling

Geometric Measurement and Dimension G-GMD

G.GMD.1 Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.

G.GMD.3 STEM Understand that Cavalieri's principle allows one to understand volume formulas informally by visualizing volumes as stacks of thin slices.

G.GMD.4 Find areas of polygons by dissecting them into triangles.

G.GMD.5 Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.

G.GMD.6 For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.

G.GMD.7 Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.

Modeling with Geometry G-MG

G.MG.1 Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects.★

G.MG.2 Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder).★

G.MG.3 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★

G.MG.4 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typograph.

Unit 6: Probability Models

Significant emphasis should be given to the connection between probability and geometry. For example, there are geometry models for probability, including scaled two-way tables, for example. There are also true geometric probability problems, such as "What is the probability of breaking a piece of 10" linguine into two parts and having one part be more than 8" long?" Both types of models provide valuable opportunities to connect probability and geometry.

Probability Models S-PM

★ Standard with close connection to modeling

★ Standard with close connection to modeling

S.PM.1 Understand that in a probability model, individual outcomes have probabilities that sum to 1. When outcomes are categorized, the probability of a given type of outcome is the sum of the probabilities of all the individual outcomes of that type.

S.PM.2 Understand that uniform probability models are useful models for processes such as (i) the selection of a person from a population; (ii) the selection of a number in a lottery; (iii) any physical situation in which symmetry suggests that different individual outcomes are equally likely.

S.PM.3 Understand that two different empirical probability models for the same process will rarely assign exactly the same probability to a given type of outcome. But if the data sets are large and the methods used to collect the data for the two data sets are consistent, the agreement between the models is likely to be reasonably good.

S.PM.4 Understand that a (theoretical) uniform probability model may be judged by comparing it to an empirical probability model for the same process. If the theoretical assumptions are appropriate and the data set is large, then the two models should agree approximately. If the agreement is not good, then it may be necessary to modify the assumptions underlying the theoretical model or look for factors that might have affected the data used to create the empirical model.

S.PM.5 Use a uniform probability model to compute probabilities for a process involving uncertainty, including the random selection of a person from a population and physical situations where symmetry suggests that different individual outcomes are equally likely.

List the individual outcomes to create a sample space.

Label the individual outcomes in the sample space to reflect important characteristics or quantities associated with them.

Determine probabilities of individual outcomes, and determine the probability of a type or category of outcome as the fraction of individual outcomes it includes.

S.PM.6 Generate data by sampling, repeated experimental trials, and simulations. Record and appropriately label such data, and use them to construct an empirical probability model. Compute probabilities in such models.

S.PM.7 Compare probabilities from a theoretical model to probabilities from a corresponding empirical model for the same situation. If the agreement is not good, explain possible sources of the discrepancies.

Independently Combined Probability Models S-IPM

S.IPM.1 Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model.

- The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model.
- The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.

S.IPM.2 Understand that when two probability models are combined independently, the probability that one type of outcome in the first model occurs together with another type of outcome in the second model is the product of the two corresponding probabilities in the original models (the Multiplication Rule).

S.IPM.3 Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes).

Use organized lists, tables and tree diagrams to represent the combined sample space.

Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.

S.IPM.4 For two independently combined uniform models, use the Multiplication Rule to determine probabilities.

Conditional Probability and the Laws of Probability S-CP

S.CP.1 Understand that events are subsets of a sample space; often, events of interest are defined by using characteristics (or categories) of the sample points, or as unions, intersections, or complements thereof ("and," "or," "not"). A sample point may belong to several events (categories).

S.CP.2	Understand that if A and B are two events, then in a uniform model the conditional probability of A given B, denoted by $P(A \mid B)$, is the fraction of B's sample points that also lie in A.
S.CP.3	Understand that the laws of probability allow one to use known probabilities to determine other probabilities of interest.
S.CP.4	Compute probabilities by constructing and analyzing sample spaces, representing them by tree diagrams, systematic lists, and Venn diagrams.
S.C.5	Use the laws of probability to compute probabilities.
S.CP.6	Apply concepts such as intersections, unions and complements of events, and conditional probability and independence to define or analyze events, calculate probabilities and solve problems.
S.CP.7	Construct and interpret two-way tables to show probabilities when two characteristics (or categories) are associated with each sample point. Use a two-way table to determine conditional probabilities.★
S.CP.8	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.★
S.CP.9	Use permutations and combinations to compute probabilities of compound events and solve problems.

★ Standard with close connection to modeling

Pathway A
Course 3a

Building on their work with linear, quadratic, and exponential functions, students extend their repertoire of mathematical structures to include polynomial, rational[3] square root, and cube root functions. Students work closely with the expressions that define the functions, and continue to expand and hone their abilities to model situations and to solve equations, including solving quadratic equations over the set of complex numbers and solving exponential equations using the properties of logarithms.

There are many unifying threads which wind their way throughout the course, offering greater focus and coherence. These threads are captured in the Unifying Standards, and should be applied appropriately to each instructional unit. The final unit in this course provides students opportunities to engage in inferential reasoning through further study in statistics.

Through this course, students continue to improve in their Mathematical Practices by attending to precision, constructing viable arguments and critiquing the reasoning of others, making sense of problems and persevering in solving them, looking for and making use of structure, looking for and expressing regularity in repeated reasoning, reasoning abstractly and quantitatively, modeling with mathematics, and using appropriate tools strategically. Teachers should look for opportunities to encourage student demonstration of their improvement of these practices.

Unifying Standards

Seeing Structure in Expressions — A-SSE

A.SSE.1	Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.
A.SSE.2	Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.
N.Q.5	Use and interpret quantities and units correctly in algebraic formulas.
A.SSE.3	Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★
A.SSE.5	See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Reasoning with Equations and Inequalities — A-REI

A.REI.1	Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one. *Emphasize the use of logical arguments based on the properties of equality, rules of arithmetic, and, where appropriate, the laws of exponents.*
A.REI.4	Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

[3] In this course "rational" expressions are taken to be those that are at most linear polynomials divided by quadratic polynomials.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

Include the use of technology to approximate intersections.

Interpreting Functions A-IF

The following standards support the introduction of each major function (polynomial, rational, square root, and cube root) in this course.

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

A.IF.4 Use function notation and evaluate functions for inputs in their domains.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

A.IF.7 Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, draw conclusions about the graph of a quadratic function from its algebraic expression.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. ★

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to first introduce the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

Building Functions A-BF

★ Standard with close connection to modeling

A.BF.1 Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology. ★

Include non-traditional functions, as well. Students should become adept at writing functions to represent a variety of situations.

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Focus on linear, exponential, rational, quadratic, square root, and cube root functions; consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.9 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. ★

Unit 1: Polynomial and Radical Expressions, Equations, and Functions

The Complex Number System N-CN

N.CN.1 Understand that the relation $i^2 = -1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.

Include discussion of the extension of the number system to complex numbers based on need to solve certain equations.

N.CN.2 STEM Understand that polynomials can be factored over the complex numbers, e.g., as in $x^2 + 4 = (x + 2i)(x - 2i)$.

Extend to higher degree polynomials where factoring is reasonable. Include application of factoring polynomials where factoring is reasonable. Include application of factoring polynomials to reduce rational expressions to lowest terms.

N.CN.6 Add, subtract, and multiply complex numbers.

Extend beyond the application to quadratics and $i^2 = -1$ to include cubics and higher powers of i.

N.CN.8 STEM Solve quadratic equations with real coefficients that have complex solutions.

Seeing Structure in Expressions A-SSE

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.

Reasoning with Equations and Inequalities A REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on square root and cube root[4] functions in this unit.

A.REI.12 Solve quadratic equations in one variable. *Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.*

Focus on complex solutions in this course. Include connection of quadratic functions to partial sums of arithmetic series; emphasize derivation of the formula to find partial sums.

Arithmetic with Polynomials and Rational Expressions A-APR

[4] The introduction of the square root and cube root functions should be handled with care. In particular, their problematic nature over the complex numbers should be discussed as existing and to be encountered fully in later mathematics courses.

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.

A.APR.2 Understand that polynomial identities become true statements no matter which real numbers are substituted. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.

Extend beyond quadratic examples to include higher degree polynomials in this course.

A.APR.3 Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.

Relate long division of polynomials to long division of positive integers.

A.APR.4 STEM Understand that the Binomial Theorem gives the expansion of $(x + a)^n$ in powers of x for a positive integer n and a real number a, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

Connect to probability and Pascal's triangle. The proof may be explained by the instructor, but is not intended to be performed by students on their own.

A.APR.6 Add, subtract and multiply polynomials.

Emphasize relationship of polynomial multiplication as an application of the distributive property.

A.APR.7 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.

Unit 2: Rational and Exponential Expressions, Equations, and Functions

Arithmetic with Polynomials and Rational Expressions A-APR

A.APR.5 STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.

A.APR.8 Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.

Relate to division by zero. Clarify this it is the function output value that becomes zero with polynomial division. Distinguish between the output variable and the input value of the function that makes the function equal zero.

A.APR.9 Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.

A.APR.11 STEM Identify zeros and asymptotes of rational functions, when suitable factorizations are available, and use the zeros and asymptotes to construct a rough graph of the function.

A.APR.12 STEM Divide polynomials, using long division for linear divisors and long division or a computer algebra system for higher degree divisors.

Reasoning with Equations and Inequalities A-REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on rational functions in this unit.

A.REI.20 STEM Relate the properties of logarithms to the laws of exponents and solve equations involving exponential functions.

Unit 3: Statistics and Probability

Making Inferences and Justifying Conclusions S-IC

S.IC.1 Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.

S.IC.2	Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.
S.IC.3	Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.
S.IC.4	Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)
S.IC.5	Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.
S.IC.6	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
S.IC.7	Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.
S.IC.8	Evaluate reports based on data.

Experimenting and Simulating to Model Probabilities S-ES

S.ES.1	Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.
S.ES.2	Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome's occurrence if the random experiment is repeated a large number of times.
S.ES.3	Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.
S.ES.4	Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.
S.ES.5	Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve) and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Using Probability to Make Decisions S-MD

S.MD.1	Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.
S.MD.2	Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g. of an investment.
S.MD.3	Calculate expected value, e.g. to determine the fair price of an investment.
S.MD.4	Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
S.MD.5	Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.
S.MD.6	Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.
S.MD.7	Analyze decisions and strategies using probability concepts (e.g. product testing, medical testing, pulling a hockey goalie at the end of a game).

Pathway A
Course 3b

Building on their work with linear, quadratic, and exponential functions, students extend their repertoire of mathematical structures to include polynomial, rational[5] square root, and cube root functions. Students work closely with the expressions that define the functions, and continue to expand and hone their abilities to model situations and to solve equations. Additional emphasis is placed in this course on modeling. Students should engage with meaningful and rigorous modeling tasks to deepen their understanding of the mathematics.

There are many unifying threads which wind their way throughout the course, offering greater focus and coherence. These threads are captured in the Unifying Standards, and should be applied appropriately to each instructional unit. The final unit in this course provides students opportunities to engage in inferential reasoning through further study in statistics.

Through this course, students continue to improve in their Mathematical Practices by attending to precision, constructing viable arguments and critiquing the reasoning of others, making sense of problems and persevering in solving them, looking for and making use of structure, looking for and expressing regularity in repeated reasoning, reasoning abstractly and quantitatively, modeling with mathematics, and using appropriate tools strategically. Teachers should look for opportunities to encourage student demonstration of their improvement of these practices.

Unifying Standards

Seeing Structure in Expressions — A-SSE

Core Standards · Students understand that:

A.SSE.1	Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. *Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*
A.SSE.2	Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.
N.Q.5	Use and interpret quantities and units correctly in algebraic formulas.
A.SSE.3	Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★
A.SSE.5	See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Reasoning with Equations and Inequalities — A-REI

A.REI.1	Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one. *Emphasize the use of logical arguments based on the properties of equality, rules of arithmetic, and, where appropriate, the laws of exponents.*

5 In this course "rational" expressions are taken to be those that are at most linear polynomials divided by quadratic polynomials.

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

Interpreting Functions A-IF

The following standards support the introduction of each major function (polynomial, rational, square root, and cube root) in this course.

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

A.IF.4 Use function notation and evaluate functions for inputs in their domains.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

A.IF.7 Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, draw conclusions about the graph of a quadratic function from its algebraic expression.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.★

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to first introduce the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

Building Functions A-BF

★ Standard with close connection to modeling

A.BF.1 Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology. ★
Include non-traditional functions, as well. Students should become adept at writing functions to represent a variety of situations.

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
Focus on linear, exponential, rational, quadratic, square root, and cube root functions; consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.9 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. ★

Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

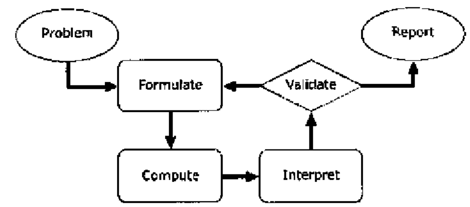
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car
- Modeling savings account balance, bacterial colony growth, or investment growth
- Critical path analysis, e.g. applied to turnaround of an aircraft at an airport.
- Risk situations, like extreme sports, pandemics and terrorism.
- Relating population statistics to individual predictions

In situation like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those than represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then, either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO_2 over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, CAS environments, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Unit 1: Polynomial and Radical Expressions, Equations, and Functions

The Complex Number System — N-CN

N.CN.1 Understand that the relation $i^2 = -1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.

Include discussion of the extension of the number system to complex numbers based on need to solve certain equations.

N.CN.6 Add, subtract, and multiply complex numbers.

Include application to quadratics and extend to include cubics and higher powers of i.

Seeing Structure in Expressions — A-SSE

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.

Reasoning with Equations and Inequalities — A-REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on square root and cube root[6] functions in this unit.

A.REI.12 Solve quadratic equations in one variable. *Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.*

[6] The introduction of the square root and cube root functions should be handled with care. In particular, their problematic nature over the complex numbers should be discussed as existing and to be encountered fully in later mathematics courses.

Focus on complex solutions in this course. Include connection of quadratic functions to partial sums of arithmetic series; emphasize derivation of the formula to find partial sums.

Arithmetic with Polynomials and Rational Expressions A-APR

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.

A.APR.2 Understand that polynomial identities become true statements no matter which real numbers are substituted. *For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.*

Extend beyond quadratic examples to include higher degree polynomials in this course.

A.APR.3 Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.

Relate long division of polynomials to long division of positive integers.

A.APR.6 Add, subtract and multiply polynomials.

Emphasize relationship of polynomial multiplication as an application of the distributive property.

A.APR.7 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.

A.APR.9 Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.

Unit 2: Rational and Exponential Expressions, Equations, and Functions

Arithmetic with Polynomials and Rational Expressions A APR

A.APR.5 STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.

A.APR.8 Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.

Relate to division by zero. Clarify this it is the function output value that becomes zero with polynomial division. Distinguish between the output variable and the input value of the function that makes the function equal zero.

A.APR.9 Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.

Reasoning with Equations and Inequalities A-REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on rational functions in this unit.

Unit 3: Statistics and Probability

Making Inferences and Justifying Conclusions S-IC

S.IC.1 Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.

S.IC.2 Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.

S.IC.3 Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.

S.IC.4 Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)

S.IC.5 Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.

S.IC.6 Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

S.IC.7 Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.

S.IC.8 Evaluate reports based on data.

Experimenting and Simulating to Model Probabilities S-ES

S.ES.1 Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.

S.ES.2 Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome's occurrence if the random experiment is repeated a large number of times.

S.ES.3 Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.

S.ES.4 Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.

S.ES.5 Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve) and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Using Probability to Make Decisions S-MD

S.MD.1 Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.

S.MD.2 Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g. of an investment.

S.MD.3 Calculate expected value, e.g. to determine the fair price of an investment.

S.MD.4 Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S.MD.5 Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.

S.MD.6 Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.

S.MD.7 Analyze decisions and strategies using probability concepts (e.g. product testing, medical testing, pulling a hockey goalie at the end of a game).

Pathway B
Course 1

The fundamental purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. The course is conceived in five units: (1) Relationships between quantities, (2) Linear and exponential functions, (3) Descriptive statistics, (4) Congruence and rigid motions, and (5) Connecting algebra and geometry through coordinates.

Relationships Between Quantities. This unit builds on informal experiences with functions, equations, inequalities, and their graphs. Students learn function notation and language for describing characteristics of functions, including the concepts of domain and range. They use average rates of change (over an interval) to describe nonlinear functions and to distinguish linear from nonlinear functions. They explore functions graphically, numerically, symbolically, and verbally, translate between representations, and understand the limitations of various representations. Students understand sequences as functions. They work with functions given by graphs, tables, keeping in mind that, depending upon the context, these representations are likely to be approximate and incomplete. Their work includes functions that can be described or approximated by formulas as well as those that cannot. When functions are given through contexts, they reason with the units in which those quantities are measured.

Linear and Exponential Relationships. Students reason about the laws of counting-number exponents, and they extend the laws of exponents to the integers to determine the meanings of zero and negative exponents. Students compare and contrast linear and exponential functions, distinguishing between additive and multiplicative change. They interpret arithmetic sequences as linear functions and geometric sequences as exponential functions. They develop fluency writing, interpreting, and translating between various forms of linear equations and inequalities and their graphical representations. They explore systems of equations and inequalities and find and interpret their solutions.

Statistical Analysis of Data. Students use regression techniques to describe relationships between quantities. They use graphical representations and knowledge of the context to make judgments about the appropriateness of linear models, and with a linear model they look at residuals to analyze the goodness of fit.

Congruence and Rigid Motions. In previous grades, students were asked to draw triangles based on given measurements. In this course, based on analyses of rigid motions and formal constructions, triangle congruence theorems are established and then used to prove theorems and to solve problems about triangles, quadrilaterals, and other polygons.

Connecting Algebra and Geometry Through Coordinates. Students use a coordinate system to verify geometric relationships, including properties of special triangles and quadrilaterals and slopes of parallel and perpendicular lines.

Unit 1: Relationships between Quantities

Quantities★ NQ

N.Q.1 Understand that the magnitude of a quantity is independent of the unit used to measure it. For example, the density of a liquid does not change when it is measured in another unit. Rather, its measure changes. The chosen unit "measures" the quantity by giving it a numerical value ("the density of lead is 11.3 times that of water").

★ Standard with close connection to modeling

N.Q.2 Use units as a way to understand problems and to guide the solution of multi-step problems, involving, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game.

N.Q.3 Define metrics for the purpose of descriptive modeling. For example, find a good measure of overall highway safety; propose and debate measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled.

N.Q.4 Add, subtract, multiply, and divide numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

Make connection between scientific notation's use of base 10 to the use of base 10 in solving exponential equations.[7]

N.Q.5 Use and interpret quantities and units correctly in algebraic formulas.

N.Q.6 Use and interpret quantities and units correctly in graphs and data displays (function graphs, data tables, scatter plots, and other visual displays of quantitative information). Generate graphs and data displays using technology. *This standard should be considered whenever a graph or data display is discussed.*

Seeing Structure in Expressions A-SSE

A.SSE.3 Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★

Creating Equations That Describe Numbers or Relationships A-CED*

A.CED.2 Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.

A.CED.3 Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

Focus on equations arising from situations involving linear and exponential functions in this course.

A.CED.4 Rearrange formulas to highlight a quantity of interest. *For example, transform Ohm's law $V = IR$ to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$.*
Focus on formula involving linear expressions in this course. Emphasize the use of logical arguments based on the properties of equality and rules of arithmetic.

Reasoning with Equations and Inequalities A-REI

A.REI.1 Understand that to solve an equation algebraically, one makes logical deductions from the equality asserted by the equation, often in steps that replace it with a simpler equation whose solutions include the solutions of the original one.
Emphasize the use of logical arguments based on the properties of equality and rules of arithmetic.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Focus on systems of linear equations in this course.

A.REI.7 Understand that solutions to several linear inequalities in two variables correspond to points in the intersection of the regions in the plane defined by the solutions to the inequalities.

A.REI.8 Understand that equations and inequalities can be viewed as constraints in a problem situation, (e.g., inequalities describing nutritional and cost constraints on combinations of different foods.) ★

In this course, focus on constraints that are linear or exponential.

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[7] Italicized text following a standard is an "instructional note" to the teacher.

★ Standard with close connection to modeling

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

In this course, focus on functions $f(x)$ and $g(x)$ that are linear or exponential functions.

A.REI.18 In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context. ★

Interpreting Functions

A-IF

A.IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x.

Introduced as a general concept but applied in terms of linear and exponential functions in this course.

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Introduced as a general concept but applied in terms of linear and exponential functions in this course. Relate average rates of change to linear approximations and note different characteristics of exponential growth and decay.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

Focus on rewriting linear and exponential functions and on vertical translations in this course.

A.IF.4 Use function notation and evaluate functions for inputs in their domains.

Focus on linear and exponential relationships in this course.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Focus on linear and exponential relationships in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★

Focus on linear and exponential functions in this course.

A.IF.7 Compare properties of two functions represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, draw conclusions about the graph of a quadratic function from its algebraic expression.

Focus on values and properties of linear and exponential functions in this course.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. ★

Focus on linear and exponential functions in this course.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Focus on the behavior of linear and exponential functions in this course.

Building Functions

A-BF

A.BF.1 Understand that functions can be described by specifying an explicit expression, a recursive process or steps for calculation.

A.BF.2 Understand that sequences are functions whose domain is a subset of the nonnegative integers.

★ Standard with close connection to modeling

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology.★

Discuss building functions from basic operations of arithmetic using one operation – $y = ax$, $y = x + a$, or $y = a - x$ and focus on linear and exponential functions in this course.

Linear, Quadratic, and Exponential Models — A-LQE

A,LQE.14 Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed time interval. Estimate the growth factor from a graph.★

Focus on linear and exponential functions in this course.

Unit 2: Linear and Exponential Relationships

The Real Number System — N-RN

N.RN.1 Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.

In this course, focus on integral exponents.

N.RN.2 Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, since $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ is a cube root of 5.*

N.RN.5 Rewrite expressions using the laws of exponents. *For example $(5^{1/2})^3 = 5^{3/2}$ and $1/5 = 5^{-1}$.*

Seeing Structure in Expressions — A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression $1.15t$ can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

In this course, focus on different forms of linear functions.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

In this course, focus on linear expressions.

A.SSE.3 Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.

In this course, focus on integer exponents.

Creating Equations That Describe Numbers or Relationships — A-CED★

A.CED.1 Understand that equations in one variable are often created to describe properties of a specific but unknown number.

Reasoning with Equations and Inequalities — A-REI

★ Standard with close connection to modeling

A.REI.3 Understand that given a system of two linear equations in two variables, adding a multiple of one equation to another produces a system with the same solutions. This principle, combined with principles already encountered with equations in one variable, allows for the simplification of systems.

Note that on the coordinate plane, the graph of a linear combination of two linear equations whose graphs intersect produces a third equation whose graph intersects the two original ones at their point of intersection.

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

Focus on linear and exponential equations in this course.

A.REI.6 Understand that the solutions to a linear inequality in two variables can be graphed as a half-plane (excluding the boundary in the case of a strict inequality).

A.REI.11 Solve linear equations in one variable, including equations with coefficients represented by letters.

A.REI.14 Solve linear inequalities in one variable and graph the solution set on a number line.

A.REI.15 Solve systems of linear equations algebraically and graphically, focusing on pairs of linear equations in two variables.

A.REI.17 Graph the solution set of a system of linear inequalities in two variables.

A.REI.19 In the context of exponential models, solve equations of the form $a\,b^{c} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.★

In this course, use graphical methods or focus on equations having exact, integral solutions. For example, solve $2^x = 32$.

Interpreting Functions — A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Introduced as a general concept but applied in terms of linear and exponential functions in this course. Relate average rates of change to linear approximations and note different characteristics of exponential growth and decay.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

Distinguish between linear and non-linear and focus on vertical translations in this course.

Building Functions — A-BF

A.BF.2 Understand that sequences are functions whose domain is a subset of the nonnegative integers.

Note that arithmetic sequences are linear functions and geometric sequences are exponential functions.

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology.★

Discuss building functions from basic operations of arithmetic using one operation – $y = ax$, $y = x + a$, *or* $y = a - x$ *and focus on linear and exponential functions in this course.*

A.BF.6 Solve problems involving linear, quadratic, and exponential functions.★

Focus on linear and exponential functions in this course.

A.BF.8 Generate an arithmetic or geometric sequence given a recursive rule for the sequence.★

Focus on arithmetic sequences in this unit.

A.BF.9 As a way to describe routine modeling situations, write arithmetic and geometric sequences both recursively and in closed form, and translate between the two forms.★

Focus on arithmetic sequences in this unit.

Linear, Quadratic, and Exponential Models — A-LQE

A.LQE.1 Understand that a linear function, defined by $f(x) = mx + b$ for some constants m and b, models a situation in which a quantity changes at a constant rate, m, relative to another.★

A.LQE.3 Understand that an exponential function, defined by $f(x) = ab^x$ or by $f(x) = a(1 + r)^x$ for some constants a, $b > 0$ and $r > -1$, models a situation where a quantity grows or decays by a constant factor or a constant percentage change over each unit interval.★

A.LQE.4 Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.★

A.LQE.5 Understand that in an arithmetic sequence, differences between consecutive terms form a constant sequence, and second differences are zero. Conversely, if the second differences are zero, the sequence is arithmetic. Arithmetic sequences can be seen as linear functions.★

A.LQE.7 Understand that in a geometric sequence, ratios of consecutive terms are all the same.★

A.LQE.8 Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically or (more generally) as a polynomial function.★

Compare exponential with linear only in this course.

A,LQE.14 Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed time interval. Estimate the growth factor from a graph.★

Focus on linear and exponential functions in this course.

A.LQE.10 Construct a function to describe a linear relationship between two quantities. Determine the rate of change and constant term of a linear function from a graph, a description of a relationship, or from two (x, y) values (including reading these from a table).★

A.LQE.12 Construct an exponential function in the form $f(x) = a(1 + r)^x$ or $f(x) = ab^x$ to describe a relationship in which one quantity grows with respect to another at a constant percent growth rate or a with a constant growth factor.★

Make connection to compound interest, here.

A.LQE.13 Interpret the rate of change and constant term of a linear function or sequence in terms of the situation it models, and in terms of its graph or a table of values.★

A,LQE.14 Calculate and interpret the growth factor for an exponential function (presented symbolically or as a table) given a fixed time interval. Estimate the growth factor from a graph.★

A.LQE.15 Recognize a quantitative relationship as linear, exponential or neither from description of a situation.★

A.LQE.16 Compare quantities increasing exponentially to quantities increasing linearly or as a polynomial function.★

Exclude polynomial functions in this course.

Unit 3: Statistical Analysis of Data

Summarizing Categorical and Quantitative Data S-SI

S.SI.1 Understand that statistical methods take variability into account to support making informed decisions based on data collected to answer specific questions.

S.SI.2 Understand that visual displays and summary statistics condense the information in data sets into usable knowledge.

S.SI.3 Understand that patterns of association or relationships between variables may emerge through careful analysis of multi-variable data.

In this course, focus on assessing whether potential linear or exponential relationships are indicated in this data.

S.SI.4 Summarize comparative or bivariate categorical data in two-way frequency tables. Interpret joint, marginal and conditional relative frequencies in the context of the data, recognizing possible associations and trends in bivariate categorical data.

S.SI.5 Compare data on two or more count or measurement variables by using plots on the real number line (dot plots, histograms, and box plots). Use statistics appropriate to the shape of the data distribution to summarize center (median, mean) and spread (interquartile range, standard deviation) of the data sets. Interpret changes in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

S.SI.6 Represent bivariate quantitative data on a scatter plot and describe how the variables are related.

Focus on bivariate data that exhibit linear or exponential relationships.

S.SI.7 Fit a linear function for scatter plots that suggest a linear association. Informally assess the fit of the model function by plotting and analyzing residuals.

Explain that one common measure of goodness of fit is the sum of squared vertical distances from the points to the line. The least squares line minimizes this sum. When the residuals (the vertical deviations from the line) are plotted against x, a pattern in the plot suggests that a linear function may not be the best way to describe the relationship between x and y.

S.SI.8 Use a model function fitted to the data to solve problems in the context of the data, interpreting the slope (rate of change) and the intercept (constant term).

Focus on linear models in this course.

S.SI.9 Compute (using technology) and interpret the correlation coefficient for a linear relationship between variables.

S.SI.10 Distinguish between correlation and causation.

Probability Models S-PM

S.PM.1 Understand that in a probability model, individual outcomes have probabilities that sum to 1. When outcomes are categorized, the probability of a given type of outcome is the sum of the probabilities of all the individual outcomes of that type.

S.PM.2 Understand that uniform probability models are useful models for processes such as (i) the selection of a person from a population; (ii) the selection of a number in a lottery; (iii) any physical situation in which symmetry suggests that different individual outcomes are equally likely.

S.PM.3 Understand that two different empirical probability models for the same process will rarely assign exactly the same probability to a given type of outcome. But if the data sets are large and the methods used to collect the data for the two data sets are consistent, the agreement between the models is likely to be reasonably good.

S.PM.4 Understand that a (theoretical) uniform probability model may be judged by comparing it to an empirical probability model for the same process. If the theoretical assumptions are appropriate and the data set is large, then the two models should agree approximately. If the agreement is not good, then it may be necessary to modify the assumptions underlying the theoretical model or look for factors that might have affected the data used to create the empirical model.

S.PM.5 Use a uniform probability model to compute probabilities for a process involving uncertainty, including the random selection of a person from a population and physical situations where symmetry suggests that different individual outcomes are equally likely.

- List the individual outcomes to create a sample space.
- Label the individual outcomes in the sample space to reflect important characteristics or quantities associated with them.
- Determine probabilities of individual outcomes, and determine the probability of a type or category of outcome as the fraction of individual outcomes it includes.

S.PM.6 Generate data by sampling, repeated experimental trials, and simulations. Record and appropriately label such data, and use them to construct an empirical probability model. Compute probabilities in such models.

S.PM.7 Compare probabilities from a theoretical model to probabilities from a corresponding empirical model for the same situation. If the agreement is not good, explain possible sources of the discrepancies.

Independently Combined Probability Models S-IPM

S.IPM.1 Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model.

- The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model.
- The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.

S.IPM.3 Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes).

- Use organized lists, tables and tree diagrams to represent the combined sample space.
- Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.

Unit 4: Congruence and Rigid Motions

Congruence G-CO

G.CO.1 Understand that two geometric figures are congruent if there is a sequence of rigid motions (rotations, reflections, translations) that carries one onto the other. This is the principle of superposition.

G.CO.2 Understand that criteria for triangle congruence are ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent.

G.CO.3 Understand that criteria for triangle congruence (ASA, SAS, and SSS) can be established using rigid motions.

G.CO.4 Understand that geometric diagrams can be used to test conjectures and identify logical errors in fallacious proofs.

G.CO.5 Know and use (in reasoning and problem solving) definitions of angles, polygons, parallel and perpendicular lines, rigid motions, parallelograms and rectangles.

G.CO.6 Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; two lines parallel to a third are parallel to each other; points on a perpendicular bisector of a segment are exactly those equidistant from the segment's endpoints.*

G.CO.7 Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°, base angles of isosceles triangles are congruent, the triangle inequality, the longest side of a triangle faces the angle with the greatest measure and vice-versa, the exterior-angle inequality, and the segment joining midpoints of two sides of a triangle parallel to the third side and half the length.*

Connect to logical reasoning about expressions and equations.

G.CO.8 Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.

G.CO.9 Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.

G.CO.10 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*

G.CO.11 Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.

G.CO.12 Use two-dimensional representations to transform figures and to predict the effect of translations, rotations and reflections.

Geometric Measurement and Dimension G-GMD

G.GMD.1 Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.

Unit 5: Connecting Algebra and Geometry Through Coordinates

Congruence G-CO

G.CO.8 Use and prove properties of and relationships among special quadrilaterals: parallelogram, rectangle, rhombus, square, trapezoid and kite.

G.CO.9 Characterize parallelograms in terms of equality of opposite sides, in terms of equality of opposite angles, and in terms of bisection of diagonals; characterize rectangles as parallelograms with equal diagonals.

G.CO.12 Use two-dimensional representations to transform figures and to predict the effect of translations, rotations and reflections.

Expressing Geometric Properties with Equations G-GPE

G.GPE.1 Understand that two lines with well-defined slopes are perpendicular if and only if the product of their slopes is equal to -1.

G.GPE.7 Use the slope criteria for parallel and perpendicular lines to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

G.GPE.9 Use coordinates to compute perimeters of polygons and areas for triangles and rectangles, e.g. using the distance formula.★

G.GPE.11 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.

In this course, focus on theorems involving lengths of segments, polygons, and other situations involving linear relationships. Avoid theorems about circles.

★ Standard with close connection to modeling

Pathway B
Course 2

The course is conceived in five units: (1) Number systems, (2) Quadratics and beyond, (3) Applications of probability, (4) Similarity and right triangle trigonometry, and (5) Circles with and without coordinates.

Number Systems. In this unit, students explore relationships between number systems: whole numbers, integers, rational numbers, real numbers, and complex numbers. The guiding principle is that equations with no solutions in one number system may have solutions in a larger number system. In the real numbers, students explore distinctions between rational and irrational numbers by considering their decimal representations. Based on experiences converting fractions to repeating decimals and converting repeating decimals to fractions, students can reason that irrational numbers have decimal representations that neither repeat nor terminate. These irrational numbers "complete" the real number line. The rules of exponents are extended to include rational exponents, which are related to roots and radicals, and which allow for additional precision in the analysis of exponential functions and equations. The unit culminates with consideration of the equation $x^2 + 1 = 0$, which has no solution on the real number line, but which has a solution in a larger number system called the complex numbers.

Quadratics and Beyond. In this unit, students study quadratic expressions, equations, and functions with real coefficients. Quadratic functions are compared to other functions, including exponential functions and simple cubic functions. Students use area and volume models to interpret polynomial multiplication, as appropriate. Students learn to anticipate the graph of a quadratic function by interpreting various forms of quadratic expressions. In particular, they identify the real solutions of a quadratic equation as the zeros of a related quadratic function. When quadratic equations do not have real solutions, students find complex solutions, and they interpret the existence of non-real solutions as indicating that the graph of the related quadratic function does not cross the horizontal axis. They discuss the fundamental theorem of algebra in order to complete the thread begun in Number Systems unit.

Applications of Probability. Building on probability concepts that began in the middle grades, students use the languages of set theory to expand their ability to compute and interpret theoretical and experimental probabilities for compound events, attending to mutually exclusive events, independent events, and conditional probability.

Similarity and Right Triangle Trigonometry. Building on similarity ideas that were introduced in grade 8 as applications of proportional reasoning, students formalize the study of similarity and identify criteria for similarity of triangles. Similarity in right triangles is formalized as right triangle trigonometry, with special attention to special right triangles and the use of the Pythagorean theorem.

Circles With and Without Coordinates. In this unit, students prove basic theorems about circles, with particular attention to perpendicularity and inscribed angles, in order to see symmetry in circles and as an application of triangle congruence criteria. They study relationships among segments on chords, secants, and tangents as an application of similarity. In coordinate systems, students use the distance formula to write the equation of a circle. Given an equation of a circle, they draw the graph in the coordinate plane, and they find intersections between a line and a circle and between two circles as an application of techniques for solving quadratic equations.

Unit 1: Number Systems

The Real Number System N-RN

N.RN.1 Understand that the laws of exponents for positive integer exponents follow from an understanding of exponents as indicating repeated multiplication, and from the associative law for multiplication.

In this course, focus on integral exponents.

N.RN.2 Understand that the definition of the meaning of zero, positive rational, and negative exponents follows from extending the laws of exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, since $(5^{1/3})^3 = 5^{(1/3)\cdot 3} = 5^1 = 5$, $5^{1/3}$ is a cube root of 5.*

While integral exponents were addressed in the previous course, in this course rational exponents should also be addressed. Be prepared to informally discuss the graph of an exponential function as a continuous curve.

N.RN.3 Understand that sums and products of rational numbers are rational.

N.RN.4 Understand that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational

Include definition of rational numbers as infinite and periodic decimals and definition of irrational numbers as infinite but non-periodic decimals.

N.RN.5 Rewrite expressions using the laws of exponents. *For example* $(5^{1/2})^3 = 5^{3/2}$ *and* $1/5 = 5^{-1}$.

Seeing Structure in Expressions — A-SSE

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ and $1/x = x^{-1}$.

Unit 2: Quadratics and Beyond

The Complex Number System — N-CN

N.CN.1 Understand that the relation $i^2 = -1$ and the commutative, associative, and distributive laws can be used to calculate with complex numbers.

Include discussion of the extension of the number system to complex numbers based on need to solve certain equations.

N.CN.2 STEM Understand that polynomials can be factored over the complex numbers, e.g., as in $x^2 + 4 = (x + 2i)(x - 2i)$.

Extend to higher degree polynomials where factoring is reasonable. Include application of factoring polynomials where factoring is reasonable. Include application of factoring polynomials to reduce rational expressions to lowest terms.

N.CN.6 Add, subtract, and multiply complex numbers.

Include application to quadratics and extend to include cubics and higher powers of i.

N.CN.8 STEM Solve quadratic equations with real coefficients that have complex solutions.

Seeing Structure in Expressions — A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression $1.15t$ can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

Extend to quadratic, exponential, and simple rational functions in this course.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

A.SSE.4 Factor, expand, and complete the square in quadratic expressions.

A.SSE.5 See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ *as* $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

A.SSE.6 Rewrite expressions using the laws of exponents. For example, $(x^{1/2})^3 = x^{3/2}$ *and* $1/x = x^{-1}$.

In this course, expand the applications of the laws of exponents from the integral exponents treated in Course 1 to fractional exponents.

A.SSE.7 Use the laws of exponents to interpret expressions for exponential functions, recognizing positive rational exponents as indicating roots of the base and negative exponents as indicating the reciprocal of a power. For example, identify the per unit percentage change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, and conclude whether it represents exponential growth or decay. Recognize that any non-zero number raised to the 0 power is 1 (for example, $12(1.05)^0 = 12$). Avoid common errors such as confusing $6(1.05)^t$ with $(6 \cdot 1.05)^t$ and $5(0.03)^t$ with $5(1.03)^t$.

Appendix A
Designing High School Mathematics Courses Based on the Common Core Standards

Arithmetic with Polynomials and Rational Expressions — A-APR

A.APR.6 Add, subtract and multiply polynomials.

Emphasize relationship of polynomial multiplication as an application of the distributive property. In this course, focus on rewriting polynomial expressions that result in linear or quadratic polynomials or to expressions or equations that can be seen as having fundamentally a linear or quadratic form.

A.APR.7 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.

Focus on quadratic polynomials in this course.

Creating Equations That Describe Numbers or Relationships — A-CED*

A.CED.2 Understand that equations in two or more variables that represent a relationship between quantities can be built by experimenting with specific numbers in the relationship.

In this course, focus on examples drawn from quadratic and simple rational relationships such as contexts that exhibit inverse proportionality.

A.CED.3 Write equations and inequalities that specify an unknown quantity or to express a relationship between two or more quantities. Use the equations and inequalities to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

Include equations arising from situations involving linear, quadratic, simple rational and exponential functions. Focus on quadratic, simple rational and exponential functions in this course.

A.CED.4 Rearrange formulas to highlight a quantity of interest. *For example, transform Ohm's law $V = IR$ to highlight resistance R; in motion with constant acceleration, transform $v_{f,x}^2 - v_{i,x}^2 = 2a_x(x_f - x_i)$ to highlight the change in position along the x-axis, $x_f - x_i$.*

Focus should be on formulas involving quadratic or rational expressions in this course.

Reasoning with Equations and Inequalities — A-REI

A.REI.2 Understand that the method of completing the square can transform any quadratic equation in x into an equivalent equation of the form $(x-p)^2 = q$. This leads to the quadratic formula.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Expand from linear equations addressed in Course 1 to include the graphs of quadratic, exponential and simple rational equations in this course.

A.REI.12 Solve quadratic equations in one variable. *Include methods such as inspection (e.g. for $x^2 = 49$), square roots, completing the square, the quadratic formula and factoring. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.*

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

Include the use of technology to approximate intersections.

A.REI.16 Solve algebraically a simple system consisting of one linear equation and one quadratic equation in two variables; for example, find points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.

A.REI.19 In the context of exponential models, solve equations of the form $a\,b^{ct} = d$ where a, c, and d are specific numbers and the base b is 2, 10, or e.★

A.REI.20 STEM Relate the properties of logarithms to the laws of exponents and solve equations involving exponential functions.

Relate to A.SSE.d, the laws of exponents.

Interpreting Functions — A-IF

★ Standard with close connection to modeling

A.IF.2 Understand that [quadratic] functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

In this course, focus on quadratic and simple rational functions but include examples from other types of functions, such as power functions. Compare and contrast with linear and exponential functions.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

In this course, focus especially on different forms of a quadratic function and the properties highlighted in each form.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

In this course, extend beyond linear and exponential relationships to include those that are quadratic or inversely proportional.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★

In this course, extend beyond linear and exponential relationships to include those that are quadratic or inversely proportional.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Focus on quadratic and simple rational functions; compare to linear and exponential functions. Do not address trigonometric functions in this course.

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions. ★

A.IF.12 Transform quadratic polynomials algebraically to reveal different features of the function they define, such as zeros, extreme values, and symmetry of the graph.

Building Functions A-BF

A.BF.5 Write a function that describes a relationship between two quantities, for example by varying parameters in and combining standard function types (such as linear, quadratic or exponential functions). Experiment with parameters and illustrate an explanation of the behavior of the function when parameters vary using technology. ★

Focus on quadratic and simple rational functions in this course.

A.BF.6 Solve problems involving linear, quadratic, and exponential functions. ★

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Focus on absolute value, quadratic, and simple rational functions in this course.

Linear, Quadratic, and Exponential Models A-LQE

A.LQE.2 Understand that quadratic functions have maximum or minimum values and can be used to model problems with optimum solutions. ★

A.LQE.6 Understand that in a sequence that increases quadratically (e.g., $a_n = 3n^2 + 2n + 1$), differences between consecutive terms form an arithmetic sequence, and second differences form a constant sequence. Conversely, if the second differences form a constant sequence with non-zero value, the sequence increases quadratically. ★

★ Standard with close connection to modeling

★ Standard with close connection to modeling

A.LQE.8 Understand that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically or (more generally) as a polynomial function.★

In this course, compare exponential growth to quadratic growth. Note that it is very difficult to distinguish between quadratic and exponential growth over a limited domain.

A.LQE.11 Use quadratic functions to model problems, e.g. in situations with optimum solutions.★

Unit 3: Applications of Probability

Independently Combined Probability Models S-IPM

S.IPM.1 Understand that to describe a pair of random processes (such as tossing a coin and rolling a number cube), or one random process repeated twice (such as randomly selecting a student in the class on two different days), two probability models can be combined into a single model.

- The sample space for the combined model is formed by listing all possible ordered pairs that combine an individual outcome from the first model with an individual outcome from the second. Each ordered pair is an individual outcome in the combined model.
- The total number of individual outcomes (ordered pairs) in the combined model is the product of the number of individual outcomes in each of the two original models.

S.IPM.2 Understand that when two probability models are combined independently, the probability that one type of outcome in the first model occurs together with another type of outcome in the second model is the product of the two corresponding probabilities in the original models (the Multiplication Rule).

S.IPM.3 Combine two uniform models independently to compute probabilities for a pair of random processes (e.g., flipping a coin twice, selecting one person from each of two classes).

- Use organized lists, tables and tree diagrams to represent the combined sample space.
- Determine probabilities of ordered pairs in the combined model, and determine the probability of a particular type or category of outcomes in the combined model, as the fraction of ordered pairs corresponding to it.

S.IPM.4 For two independently combined uniform models, use the Multiplication Rule to determine probabilities.

Conditional Probability and the Laws of Probability S-CP

S.CP.1 Understand that events are subsets of a sample space; often, events of interest are defined by using characteristics (or categories) of the sample points, or as unions, intersections, or complements thereof ("and," "or," "not"). A sample point may belong to several events (categories).

S.CP.2 Understand that if A and B are two events, then in a uniform model the conditional probability of A given B, denoted by $P(A \mid B)$, is the fraction of B's sample points that also lie in A.

S.CP.3 Understand that the laws of probability allow one to use known probabilities to determine other probabilities of interest.

S.CP.4 Compute probabilities by constructing and analyzing sample spaces, representing them by tree diagrams, systematic lists, and Venn diagrams.

S.C.5 Use the laws of probability to compute probabilities.

S.CP.6 Apply concepts such as intersections, unions and complements of events, and conditional probability and independence to define or analyze events, calculate probabilities and solve problems.

S.CP.7 Construct and interpret two-way tables to show probabilities when two characteristics (or categories) are associated with each sample point. Use a two-way table to determine conditional probabilities. ★

S.CP.8 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. ★

S.CP.9 Use permutations and combinations to compute probabilities of compound events and solve problems.

Experimenting and Simulating to Model Probabilities S-ES

S.ES.1 Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.

S.ES.2 Understand that the probability of an outcome can be interpreted as an assertion about the long-run proportion of the outcome's occurrence if the random experiment is repeated a large number of times.

S.ES.3 Calculate experimental probabilities by performing simulations or experiments involving a probability model and using relative frequencies of outcomes.

S.ES.4 Compare the results of simulations with predicted probabilities. When there are substantial discrepancies between predicted and observed probabilities, explain them.

S.ES.5 Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve) and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Using Probability to Make Decisions S-MD

S.MD.1 Understand that the expected value of a random variable is the weighted average of its possible values, with weights given by their respective probabilities.

S.MD.2 Understand that when the possible outcomes of a decision can be assigned probabilities and payoff values, the decision can be analyzed as a random variable with an expected value, e.g. of an investment.

S.MD.3 Calculate expected value, e.g. to determine the fair price of an investment.

S.MD.4 Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S.MD.5 Evaluate and compare two investments or strategies with the same expected value, where one investment or strategy is safer than the other.

S.MD.6 Evaluate and compare two investments or strategies, where one investment or strategy is safer but has lower expected value. Include large and small investments, and situations with serious consequences.

S.MD.7 Analyze decisions and strategies using probability concepts (e.g. product testing, medical testing, pulling a hockey goalie at the end of a game).

Unit 4: Similarity, Right Triangle Trigonometry, and Measurement

Similarity, Right Triangles, and Trigonometry G-SRT

G.SRT.1 Understand that dilating a line produces a line parallel to the original. (In particular, lines passing through the center of the dilation remain unchanged.)

G.SRT.2 Understand that the dilation of a given segment is parallel to the given segment and longer or shorter in the ratio given by the scale factor. A dilation leaves a segment unchanged if and only if the scale factor is 1.

G.SRT.3 Understand that the assumed properties of dilations can be used to establish the AA, SAS, and SSS criteria for similarity of triangles.

★ Standard with close connection to modeling

G.SRT.4 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of sine, cosine and tangent.

G.SRT.5 Understand that a line parallel to one side of a triangle divides the other two proportionally, and conversely.

G.SRT.6 Use triangle similarity criteria to solve problems and to prove relationships in geometric figures. Include a proof of the Pythagorean Theorem using triangle similarity.

G.SRT.7 Use and explain the relationship between the sine and cosine of complementary angles.

G.SRT.8 Use sine, cosine, tangent and the Pythagorean Theorem to solve right triangles§§ in applied problems.

G.SRT.9 STEM Give an informal explanation using successive approximation that a dilation of scale factor r changes the length of a curve by a factor of r and the area of a region by a factor of r^2.

Circles G-C

G.C.1 Understand that dilations can be used to show that all circles are similar.

Expressing Geometric Properties with Equations G-GPE

G.GPE.8 Find the point on the segment between two given points that divides the segment in a given ratio.

Modeling with Geometry G-MG

G.MG.1 Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects. ★

G.MG.2 Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder). ★

Unit 5: Circles With and Without Coordinates

Circles G-C

G.C.1 Understand that dilations can be used to show that all circles are similar.

G.C.2 Understand that here is a unique circle through three non-collinear points, or tangent to three non-concurrent lines.

Connect to the construction of a circle.

G.C.3 Identify and define radius, diameter, chord, tangent, secant and circumference.

G.C.4 Identify and describe relationships among angles, radii, and chords. *Include the relationship between central, inscribed and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

G.C.5 Determine the arc lengths and the areas of sectors of circles, using proportions.

G.C.6 STEM Construct a tangent line from a point outside a given circle to the circle.

G.C.7 STEM Prove and use theorems about circles, and use these theorems to solve problems. *Include:*

- *Symmetries of a circle*
- *Similarity of a circle to any other*
- *Tangent line, perpendicularity to a radius*
- *Inscribed angles in a circle, relationship to central angles, and equality of inscribed angles*

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§§ A right triangle has five parameters, its three lengths and two acute angles. Given a length and any other parameter, "solving a right triangle" means finding the remaining three parameters.

★ Standard with close connection to modeling

- *Properties of chords, tangents and secants as an application of triangle similarity.*

Expressing Geometric Properties with Equations G-GPE

G.GPE.2 Understand that the equation of a circle can be found using its definition and the Pythagorean Theorem.

G.GPE.3 Understand that transforming the graph of an equation by reflecting in the axes, translating parallel to the axes, or applying a dilation to one of the axes correspond to substitutions in the equation. *For example, reflection in the y axis corresponds to $(x,y) \rightarrow (-x,y)$, translation vertically down by three units corresponds to $(x,y) \rightarrow (x,y+3)$, and dilating by a factor of 2 parallel to the x-axis corresponds to $(x, y) \rightarrow (x/2, y)$.*

G.GPE.10 Decide whether a point with given coordinates lies on a circle defined by a given equation.

G.GPE.11 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point (0, 2).

G.GPE.12 Complete the square to find the center and radius of a circle given by an equation.
Include the case where the radius is 1 with center at the origin, and an introductory discussion of the unit circle.

Modeling with Geometry G-MG

G.MG.1 Understand that models of objects and structures can be built from a library of standard shapes; a single kind of shape can model seemingly different objects. ★

G.MG.2 Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso or as a cylinder). ★

★ Standard with close connection to modeling

Pathway B
Course 3a

During the first semester of Course 3 in the Integrated Mathematics sequence students engage in coherent study of beginning statistics. They see how the visual displays and summary statistics they learned in earlier grades apply to different types of data and to probability distributions of those data. They identify different ways of collecting data – including sample surveys, experiments, and simulations – and the role that randomness and careful design play in the conclusions that can be drawn. Students learn and apply the laws of probability and begin to understand the fundamental role of probability in statistical processes.

With patterns of data as a foundation, students are prepared to use their increasing repertoire of equations and functions to model a wide variety of contextual situations mathematically. The second semester of Course 3 adds power, polynomial, additional rational functions to the linear, exponential, and quadratic functions of Course 2. Qualitative analysis of these functions shows students how to adjust a function to better model a particular problem situation or set of data. Students understand that the effect of certain function transformations is uniform across function types and begins to understand the power of generalization in mathematics. They understand the analogy between the system of integers and the system of polynomials. They perform operations on complex numbers, seeing this set of numbers as an expansion of the real number system. The generalization theme continues in geometry where the law of sines and the law of cosines extend the application of trigonometry to non-right triangles.

Unit 1: Inferences and Conclusions from Data

Making Inferences and Justifying Conclusions S-IC

S.IC.1	Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.
S.IC.2	Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.
S.IC.3	Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.
S.IC.4	Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)
S.IC.5	Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.
S.IC.6	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
S.IC.7	Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.
S.IC.8	Evaluate reports based on data.

Experimenting and Simulating to Model Probabilities S-ES

S.ES.1	Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.
S.ES.5	Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve) and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Include using the normal distribution as an approximation to the binomial distribution and connect this with the Binomial Theorem, Pascal's Triangle and Probability.

Unit 2: Polynomial Expressions and Functions

The Complex Number System — N-CN

N.CN.2 STEM Understand that polynomials can be factored over the complex numbers, e.g., as in $x^2 + 4 = (x + 2i)(x - 2i)$.

This was introduced in Course 2 for quadratics. In this course, it should be extended to higher degree polynomials where factoring is reasonable. Include application of factoring polynomials where factoring is reasonable. Include application of factoring polynomials to reduce rational expressions to lowest terms.

N.CN.6 Add, subtract, and multiply complex numbers.

Extend beyond the application to quadratics and $i^2 = -1$ *to include cubics and higher powers of i.*

Seeing Structure in Expressions — A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.5 See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

In this course, focus on polynomial, rational, square root and cube root expressions

Arithmetic with Polynomials and Rational Expressions — A-APR

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.

A.APR.2 Understand that polynomial identities become true statements no matter which real numbers are substituted. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*

Extend beyond quadratics addressed in Course 2 to include higher degree polynomials in this course.

A.APR.3 Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.

Relate long division of polynomials to long division of positive integers.

A.APR.4 STEM Understand that the Binomial Theorem gives the expansion of $(x + a)^n$ in powers of x for a positive integer n and a real number a, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

Connect to probability and Pascal's triangle. The proof may be explained by the instructor, but is not intended to be performed by students on their own.

A.APR.6 Add, subtract and multiply polynomials.

Build on experiences from Course 2 with polynomials that resulted in linear or quadratic expressions to include operations that result in polynomials of a higher degree.

A.APR.7 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.

Extend work with quadratics to higher degree polynomials when suitable factorizations are available.

Reasoning with Equations and Inequalities A-REI

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

In this course, expand the type of functions to include polynomial, rational, square root, and cube root functions in this course. Include the use of technology to approximate intersections.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course. Note the information given by factored forms of each of these types of functions.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

Focus on rational, square root, and cube root functions in this course. Note the information given by factored forms of each of these types of functions, especially related to roots and asymptotes.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to consider introducing the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

★ Standard with close connection to modeling

Building Functions A-BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Unit 3: Simple[9] Rational Expressions and Functions

Seeing Structure in Expressions A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

In this course, focus on polynomial, rational, square root and cube root expressions

A.SSE.5 See expressions in different ways that suggest ways of transforming them. *For example, see* $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, *thus recognizing it as a difference of squares that can be factored as* $(x^2 - y^2)(x^2 + y^2)$.

In this course, focus on polynomial, rational, square root and cube root expressions

Arithmetic with Polynomials and Rational Expressions A-APR

A.APR.5 STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.

A.APR.8 Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.

Relate to division by zero. Clarify this it is the function output value that becomes zero with polynomial division. Distinguish between the output variable and the input value of the function that makes the function equal zero.

A.APR.9 Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.

A.APR.11 STEM Identify zeros and asymptotes of rational functions, when suitable factorizations are available, and use the zeros and asymptotes to construct a rough graph of the function.

A.APR.12 STEM Divide polynomials, using long division for linear divisors and long division or a computer algebra system for higher degree divisors.

Reasoning with Equations and Inequalities A-REI

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

In this course, focus on polynomial, rational, square root and cube root expressions.

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[9] In this course "simple rational" expressions are taken to be those that are at most linear polynomials divided by quadratic polynomials.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on rational, square root and cube root[10] functions.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

In this course, expand the type of functions to include polynomial, rational, square root and cube root expressions. Include the use of technology to approximate intersections.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function

Focus on polynomial, rational, square root, and cube root functions in this course. Note the information given by factored forms of each of these types of functions, especially related to roots and asymptotes.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions. ★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to consider introducing the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first

[10] The introduction of the square root and cube root functions should be handled with care. In particular, their problematic nature over the complex numbers should be discussed as existing and to be encountered fully in later mathematics courses.

★ Standard with close connection to modeling

quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

Building Functions A BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Unit 4: Modeling with Functions

Seeing Structure in Expressions A SSE

A.SSE.3 Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★

Reasoning with Equations and Inequalities A-REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

A.REI.18 In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context. ★

In this course, expand the type of functions to include polynomial, rational, square root and cube root equations or inequalities.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

★ Standard with close connection to modeling

Building Functions A-BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Unit 5: Geometry of General Triangles

Trigonometry of General Triangles G-TGT

G.TGT.1 STEM Understand that the formula A = ½ ab sin(C) for the area of a triangle can be derived by drawing an auxiliary line from a vertex perpendicular to the opposite side. Applying this formula in three different ways leads to the Law of Sines.

G.TGT.2 STEM Understand that the Law of Cosines generalizes the Pythagorean Theorem.

G.TGT.4 STEM Understand that the Laws of Sines and Cosines embody the triangle congruence criteria, in that three pieces of information are usually sufficient to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that "Side-Side-Angle" is not a congruence criterion.

Do not emphasize ambiguous case in this course. Constrain to a discussion of its existence.

G.TGT.5 STEM Explain proofs of the Law of Sines and the Law of Cosines.

For proof, emphasize explanation.

G.TGT.6 STEM Use the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Do not include ambiguous case.

Geometric Measurement and Dimension G-GMD

G.GMD.1 Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.

G.GMD.4 Find areas of polygons by dissecting them into triangles.

G.GMD.5 Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.

G.GMD.6 For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.

G.GMD.7 Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.

Modeling with Geometry G-MG

G.MG.3 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). ★

G.MG.4 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typograph.

★ Standard with close connection to modeling

Pathway B
Course 3b

During the first semester of Course 3 in the Integrated Mathematics sequence students engage in coherent study of beginning statistics. They see how the visual displays and summary statistics they learned in earlier grades apply to different types of data and to probability distributions of those data. They identify different ways of collecting data – including sample surveys, experiments, and simulations – and the role that randomness and careful design play in the conclusions that can be drawn. Students learn and apply the laws of probability and begin to understand the fundamental role of probability in statistical processes.

With patterns of data as a foundation, students are prepared to use their increasing repertoire of equations and functions to model a wide variety of contextual situations mathematically. The second semester of Course 3 adds power, polynomial, additional rational functions to the linear, exponential, and quadratic functions of Course 2. Qualitative analysis of these functions shows students how to adjust a function to better model a particular problem situation or set of data. Students understand that the effect of certain function transformations is uniform across function types and begins to understand the power of generalization in mathematics. They understand the analogy between the system of integers and the system of polynomials. The generalization theme continues in geometry where the law of sines and the law of cosines extend the application of trigonometry to non-right triangles.

Additional emphasis is placed in this course on modeling. Students should engage with meaningful and rigorous modeling tasks to deepen their understanding of the mathematics.

Unit 1: Inferences and Conclusions from Data

Making Inferences and Justifying Conclusions — S-IC

S.IC.1	Understand that statistics is a process for making inferences about population parameters based on a sample from that population; randomness is the foundation for statistical inference.
S.IC.2	Understand that the design of an experiment or sample survey is of critical importance to analyzing the data and drawing conclusions.
S.IC.3	Understand that simulation-based techniques are powerful tools for making inferences and justifying conclusions from data.
S.IC.4	Use probabilistic reasoning to decide if a specified model is consistent with results from a given data-generating process. (For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?)
S.IC.5	Recognize the purposes of and differences among sample surveys, experiments and observational studies; explain how randomization relates to each.
S.IC.6	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
S.IC.7	Use data from a randomized experiment to compare two treatments; justify significant differences between parameters through the use of simulation models for random assignment.
S.IC.8	Evaluate reports based on data.

Experimenting and Simulating to Model Probabilities — S-ES

S.ES.1	Understand that sets of data obtained from surveys, simulations or other means can be used as probability models, by treating the data set itself as a sample space, in which the sample points are the individual pieces of data.

S.ES.5 Use the mean and standard deviation of a data set to fit it to a normal distribution (bell-shaped curve) and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets and tables to estimate areas under the normal curve.

Include using the normal distribution as an approximation to the binomial distribution and connect this with the Binomial Theorem, Pascal's Triangle and Probability.

Unit 2: Polynomial Expressions and Functions

Seeing Structure in Expressions — A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.5 See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

In this course, focus on polynomial, rational, square root and cube root expressions

Arithmetic with Polynomials and Rational Expressions — A-APR

A.APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication.

A.APR.2 Understand that polynomial identities become true statements no matter which real numbers are substituted. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.

Extend beyond quadratics addressed in Course 2 to include higher degree polynomials in this course.

A.APR.3 Understand the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.

Relate long division of polynomials to long division of positive integers.

A.APR.6 Add, subtract and multiply polynomials.

Build on experiences from Course 2 with polynomials that resulted in linear or quadratic expressions to include operations that result in polynomials of a higher degree.

A.APR.7 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the polynomial.

Extend work with quadratics to higher degree polynomials when suitable factorizations are available.

Reasoning with Equations and Inequalities — A-REI

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

In this course, expand the type of functions to include polynomial, rational, square root, and cube root functions in this course. Include the use of technology to approximate intersections.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course. Note the information given by factored forms of each of these types of functions.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function.

Focus on rational, square root, and cube root functions in this course. Note the information given by factored forms of each of these types of functions, especially related to roots and asymptotes.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to consider introducing the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

Building Functions A-BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

★ Standard with close connection to modeling

Unit 3: Simple[11] Rational Expressions and Functions

Seeing Structure in Expressions A-SSE

A.SSE.1 Understand that different forms of an expression may reveal different properties of the quantity in question; a purpose in transforming expressions is to find those properties. Examples: factoring a quadratic expression reveals the zeros of the function it defines, and putting the expression in vertex form reveals its maximum or minimum value; the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.SSE.2 Understand that complicated expressions can be interpreted by viewing one or more of their parts as single entities.

In this course, focus on polynomial, rational, square root and cube root expressions

A.SSE.5 See expressions in different ways that suggest ways of transforming them. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

In this course, focus on polynomial, rational, square root and cube root expressions

Arithmetic with Polynomials and Rational Expressions A-APR

A.APR.5 STEM Understand that rational expressions are quotients of polynomials. They form a system analogous to the rational numbers, closed under division by a nonzero rational function.

A.APR.8 Transform simple rational expressions using the commutative, associative, and distributive laws, and the inverse relationship between multiplication and division.

Relate to division by zero. Clarify this it is the function output value that becomes zero with polynomial division. Distinguish between the output variable and the input value of the function that makes the function equal zero.

A.APR.9 Divide a polynomial $p(x)$ by a divisor of the form $x - a$ using long division.

Reasoning with Equations and Inequalities A-REI

A.REI.4 Understand that the graph of an equation in two variables is the set of its solutions plotted in the coordinate plane, often forming a curve or a line.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.5 Understand that solutions to two equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

In this course, focus on polynomial, rational, square root and cube root expressions.

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

Focus on rational, square root and cube root[12] functions.

A.REI.13 Solve equations $f(x) = g(x)$ approximately by finding the intersections of the graphs of $f(x)$ and $g(x)$, e.g. using technology to graph the functions. Include cases where f(x) and/or g(x) are linear, polynomial, rational, exponential, and logarithmic functions.

In this course, expand the type of functions to include polynomial, rational, square root and cube root expressions. Include the use of technology to approximate intersections.

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[11] In this course "simple rational" expressions are taken to be those that are at most linear polynomials divided by quadratic polynomials.

[12] The introduction of the square root and cube root functions should be handled with care. In particular, their problematic nature over the complex numbers should be discussed as existing and to be encountered fully in later mathematics courses.

Interpreting Functions A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course.

A.IF.3 Understand that a function defined by an expression may be written in different but equivalent forms, which can reveal different properties of the function

Focus on polynomial, rational, square root, and cube root functions in this course. Note the information given by factored forms of each of these types of functions, especially related to roots and asymptotes.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities.★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.10 Use technology to exhibit the effects of parameter changes on the graphs of linear, power, quadratic, square root, cube root, and polynomial functions, and simple rational, exponential, logarithmic, sine, cosine, absolute value and step functions.★

While the focus of this standard is on the effects of parameter changes on the graphs of several functions, it is advisable to consider introducing the graphs through brief examinations of the functions' domains.

For logarithmic, absolute value and step functions, demonstrate the genesis of their graphs by evaluating the functions for several inputs in their domains and graphing the results.

While the trigonometric functions will be fully treated in the Precalculus course, one may describe the genesis of their graphs for the purpose of studying transformations. This can be done by demonstrating the use of benchmark acute angles with vertex at the origin and right angles formed with the x-axis and points on the unit circle to develop a table of values in the first quadrant. Demonstrate the use transformations to move the angles to subsequent quadrants eventually generalizing to all quadrants to continue the table. Use the tables to generate the graph of sine and cosine.

Building Functions A-BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

★ Standard with close connection to modeling

Modeling

Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in physical, economic, public policy, social and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.

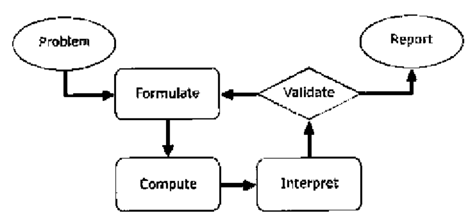
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.

Some examples of such situations might include:

- Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed.
- Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player
- Designing the layout of the stalls in a school fair so as to raise as much money as possible.
- Analyzing stopping distance for a car
- Modeling savings account balance, bacterial colony growth, or investment growth
- Critical path analysis, e.g. applied to turnaround of an aircraft at an airport.
- Risk situations, like extreme sports, pandemics and terrorism.
- Relating population statistics to individual predictions

In situation like these, the models devised depend on a number of factors: How precise an answer do we want or need? What aspects of the situation do we most need to understand, control, or optimize? What resources of time and tools do we have? The range of models that we can create and analyze is also constrained by the limitations of our mathematical, statistical, and technical skills, and our ability to recognize significant variables and relationships among them. Diagrams of various kinds, spreadsheets and other technology, and algebra are powerful tools for understanding and solving problems drawn from different types of real-world situations.

One of the insights provided by mathematical modeling is that essentially the same mathematical or statistical structure can model seemingly different situations. Models can also shed light on the mathematical structures themselves, for example as when a model of bacterial growth makes more vivid the explosive growth of the exponential function.



The basic modeling cycle is summarized in the diagram. It involves (1) identifying variables in the situation and selecting those than represent essential features, (2) formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, (3) analyzing and performing operations on these relationships to draw conclusions, (4) interpreting the results of the mathematics in terms of the original situation, (5) validating the conclusions by comparing them with the situation, and then, either improving the model or, if it is acceptable, (6) reporting on the conclusions and the reasoning behind them. Choices, assumptions and approximations are present throughout this cycle.

In descriptive modeling, a model simply describes the phenomena or summarizes them in a compact form. Graphs of observations are a familiar descriptive model—for example, graphs of global temperature and atmospheric CO_2 over time.

Analytic modeling seeks to explain data on the basis of deeper theoretical ideas, albeit with parameters that are empirically based; for example, exponential growth of bacterial colonies (until cut-off mechanisms such as pollution or starvation intervene) follows from a constant reproduction rate. Functions are an important tool for analyzing such problems.

Graphing utilities, spreadsheets, CAS environments, and dynamic geometry software are powerful tools that can be used to model purely mathematical phenomena (e.g., the behavior of polynomials) as well as physical phenomena.

Unit 4: Modeling with Functions

Seeing Structure in Expressions — A-SSE

A.SSE.3 Interpret an expression that represents a quantity in terms of the context. Include interpreting parts of an expression, such as terms, factors and coefficients. ★

Reasoning with Equations and Inequalities — A-REI

A.REI.10 Solve simple rational and radical equations in one variable, noting and explaining extraneous solutions.

A.REI.18 In modeling situations, represent constraints by systems of equations and/or inequalities, and interpret solutions of these systems as viable or non-viable options in the modeling context. ★

In this course, expand the type of functions to include polynomial, rational, square root and cube root equations or inequalities.

Interpreting Functions — A-IF

A.IF.2 Understand that functions of a single variable have key characteristics, including: zeros; extreme values; average rates of change (over intervals); intervals of increasing, decreasing and/or constant behavior; and end behavior.

Focus on polynomial, rational, square root and cube root functions in this course.

A.IF.5 Describe qualitatively the functional relationship between two quantities by reading a graph (e.g., where the function is increasing or decreasing, what its long-run behavior appears to be, and whether it appears to be periodic). ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.6 Sketch a graph that exhibits the qualitative features of a function that models a relationship between two quantities. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.8 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

A.IF.9 Describe the qualitative behavior of functions presented in graphs and tables. Identify: intercepts; intervals where the function is increasing, decreasing, positive or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★

Extend to polynomial, rational, square root, and cube root functions in this course.

Building Functions — A-BF

A.BF.7 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

★ Standard with close connection to modeling

Apply to polynomial, rational, square root, and cube root functions in this course and consider examples from other types of functions. Note the common effect of each of these transformations across function types.

Unit 5: Geometry of General Triangles

Trigonometry of General Triangles G-TGT

G.TGT.1 STEM Understand that the formula A = ½ ab sin(C) for the area of a triangle can be derived by drawing an auxiliary line from a vertex perpendicular to the opposite side. Applying this formula in three different ways leads to the Law of Sines.

G.TGT.2 STEM Understand that the Law of Cosines generalizes the Pythagorean Theorem.

G.TGT.4 STEM Understand that the Laws of Sines and Cosines embody the triangle congruence criteria, in that three pieces of information are usually sufficient to completely solve a triangle. Furthermore, these laws yield two possible solutions in the ambiguous case, illustrating that "Side-Side-Angle" is not a congruence criterion.

Do not emphasize ambiguous case in this course. Constrain to a discussion of its existence.

G.TGT.5 STEM Explain proofs of the Law of Sines and the Law of Cosines.

For proof, emphasize explanation.

G.TGT.6 STEM Use the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

Do not include ambiguous case.

Geometric Measurement and Dimension G-GMD

G.GMD.1 Understand that the area of a decomposed figure is the sum of the areas of its components and is independent of the choice of dissection.

G.GMD.4 Find areas of polygons by dissecting them into triangles.

G.GMD.5 Explain why the volume of a cylinder is the area of the base times the height, using informal arguments.

G.GMD.6 For a pyramid or a cone, give a heuristic argument to show why its volume is one-third of its height times the area of its base.

G.GMD.7 Apply formulas and solve problems involving volume and surface area of right prisms, right circular cylinders, right pyramids, cones, spheres and composite figures.

Modeling with Geometry G-MG

G.MG.3 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). ★

G.MG.4 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy constraints or minimize cost; working with typograph.

★ Standard with close connection to modeling

Common Core State Standards Initiative
Standards-Setting Criteria

The following criteria guided the standards development workgroups in setting the draft college and career readiness standards.

Preamble: The Common Core State Standards define the rigorous skills and knowledge in English Language Arts and Mathematics that need to be effectively taught and learned for students to be ready to succeed academically in credit-bearing, college-entry courses and in workforce training programs. These standards have been developed to be:

- Fewer, clearer, and higher, to best drive effective policy and practice;
- Aligned with college and work expectations, so that all students are prepared for success upon graduating from high school;
- Inclusive of rigorous content and applications of knowledge through higher-order skills, so that all students are prepared for the 21st century;
- Internationally benchmarked, so that all students are prepared for succeeding in our global economy and society; and
- Research and evidence-based.

The standards intend to set forward thinking goals for student performance based in evidence about what is required for success. The standards developed will set the stage for US education not just beyond next year, but for the next decade, and they must ensure ***all*** American students are prepared for the global economic workplace. Furthermore, the standards created will not lower the bar but raise it for all students; as such, we cannot narrow the college-ready focus of the standards to just preparation of students for college algebra and English composition and therefore will seek to ensure all students are prepared for all entry-level, credit-bearing, academic college courses in English, mathematics, the sciences, the social sciences, and the humanities. The objective is for all students to enter these classes ready for success (defined for these purposes as a C or better).

Goal: The standards as a whole must be essential, rigorous, clear and specific, coherent, and internationally benchmarked.

Essential: The standards must be reasonable in scope in defining the knowledge and skills students should have to be ready to succeed in entry-level, credit-bearing, academic college courses and in workforce training programs.

Workforce training programs pertain to careers that:
1) Offer competitive, livable salaries above the poverty line
2) Offer opportunities for career advancement
3) Are in a growing or sustainable industry

Common Core State Standards Initiative
Standards-Setting Considerations

The following considerations guided the standards development workgroups in setting the draft college and career readiness standards.

Fewer, clearer, higher: One of the goals of this process was to produce a set of fewer, clearer and higher standards. It is critical that any standards document be translatable to and teachable in the classroom. As such, the standards must cover only those areas that are critical for student success. This meant making tough decisions about what to include in the standards; however, these choices were important to ensure the standards are useable by teachers.

Evidence: This work has made unprecedented use of evidence in deciding what to include – or not include – in the standards. Each document includes a brief narrative on the choices that were made based on evidence. Rather than focusing on the *opinions* of experts exclusively, evidence to guide the decisions about what to include in the standards was used. This is a key difference between this process and the processes that have come before.

Internationally benchmarked: These standards are informed by the content, rigor and organization of standards of high-performing countries and states so that all students are prepared to succeed in a global economy and society.

Special populations: In the development of these standards, the inclusion of all types of learners was a priority. Writers selected language intended to make the standards documents accessible to different learners.

Assessment: While an assessment of the common core state standards in not currently being developed, these standards will ultimately be the basis for an assessment system that would include multiple measures of student performance. Once states agree on the final standards, attention will be turned to creating a high quality system of measurement that would include proper incentives for teachers to teach these standards and a variety of assessments that will reinforce teaching and learning tied to the agreed upon expectations.

Standards and curriculum: Standards are not curriculum. This initiative is about developing a set of standards that are common across states. The curriculum that follows will continue to be a local responsibility (or state-led, where appropriate). The curriculum could become more consistent from state to state based on the commonality of the standards; however, there are multiple ways to teach these standards, and therefore, there will be multiple approaches that could help students accomplish the goals set out in the standards.

21st century skills: These documents are not an attempt to demonstrate everything that a student should learn; rather, we have focused on two areas – English-language Arts and Mathematics. The standards have incorporated 21st century skills where possible. They are not inclusive of all the skills students need for success in the 21st Century, but many of these skills will be required across disciplines.

Arkansas Department of Education
Emergency Rules Governing the
Arkansas Comprehensive Testing, Assessment and Accountability Program
and the Academic Distress Program

December 14, 2009

1.0 Regulatory Authority

1.01 These Rules shall be known as the Arkansas Department of Education Emergency Rules Governing the Arkansas Comprehensive Testing, Assessment and Accountability Program (ACTAAP).

1.02 The State Board of Education promulgated these Rules pursuant to implementation of A.C.A. §§ 6-11-105, 6-15-401 et seq., 6-15-2009, 25-15-204 and Act 1307 of 2009.

2.0 Purposes of Rules

2.01 To develop a single comprehensive testing, assessment and accountability program, which applies to and governs all public schools and public school districts in Arkansas.

2.02 To develop a single comprehensive testing, assessment and accountability program which utilizes the most current and effective testing, evaluation and assessment research information designed to achieve the following:

2.02.1 Clear academic standards that are periodically reviewed and revised;

2.02.2 Professional development standards for all administrators, teachers and instructional support personnel;

2.02.3 Expected achievement levels;

2.02.4 Reporting on student achievement and other indicators;

2.02.5 School and school district evaluation data;

2.02.6 A system of sanctions and rewards based on performance of schools and school districts; and

2.02.7 Compliance with current federal and state law and State Board of Education policies.

2.03 To ensure that all students in the public schools of Arkansas have an equal opportunity to demonstrate grade-level academic proficiency through the application of knowledge and skills in the core academic subjects consistent with state curriculum frameworks, performance standards and assessments.

2.04 To improve student learning and classroom instruction and to support high academic standards for all students, including identifiable subgroups, by establishing the provisions, procedures and requirements for the student assessment program.

2.05 To require point-in-time intervention when it is determined that a student(s) is not performing at grade level.

2.06 To outline testing and assessment security and confidentiality requirements.

2.07 To establish a program to identify, evaluate, assist and advise public school districts in academic distress.

3.0 Definitions – For the purpose of these Rules, the following terms mean:

3.01 "Academic Content Standards" – a series of documents that specify what a student enrolled in an Arkansas Public School should know and be able to do. These Academic Content Standards also provide the foundation for development of the State assessment system.

3.02 "Academic Distress" – a classification assigned to any public school district in which 75% or more of its students perform at the "below basic" performance level on the criterion-referenced assessments administered in that district.

3.03 "Academic Improvement Plan" – a plan detailing supplemental or intervention and remedial instruction, or both, in deficient academic areas for any student who is not proficient on the state-mandated criterion-referenced assessments and state mandated developmental appropriate assessments for K-2 (or delayed as that term is defined in "Uniform Readiness Screening").

3.04 "Adequate Yearly Progress" – the level of academic performance required of public schools or school districts on the state-mandated criterion-referenced assessments and/or other indicators as required in the ACTAAP, which shall comply with State and Federal law.

3.05 "Alternative Education Intervention Program" – A special instructional program for students who have been retained for two consecutive years. The program shall include research-based learning opportunities and instructional strategies.

3.06 "Approved Early Reading Assessments" – Those assessments that identify students' strengths and weaknesses in all of the elements of reading as described in the Report of the National Reading Panel.

3.07 "Approved Intensive Reading Program" – Programs of high-quality instruction that include the essential elements of reading described in the Report of the National Reading Panel.

3.08 "Arkansas Comprehensive Assessment Program" – means the testing component of Arkansas Comprehensive, Testing, Assessment and Accountability Program, which shall consist of developmentally appropriate assessments for kindergarten, Grades one and two, national norm-referenced tests in Grades 3 through 9, any other assessments as required by the State Board of Education, criterion-references tests for Grades 3 through 8, or other assessments which are based on researched best practices as determined by qualified experts which would be in compliance with federal and state law, End-of-Course tests for designated grades and content areas, and the high school literacy test.

3.09 "Arkansas Comprehensive Testing, Assessment and Accountability Program" – means a comprehensive system that focus on high academic standards, professional development, student assessments, and accountability for all schools.

3.10 "Arkansas Comprehensive School Improvement Plan (ACSIP)" – a plan developed by a local school team based on an analysis of student performance data and other relevant data that provides a plan of action to address deficiencies in student performance as evidenced in the Arkansas Comprehensive Assessment Program as defined in Section 3.08. This plan shall be reviewed annually and monitored at least every two years. Components of the plan include professional development, technology, and materials and resources necessary to carry out the activities of the plan. Additionally, this plan shall become the application for all instructional federal programs as administered by the Department of Education.

3.11 "Awards" – financial or other recognition of a public school structured to recognize schools that demonstrate and maintain high performance over time and to recognize schools that demonstrate growth on the state-mandated indicators. Awards also can be used to highlight individual schools so that their practices can be adopted in other schools and districts across the state.

3.12 "Benchmarks/Grade-Level Benchmarks" – Academic Content Standards and/or grade-level statements of what a student should know and be able to do. The Grade-Level Benchmarks provide guidance to classroom teachers in planning instruction aligned with the Academic Content Standards.

3.13 "Board" – The Arkansas State Board of Education.

3.14 "Criterion-Referenced Test (CRT)" – an assessment required by state statute, rule or regulation which is designed by the State to measure student performance/achievement on the State's Academic Content Standards.

3.15 "Department" – The Arkansas Department of Education.

3.16 "District Improvement Plan" – a compilation of the individual school improvement plans which align the district's resources to meet the needs of the individual school's plans. The main focus of the district improvement plan shall be to ensure that all students have an opportunity to demonstrate proficiency on all portions of state-mandated criterion-referenced assessments.

3.17 "Early Intervention" – a short-term, intensive, focused individualized instruction developed from ongoing, daily, systemic assessment that occurs while a child is in the initial, kindergarten through grade one (K -1), stages of learning.

3.18 "Elementary School" – public school(s) having some combination of grades kindergarten through four (K – 4).

3.19 "End-of-Course Exam" – a criterion-referenced assessment taken upon the successful completion of a course of study to determine whether a student demonstrates, according to a requisite scale score established by rule of the Board, attainment of necessary knowledge and skills.

3.20 "Essential Elements – Early Reading"
Comprehension – Understanding and remembering what is read
Decoding and Word Recognition (Phonics) – Recognizing words accurately, fluently, and independently
Fluency – Ability to read text accurately, quickly and with expression
Phonemic Awareness – Ability to hear and manipulate the sound structure of language
Vocabulary – Words that must be known to communicate effectively

3.21 "Grade Level" – performance of a student (or group of students) at the proficient level on benchmark assessments at the specified grade that is age-appropriate for that student(s).

3.22 "High School" – public school(s) having some combination of grades 9 – 12.

3.23 "Intensive Reading Improvement Plan (IRI)" – An intervention program for any K-2 student identified with substantial reading difficulties.

3.24 "Longitudinal Tracking" – means tracking individual student yearly academic achievement gains based on scheduled and annual assessments.

3.25 "Middle School" – public school(s) having some combination of grades five through eight (5 – 8).

3.26 "Norm-Referenced Test (NRT)" – an assessment required by state law, rule or regulation to measure the performance/achievement of Arkansas students relative to the achievement of students who comprised the norm or standardization group for a particular commercial instrument.

3.27 "Participation in Remediation" The amount of student involvement required in a student academic improvement plan that addresses those deficiencies for that student.

3.28 "Pass Rate" – The pass rate for the Benchmark Exams and the developmental appropriate assessments for K – 2 shall be proficiency. However, the pass rate for end-of-course and high school literacy shall be those scores established and independently approved by the State Board of Education. (See 6.03 for the proficiency definition)

3.29 "Public School District/Public School" – those school districts and schools (including open-enrollment charter schools) created pursuant to Title 6 of the Arkansas Code and subject to the Arkansas Comprehensive Testing, Assessment and Accountability Program except specifically excluding those schools or educational programs created by or receiving authority to exist pursuant to §6-15-501; §9-28-205, and §12-29-301 through §12-29-310, or other provisions of Arkansas law.

3.30 "Remediation" – a process of providing corrective, specialized supplemental instruction to help a student overcome academic deficiencies pursuant to their student academic improvement plan.

3.31 "Safe Harbor" – An alternate method of demonstrating Adequate Yearly Progress under the No Child Left Behind Act determined by decreasing the percent of students not performing at the proficient level on the Criterion Referenced Assessments by at least ten percent. Safe Harbor can only be applied if the school meets the secondary indicator condition and tests 95% or more of eligible students.

3.32 "Sanction" – intervention by the state to assist teaching and learning at a public school or a public school district that fails to meet expected performance goals on the state-mandated criterion-referenced assessments and/or other indicators.

3.33 "School Improvement" – the initial classification applied to a school that fails to meet adequate yearly progress for two successive years.

3.34 "Starting Point" – a specific figure for grade-level clusters K- 5, 6-8, and 9-12 in the content areas of literacy and mathematics which was derived by determining the school at the 20th percentile in the state based on total enrollment, among all schools ranked by the percentage of students at the proficient level, using data for the 2001-2002 school year or subsequent year for which there is a recalculation.

3.35 "Secure Examination or Assessment" – an assessment instrument, materials or other student achievement evaluation method required by State statute, rule or regulation that is administered to assess student performance or achievement and takes place on the dates specified on the testing/assessment calendar developed by the Commissioner of the Department.

3.36 "Substantial Reading Deficiency" – a determination for first and second grade students who score in the Below Basic Category on the State Reading Assessment in the previous school year and for kindergarten students who are rated as Delayed in both oral communication and written language on the Uniform Reading Scale (URS).

3.37 "Uniform Readiness Screening" - uniform, objective evaluation procedures specifically formulated for children entering public school for the first time that are intended for either kindergarten or first grade, as appropriate, and developed or adopted by the Board.

3.38 "Value-Added Computations of Student Gains" – statistical analyses of the educational impact of the school's instructional delivery system on individual student learning using a comparison of previous and post student achievement gains.

4.0 Academic Content Standards

4.01 The Board shall establish clear, specific, challenging academic content standards, which define what students shall know and be able to do in each content area.

4.02 The Board shall establish a schedule for periodic review and revision of academic content standards to ensure Arkansas academic content standards are rigorous and equip students to compete in the global workforce. For each review, the Department will provide the following:

4.02.1 Study and consideration of academic content standards from across the nation and international levels as appropriate;

4.02.2 Study and consideration of evaluations from national groups or organizations as appropriate;

4.02.3 Committees composed of Arkansas teachers and instructional supervisory personnel from public schools, assisted by teachers from institutions of higher education;

4.02.4 Review and input by the Departments of Higher Education and Workforce Education as well as community members; and

4.02.5 Public dissemination of revised academic content standards on the Department Website.

4.03 The Board shall provide for external review of revised standards by nationally recognized content experts in the discipline/area under consideration.

4.04 The Board shall establish a clear, concise system of reporting the academic performance of each school on the state's mandated criterion-referenced assessments and the norm-referenced assessments, which conform to current state and federal law.

4.05 Each local school/school district shall engage in a procedure that will assure that the academic standards for every level - grades kindergarten through twelve (K-12) are aligned and education and financial resources are aligned with student performance expectations at each level.

5.0 Arkansas Comprehensive Assessment Program

The Board shall establish a statewide assessment system for Grades K through 12 to be implemented in each public school in the State by the Department. All districts shall comply with the requirements of the assessment system. Failure to do so shall result in a recommendation to the Board for Probationary status or loss of accreditation as set out in the Standards for Accreditation, or for other intervention or sanction as allowed or required by these rules, state or federal law.

Local district school boards shall not establish school calendars that jeopardize or limit the valid testing and comparison of student learning gains.

5.01 Kindergarten, Grade One and Grade Two

5.01.1 The Board shall adopt and the Department shall implement a developmentally appropriate, uniform school readiness screening to validate a child's school readiness as part of a comprehensive evaluation decision. Beginning with the 2004-2005 school year and thereafter, the Department shall require that all school districts administer the uniform school readiness-screening instrument to each kindergarten student in the district prior to or upon the entry into kindergarten. Children who enter public school for the first time in first grade must be administered the uniform school readiness screening instrument as modified for use in first grade to determine placement.

5.01.2 Kindergarten, Grades 1 and 2: The Department shall select a developmentally appropriate assessment to be administered to all students in kindergarten, Grades one (1) and two (2) in reading and mathematics.

5.02 Criterion-Referenced Tests - Grades three through eight and high school

5.02.1 The Department shall develop and implement criterion-referenced assessments as follows: (1) Grades three (3) through eight (8) which measure application of knowledge and skills in reading and writing literacy and mathematics and science in Grades 5 and 7; (2) End-of-Course testing in Algebra I, geometry and Biology I (Biology begins in 2007-2008); (3) High school literacy that measures application of knowledge and skills in reading and writing literacy; and (4) social studies as funds are available and approved by the State Board of Education.

5.02.2 All criterion-referenced assessments shall be based on the Arkansas Curriculum Frameworks and Academic Content Standards.

5.02.3 All students in Grades 3 – 8 as well as all students enrolled in courses for which End-of-Course assessments are administered, shall take the criterion-referenced assessments on the testing dates established by the Department. This requirement includes the high school literacy assessment. This authority shall include field testing and any other requirements needed to establish fully-developed assessment instruments and methodologies.

5.02.4 Each school district shall administer criterion-referenced assessments to its students according to procedures established by the Commissioner of Education and specified in the applicable assessment administration materials.

5.02.5 Accounting for Students with Disabilities and Limited English Proficient Students

5.02.5.1 Each student in the specified grades shall participate as outlined in the test coordinator's handbook. A student shall participate in the Arkansas Alternate Assessment Program only upon the formal determination of :

5.02.5.1.1 The student's individual education program (IEP) committee, as documented in the student's individual educational program; or

5.02.5.2 The Individual Education Program (IEP) committee shall determine whether or not participation in the standard state assessment program is appropriate for students with IEPs. Students with disabilities for whom it is deemed inappropriate to take the standard state assessments (Benchmarks and End-of-Course) with the established accommodations shall participate in the Arkansas Alternate Assessment Program following the guidelines established by the Board.

5.02.5.3 Scores for students with disabilities shall be reported with other assessment results from the school.

5.02.5.4 LEP students shall participate in all required criterion referenced assessments. LEP students may access state approved accommodations provided such accommodations have been recommended by the language proficiency assessment committee and are used regularly in classroom instruction and assessment.

5.02.5.5 LEP students with less than one year in a U.S. school will not be required to take the State required literacy benchmark test or the High school literacy test. Districts may exercise this option. LEP students must take the appropriate mathematics test.

5.03 Norm-Referenced Assessments

5.03.1 The Board shall adopt a norm-referenced test to be administered in Grade 3 through Grade 9 in mathematics and reading, which shall be administered by the Department annually.

5.03.2 Each school district shall administer the norm-referenced assessments to its students according to procedures established by the Department and specified in the applicable test administration materials.

5.03.3 The Department shall establish mandatory training sessions for local district testing coordinators and other appropriate school personnel to ensure understanding of the norm-referenced assessments, proper administration of assessments, security, and effective use of the assessment reporting data to improve classroom instruction and learning.

5.04 National Assessment of Educational Progress

5.04.1 Selected schools shall participate in any or all components of the National Assessment of Educational Progress (NAEP).

5.04.2 Any school that fails to participate in the administration of any NAEP assessment shall be reported to the Board and may be subject to probationary status as set out in the Standards for Accreditation

5.05 Test Administration

5.05.1 The Department shall establish mandatory training sessions for local district testing coordinators and other appropriate school personnel to ensure understanding of the administration of assessments and effective use of assessment reporting data to improve classroom instruction and learning to provide program evaluation;

5.05.2 The superintendent or his/her designee in each school district shall be responsible for coordinating all local assessment activities including:

5.05.3 Scheduling testing times of all affected campuses according to the testing calendar developed by the Department;

5.05.4 Ensuring that security is maintained as specified in the appropriate testing administration materials;

5.05.5 Ensuring that all district personnel involved in the testing have been properly trained as specified by the Department;

5.05.6 Ensuring that all testing instruments are administered to all students according to the procedures established by the Commissioner of Education;

5.05.7 Ensuring that all assessment documents and student identification information are properly and accurately coded; and

5.05.8 Attesting whether ALL students have participated in the appropriate grade-level assessment(s).

5.05.9 Recommending for adoption by local school boards a school calendar that in no way jeopardizes or limits the valid testing and comparison of students' learning gains.

5.05.10 The appropriate test administration materials shall specify any allowable accommodations available to students participating in the administration of standard state assessments.

5.05.11 All students enrolled in a State-tested grade shall be accounted for in the State Assessment System.

5.06 A Technical Advisory Committee composed of nationally-recognized testing experts and psychometricians shall be selected by the Commissioner of Education and shall advise the Department in all technical aspects of the assessment system.

5.07 Security and Confidentiality

5.07.1 Violation of the security or confidential integrity of any assessment is prohibited.

5.07.2 The Board shall sanction a person who engages in conduct prohibited by this section, as provided under Arkansas Code §6-17-405 and following the Process for Certificate Invalidation as approved by the Board. Additionally, the Board may sanction a school district and/or school in which conduct prohibited in this section occurs.

5.07.3 Procedures for maintaining the security and confidential integrity of all assessment instruments and procedures shall be specified in the appropriate test administration instructions. Conduct that violates the security or confidential integrity of an assessment is defined as any departure from either the requirements established by the Commissioner of the Department for the administration of the assessment or from the procedures specified in the applicable test administration materials. Conduct of this nature may include, but is not limited to the following acts and omissions:

5.07.3.1 Viewing secure assessment materials;

5.07.3.2 Duplicating secure assessment materials;

5.07.3.3 Disclosing the contents of any portion of secure assessment materials;

5.07.3.4 Providing, suggesting, or indicating to an examinee a response or answer to any secure assessment items;

5.07.3.5 Aiding or assisting an examinee with a response or answer to any secure assessment item;

5.07.3.6 Changing or altering any response or answer of an examinee to a secure assessment item;

5.07.3.7 Failing to follow the specified testing procedures or to proctor students;

5.07.3.8 Failing to administer the assessment on the designated testing dates;

5.07.3.9 Encouraging or assisting an individual to engage in the conduct described in this subsection;

5.07.3.10 Failing to report to appropriate authority that an individual has engaged in conduct set forth is this section;

5.07.3.11 Failing to follow the specified procedures and required criteria for alternate assessments; or,

5.07.3.12 Failing to return the secured test booklets back to the testing company in a timely manner.

5.07.4 The superintendent of each school district shall develop procedures to ensure the security and confidential integrity of all assessment instruments and test items. The superintendent shall be responsible for immediately notifying the Department in writing of conduct that violates the security or confidential integrity of an examination or assessment.

6.0 Student Performance Levels

6.01 The Board shall establish four (4) performance levels for each criterion-referenced assessment administered as part of ACTAAP. The Board shall establish five (5) performance levels for the Alternate Assessment for Students with Disabilities as part of ACTAAP. Those performance levels shall be not evident, emergent, supported independence, functional independence, and independent. Performance levels shall be established for mathematics, reading/language arts and science independently. Additionally, the Board shall establish a pass rate for each end-of-course and high school literacy assessment.

6.02 The Board shall establish four (4) performance levels for Grades K-2 for the norm-referenced assessment administered as part of the Arkansas Comprehensive Assessment Program for reading and mathematics. The following numerical scores define those performance levels.

Mathematics Norm Referenced Assessment standard score cut scores*				
Grade	Below Basic	Basic	Proficient	Advanced
K	0-120	121-128	129-136	137-400
1	0-134	135-146	147-159	160-400
2	0-148	149-164	165-181	182-400

*Lowest possible standard score value is 80

Reading Norm-Referenced Assessment standard score cut scores*				
Grade	Below Basic	Basic	Proficient	Advanced
K	0-119	120-127	128-137	138-400
1	0-136	137-145	146-158	159-400
2	0-153	154-165	166-182	183-400

*Lowest possible standard score value is 80

6.03 Beginning in the 2009-2010 school year, all students in Grade 9 or below who are in enrolled in Algebra I are required to complete and meet the requisite scale score on the End-of-Course Algebra I Examination in order to receive an academic credit towards graduation. The Board shall establish a requisite scale score of student performance on the End-of-Course Algebra I Examination. The following numerical scores define those performance levels.

End-of-Course Algebra I Pass Scale Score	
Not Pass	**Pass**
158 and Below	**159 and Above**

6.04 The following numerical scores define the performance levels on the criterion-referenced assessments and on the Students with Disabilities Alternate Assessment for not evident, emergent, supported independence, functional independence and independent. Functional independence and independent are considered to be grade level.

Mathematics Criterion Referenced Assessments (Augmented Benchmark Exams) Scale Score Ranges				
Grade	Below Basic	Basic	Proficient	Advanced
3	0 - 408	409 - 499	500 - 585	586 & above
4	0 - 494	495 - 558	559 - 639	640 & above
5	0 - 543	544 - 603	604 - 696	697 & above
6	0 - 568	569 - 640	641 - 721	722 & above
7	0 - 621	622 - 672	673 - 763	764 & above
8	0 - 654	655 - 699	700 - 801	802 & above

Literacy Criterion Referenced Assessments (Augmented Benchmark Exams) Scale Score Ranges				
Grade	Below Basic	Basic	Proficient	Advanced
3	0 - 329	330 - 499	500 - 653	654 & above
4	0 - 353	354 - 558	559 - 747	748 & above
5	0 - 381	382 - 603	604 - 798	799 & above
6	0 - 416	417 - 640	641 - 822	823 & above
7	0 - 425	426 - 672	673 - 866	867 & above
8	0 - 506	507 - 699	700 - 913	914 & above

Science Criterion Referenced Assessments (Augmented Benchmark Exams) Scale Score Ranges				
Grade	Below Basic	Basic	Proficient	Advanced
5	0 - 153	154 - 199	200 - 249	250 & above
7	0 - 151	152 - 199	200 - 249	250 & above

End-of-Course Algebra I Scale Score Ranges			
Below Basic	Basic	Proficient	Advanced
0 - 151	152 - 199	200 - 249	250 & above

End-of-Course Geometry Scale Score Ranges			
Below Basic	Basic	Proficient	Advanced
0 - 151	152 - 199	200 - 249	250 & above

End-of-Course Biology Scale Score Ranges			
Below Basic	Basic	Proficient	Advanced
0 - 145	146 - 199	200 - 249	250 & above

Grade 11 Literacy Scale Score Ranges			
Below Basic	Basic	Proficient	Advanced
0 - 168	169 - 199	200 - 249	250 & above

Mathematics Alternate Assessment for Students with Disabilities Scale Score Ranges					
Grade	Not Evident	Emergent	Supported Independence	Functional Independence	Independent
3	520 - 672	673 - 703	704 - 708	709 - 723	724 - 733
4	523 - 673	674 - 707	708 - 712	713 - 721	722 - 736
5	545 - 674	675 - 708	709 - 713	714 - 725	726 - 733
6	535 - 677	678 - 708	709 - 714	715 - 722	723 - 731
7	478 - 675	676 - 705	706 - 713	714 - 720	721 - 731
8	484 - 697	698 - 717	718 - 725	726 - 727	728 - 738

Literacy Alternate Assessment for Students with Disabilities Scale Score Ranges					
Grade	Not Evident	Emergent	Supported Independence	Functional Independence	Independent
3	487- 663	664 - 685	686 - 710	711 - 730	731 - 734
4	503 - 672	673 - 692	693 - 712	713 - 727	728 - 733
5	545 - 664	665 - 692	693 - 717	718 - 730	731 - 735
6	518 - 637	638 - 684	685 - 709	710 - 721	722 - 732
7	464 - 620	621 - 674	675 - 708	709 - 722	723 - 736
8	442 - 622	623 - 690	691 - 719	720 - 726	727 - 742

Science Alternate Assessment for Students with Disabilities Scale Score Ranges					
Grade	Not Evident	Emergent	Supported Independence	Functional Independence	Independent
5	563 - 700	701 - 718	719 - 723	724 - 730	731 - 736
7	490 - 670	671 - 688	689 - 705	706 - 720	721 - 733

Grade 9 Mathematics Alternate Assessment for Students with Disabilities Scale Score Ranges				
Not Evident	Emergent	Supported Independence	Functional Independence	Independent
0 - 99	100 -149	150 -199	200 - 249	250 - 300

Grade 11 Literacy Alternate Assessment for Students with Disabilities Scale Score Ranges				
Not Evident	Emergent	Supported Independence	Functional Independence	Independent
483 - 595	596 - 655	656 - 680	681 - 692	693 - 740

Science Grade 10 Alternate Assessment Scale Score Ranges				
Not Evident	Emergent	Supported Independence	Functional Independence	Independent
486 - 600	601 - 664	665 - 692	693 - 715	716 - 742

7.0 Student Accountability

7.01 By the year 2013-2014 all students are expected to perform at the proficient level or above.

7.02 Beginning with the 2005-2006 school year, a) students identified as failing to achieve at the proficient level on the State 2004-2005 or any subsequent mandated CRT (as referenced in Section 6.03 tables: Mathematics Criterion Referenced Assessments, Benchmarks, raw score points and Literacy Criterion Referenced Assessments, Benchmarks, raw score points, etc.); b) students in Grade K scoring delayed on either written language or oral communications and scoring delayed in mathematics on the state mandated uniform readiness screening (as referenced in Sections 3.36 and 3.37 Uniform Readiness Screening); and c) students in Grades 1 and 2 not scoring proficient on the state mandated NRT(as referenced in Section 6.02 tables, Mathematics Norm Referenced Assessment standard score cut scores and Reading Norm-Referenced Assessment standard score cut scores), shall be evaluated by school personnel, who shall jointly develop, a remediation plan with the student's parents. The remediation plan (AIP or if appropriate IRI) will assist the student in achieving the expected standard and will describe the parent's role and responsibilities as well as the consequences for the student's failure to participate in the plan.

7.02.1 The AIP shall be prepared using the format designed by the Department of Education. However, the local school may adjust the format as deemed necessary.

7.02.2 The AIP shall be developed cooperatively by appropriate teachers and/or other school personnel knowledgeable about the student's performance or responsible for the remediation in consultation with the student's parents. An analysis of student strengths and deficiencies based on test data and previous student records shall be available for use in developing the Plan. The plan shall be signed by the appropriate school administrator and the parent/guardian.

7.02.3 The AIP should be flexible, should contain multiple remediation methods and strategies, and should include an intensive instructional program different from the previous year's regular classroom instructional program. Examples of strategies and methods include, but are not limited to, computer assisted instruction, tutorial, extended year, learning labs within the school day, Saturday school, double blocking instruction in deficient areas during the school day, extended day etc.

7.02.4 The AIP shall include formative assessment strategies and shall be revised periodically based on results from the formative assessments.

7.02.5 The AIP shall include standards-based supplemental/remedial strategies aligned with the child's deficiencies.

7.02.6 A highly qualified teacher and/or a highly qualified paraprofessional under the guidance of a highly qualified teacher shall provide instructional delivery under the AIP.

7.02.7 The AIP should contain an implementation timeline that assures the maximum time for remedial instruction.

7.02.8 AIPs should be individualized; however, similar deficiencies based on test data, may be remediated through group instruction.

7.02.9 In any instance where a student with disabilities identified under the Individuals with Disabilities Education Act has an Individualized Education Program (IEP) that already addresses any academic area or areas in which the student is not proficient on state-mandated criterion-referenced assessments, the individualized education program shall serve to meet the requirement of an AIP.

7.03 Retention for failure to participate in the Academic Improvement Plan

7.03.1 School districts shall notify parents, guardians or caregivers of remediation requirements and retention consequences for failure to participate in the required remediation at the beginning of the 2004-2005 school year. Beginning with the 2005-2006 school year, this information shall be included in the student handbook.

7.03.2 Beginning with the 2005-2006 school year, students in Grades three through eight, identified for an AIP who do not participate in the remediation program shall be retained. The local district shall determine the extent of the required participation in remediation as set forth in the student academic improvement plan.

7.03.3 Remedial instruction provided during high school years (Grades 7 – 12) may not be in lieu of English, mathematics, science or social studies, or other core subjects required for graduation.

7.03.4 Any student who does not score at the Proficient level on the criterion–referenced assessments in reading, writing and mathematics shall continue to be provided with remedial or supplemental instruction until the expectations are met or the student is not subject to compulsory school attendance.

7.03.5 Any student that has an AIP and fails to remediate, but scores at the Proficient level on the criterion-referenced assessments, shall not be retained.

7.03.6 Beginning in the 2005-2006 school year, students not proficient on the End-of-Course tests or on the high school Literacy test, shall participate in a remediation program to receive credit for the corresponding course.

7.03.7 Beginning with the 2009-2010 school year, students who fail to meet the pass rate on the end-of-course assessments shall not receive credit for the course until at least one of the following conditions are met. Any student failing to meet one of these conditions shall not be entitled to graduate with a high school diploma from an Arkansas high school or charter school.

7.03.7.1 The student is identified as meeting a satisfactory pass level on a subsequent end-of-course assessment.

7.03.7.1.1 No student that is identified as having failed to meet the satisfactory pass levels on an initial end-of-course assessment shall be entitled to take more than three (3) additional subsequent end-of-course assessments. ADE will determine annually the schedule for administration of additional assessments.

7.03.7.1.2 Prior to a student taking additional end-of-course assessments, the student shall be given a sufficient opportunity and time for remediation.

7.03.7.2 The student is identified as having, by the end of grade twelve (12), finished an appropriate Alternate exit course and is identified as having met a satisfactory pass level on an Alternate assessment directly related to the Alternate exit course.

7.03.7.2.1 Any student that fails to pass the end-of-course assessment after three additional attempts shall be required to take and pass an Alternate exit course and meet a satisfactory Alternate level score on a subsequent Alternate assessment.

7.03.7.2.2 Alternate exit courses may be offered through a distance learning class and may be offered outside the normal school day.

7.03.7.3 The student is identified as a student with disabilities who, because of the nature of the disabilities, cannot meet the requirements. In such case that student may graduate from high school by demonstrating alternate competencies or Alternate levels of competency as contained in the student's individualized education program.

7.04 The results of End-of-Course assessments shall become a part of each student's transcript or permanent record. Each course for which a student completes the assessment shall be recorded with the performance level (advanced, proficient, basic or below-basic).

7.05 The Department shall implement a statistical system that shall provide the best analysis of classroom, school, and school district effects on student progress based on established, value-added longitudinal calculations, which shall measure the difference in a student's previous year's achievement compared to the current year achievement for the purposes of improving student achievement, accountability, and recognition.

7.06 The approach used by the Department shall be in alignment with federal statutes and developed in 2004-2005 to collect data to allow research and evaluation of student achievement growth models.

7.07 The approach shall include value-added longitudinal calculations with sufficient transparency in the model's conception and operation to allow others in the field to replicate the results.

7.08 Reading Deficiency for Students in Kindergarten through Grade Two

7.08.1 Beginning with the 2005-2006 school year, any student who exhibits a substantial reading deficiency shall be provided intensive reading instruction utilizing a scientifically-based reading program. The intensive instruction shall systematically, explicitly, and coherently provide instruction in the five essential elements of reading as defined in Section 3.20.

7.08.2 During the 2005-2006 school year, the State Board of Education shall establish performance levels for kindergarten, Grade 1 and Grade 2 that define substantial difficulties in reading based on the State mandated, developmentally appropriate assessment. The State mandated Uniform Screening Readiness (USR) instrument shall be used to determine substantial reading difficulty for kindergarten students.

7.08.3 Beginning with the 2005-2006 school year, all kindergarten students exhibiting substantial difficulties in reading will be evaluated by school personnel for the purpose of diagnosing specific reading difficulties. This evaluation will occur within 30 days of receiving the USR results.

7.08.4 Beginning with the 2005-2006 school year, within 30 days of the beginning of school, Grade 1 and Grade 2 students exhibiting substantial difficulties in reading will be evaluated by school personnel for the purpose of diagnosing specific reading difficulties. However, in those school years in which the State Board of Education shall revise the performance levels schools shall be allowed 30 days from the date of the final approval to conduct the evaluation.

7.08.5 The evaluation shall include the Dynamic Indicators of Basic Early Literacy Skills (DIBELS).

7.08.6 Beginning with the 2005-2006 school year, school personnel shall develop an Intensive Reading Improvement plan (IRI) that describes the intervention program for any student identified with substantial reading difficulty. The IRI shall be developed cooperatively by appropriate teachers and/or other school personnel knowledgeable about the student's performance or responsible for remediation.

7.08.7 The IRI shall contain an implementation timeline that assures the maximum time for remedial instruction. The intervention shall occur during the regular school day whenever possible, but may include extended day when appropriate. The intervention shall supplement, and not supplant, core classroom instruction.

7.08.8 The IRI shall include valid and reliable progress monitoring assessments to measure student growth toward the grade level benchmarks in each essential element of reading.

7.08.9 The intensive reading instruction provided under the IRI shall utilize strategies that are aligned with scientifically-based reading research.

7.08.9.1 The intensive instruction shall systematically, explicitly and coherently provide instruction in the five essential areas of reading. The intensity and focus of the instruction shall be based on the evaluation results, teacher observation, and data from progress monitoring assessments. The intervention plan shall be revised periodically to reflect student needs as indicated on progress monitoring assessments.

7.08.9.2 The IRI should be individualized; however, similar deficiencies may be remediated through group instruction.

7.08.9.3 A highly qualified teacher and/or a highly qualified paraprofessional under the guidance of a highly qualified teacher shall provide instruction under the IRI.

7.08.9.4 The intervention shall continue until the child has reached grade level benchmarks in all essential areas of reading.

7.08.10 Student achievement in each of the essential elements shall be monitored monthly after students complete the intervention. Students who are not meeting current expectations shall be provided additional interventions.

7.08.11 In any instance where a student with disabilities identified under the Individuals with Disabilities Act has an IEP that already addresses reading deficiencies, the individual education program shall serve to meet the requirements of the IRI.

7.09 The parent or guardian of any student identified with a substantial reading deficiency shall be notified in writing to include the following:

7.09.1 That the child has been identified as having a substantial deficiency in reading;

7.09.2 A description of the current services that are provided to the child; and,

7.09.3 A description of the proposed supplemental instructional services and supports that will be provided to the child that are designed to remediate the identified area of reading deficiency.

8.0 School Accountability

8.01 The Department of Education shall provide analyses of data produced by the Arkansas Comprehensive Assessment Program and other reliable measures of student learning to determine classroom, school, and school district academic performance.

8.02 Student performance trend data shall be one of the components used in developing objectives of the school improvement plan, internal evaluations of instructional and administrative personnel, assignment of staff, allocation of resources, acquisition of instructional materials and technology, performance-based budgeting, and assignment of students into educational programs of the local school program.

8.03 Each school shall develop one (1) Arkansas Comprehensive, School Improvement Plan (ACSIP) focused on student achievement. This requirement is intended to focus the school/school district annually on the school's performance data for the purposes of improved student performance, based on data and the performance of students on the state assessment system.

8.04 The purpose of ACSIP is to provide equal opportunity for all students, including identifiable subgroups, to meet the expected performance levels established by the Board on all State assessments.

8.05 Consistent with the No Child Left Behind Act, each school must make adequate yearly progress (AYP), based primarily on the administration of the criterion-referenced assessments described in Section 5.02. In order to make AYP, a school or school district must—

- Demonstrate that at least 95 percent of all students and of students in each applicable subgroup, as provided in Section 8.06, at the tested grade levels, participated in the assessments;

- Meet or exceed the annual measurable performance levels described in Section 904.5, based on the percentages of students scoring proficient or above on the assessments, overall and for each applicable subgroup; or alternatively, if the total group or any subgroup does not meet the annual measurable performance levels, demonstrate that the percentage of students in that subgroup who did not meet the proficient level for that year decreased by 10 percent of that percentage from the preceding school year and that the subgroup made progress on one additional academic indicator; and

- Show progress for all students on an additional academic indicator, which shall be graduation rate for high schools and percent attendance for elementary and middle schools.

8.06 The following subgroups must be included in the school/school district data disaggregation:

8.06.1 Students with Disabilities
8.06.2 Students who are English Language Learners
8.06.3 Economically Disadvantaged Students
8.06.4 Ethnic Subgroups
    8.06.4.1 Caucasian
    8.06.4.2 African American
    8.04.4.3 Hispanic

8.07 A school must meet AYP criteria overall and for each of these subgroups that meets the minimum group size as determined by the Department of Education and approved by the U.S. Department of Education.

8.08 The Department will determine AYP separately for mathematics and literacy, using appropriate statistical treatments. Based on the single statewide starting point described in this section, annual performance levels assure that ALL students will reach proficient by school year 2013-2014.

8.09 The Department will determine for each school in the state the percent of students performing at the proficient or advanced levels. This percentage will be determined by computing the sum of students proficient or advanced for the current year or the most recent three years across each grade for which there is a criterion-referenced assessment. That sum is divided by the total number of students assessed for that year or across those three years and grades. This number shall include students taking alternate assessments. The percentage shall be determined separately for mathematics and reading/literacy.

8.10 The AYP starting point regarding percent proficient on state assessments will be determined for grade-level clusters K- 5; 6 – 8; and 9 – 12 and separately for mathematics and reading/literacy.

8.11 The AYP starting point will be determined by ranking each school within the grade-level by the percent proficient. Additionally, the ranking will include the total student enrollment for those grades using October 1, 2002, data or October 1 of a subsequent year for which there is a recalculation.

8.12 The Department will determine the school that contains the 20^{th} percent student of total enrollment – starting from the school with the lowest percent proficient and counting upward. The percent proficient of that school becomes the "starting point" for determining AYP for that grade-level cluster and content area.

8.13 The following table establishes the starting point and projected performance level for each year of the twelve years addressed by the No Child Left Behind Act.

Calculating AYP and Annual Expected Performance Levels

	K-5 Math	K-5 Literacy	6-8 Math	6-8 Literacy	9-12 Math	9-12 Literacy
Year 05-06	40.00	42.40	29.10	35.20	29.20	35.50
Year 06-07	47.50	49.60	37.96	43.30	38.05	43.56
Year 07-08	55.00	56.80	46.83	51.40	46.90	51.63
Year 08-09	62.50	64.00	55.69	59.50	55.75	59.69
Year 09-10	70.00	71.20	64.55	67.60	64.60	67.75
Year 10-11	77.50	78.40	73.41	75.70	73.45	75.81
Year 11-12	85.00	85.60	82.28	83.80	82.30	83.88
Year 12-13	92.50	92.80	91.14	91.90	91.15	91.94
Year 13-14	100.00	100.00	100.00	100.00	100.00	100.00

8.14 Each year, in determining whether a school has met the target of percent proficient for that school year as listed on the chart, the Department shall compare the school's percent proficient in the appropriate grade-level cluster and content area with the statewide projected goal for that year. A school shall be deemed to have met AYP for a particular year for a particular grade-level cluster and content area as long as the school attains at least the statewide projected goal.

8.15 Schools/School Districts failing to meet expected performance standards as established by the Board shall be subject to sanctions as specified in school improvement or academic distress.

8.16 Schools/School Districts exemplifying exceptional performance levels and/or growth patterns shall be recognized for exemplary performance and will be eligible to participate in the rewards program.

9.0 Accountability

Schools failing to meet Adequate Yearly Progress as determined under these Rules shall be classified subject to the following consequences.

9.01 A school will be identified in alert status if it has not made AYP in the same subject (Mathematics or Literacy) for one year.

9.02 A school will be identified as in Improvement Status if it has not made AYP in the same subject (Mathematics or Literacy) for two consecutive years.

9.03 A school in Alert Status or Improvement Status that fails to make AYP, but does not fail to make AYP in the same subject for two consecutive years, will remain in its existing status for the following school year.

9.04 The first year a school fails to meet expected performance levels, that school shall be classified as on Alert Status. Any school classified on Alert Status shall be required to review and/or revise the school's ACSIP Plan with special attention given to State designated subgroup(s) which failed to meet expected performance levels.

9.05 The local school board president and the superintendent of a public school or school district identified by the Department in school improvement shall be notified in writing by the Department, via certified mail, return receipt requested, and the school district shall have a right to appeal to the Commissioner of the Department. The written appeal must be received in the Office of the Commissioner of Education within thirty (30) calendar days of the receipt of notice.

9.06 The second year a school fails to make Adequate Yearly Progress, that school shall be classified as Year 1 of School Improvement. Any school classified in Year 1 of School Improvement shall offer eligible students choice options to another school in the district not in school improvement.

9.07 The third year a school fails to make Adequate Yearly Progress, that school shall be classified as Year 2 of School Improvement. Any school classified in Year 2 of School Improvement shall offer eligible students supplementary educational services in keeping with federal guidelines in addition to continued consequences from Year 1 of School Improvement.

9.08 Should a school fail to make Adequate Yearly Progress in the fourth year, the Board shall advance that school into corrective action. Schools in corrective action must continue to offer consequences from School Improvement Year 2 and the school must implement a plan, with the approval of the Department, having specified corrective actions.

9.09 Should a school fail to make Adequate Yearly Progress in the fifth year, the Board shall advance that school into restructuring. In restructuring the Department may require the school to dismiss staff and administrators, annex the school to another school that is not in school improvement, and/or take other such action as deemed necessary by the Department and the Board.

9.10 Once a school has been identified in school improvement, that school must meet the standard(s) for which it failed to meet for two consecutive years to be considered for removal.

9.11 Schools that receive Title I funds must meet all funding requirements as specified by federal guidelines. Schools that do not receive Title I funds must implement programming in keeping with the school's ACSIP Plan as revised.

9.12 Beginning with the 2006-2007 school year, schools designated in year three, four or five school improvement shall participate in a scholastic audit conducted by the Department of Education (or its designees).

19.12.1 Results of the scholastic audit shall be presented to the superintendent within four (4) weeks of completing the scholastic audit. The audit shall make recommendations to improve teaching and learning for inclusion in the comprehensive school improvement plan.

9.13 School Performance Rating System

9.13.1 The Department of Education will establish a working task force during the 2004-2005 school year to assist in the development of the rating system. The task force shall include educators, parents, and business/community stakeholders. In order to keep the rating system reliable and valid, a Technical Advisory Committee composed of nationally recognized accountability experts, statisticians, and psychometricians shall be selected by the Commissioner of Education and shall advise the Department in all technical aspects of the accountability system. The rating system shall include the establishment of a performance level and an improvement level. The improvement level shall be assigned in the 2007-2008 school year and the performance level shall be assigned no later than the 2009-2010 school year. The ADE will implement a pilot system of performance levels required by A.C.A. § 6-15-1903, at least one (1) year prior to the year of implementation required by law. The performance level designations may be applied to any school district requesting to be classified by such performance designations as allowed by A.C.A. § 6-15-1903 (b) (1).

9.14 Performance Category Levels

9.14. 1 The Department of Education shall prepare an annual report, which shall describe the school rating system. The annual report shall designate two (2) category levels for each school. The first category, annual performance, is based on the performance from the prior year on the criterion-referenced test and end–of–course exams. The second category, growth, shall be based on the schools' improvement gains tracked longitudinally and using value-added calculations on the criterion-referenced assessment

9.14.2 The initial annual report shall identify schools as being in one (1) of the following annual performance category levels, based on the criterion-referenced Benchmark exams, as defined in 6-15-404(g) (1), and defined according to rules of the State Board of Education:

(1) "Level 5", schools of excellence;
(2) "Level 4", schools exceeding the standards;
(3) "Level 3", schools meeting the standards;
(4) "Level 2", schools on alert; or
(5) "Level 1", schools in need of immediate improvement.

9.15 For the years 2004-2005 through 2008-2009, school will not be assigned annual school performance category levels, unless an annual performance category levels is requested by the school.

9.16 Annual School Performance Rating: Weighted Average Approach

9.16.1 Since the ACTAAP testing program in Arkansas was designed as a criterion-referenced assessment system with performance standards, the standards for student performance can be used to develop a rating index of school performance.

9.16.2 Numerical values to be used as weighting factors can be assigned to each students' performance category (Advanced = 4; Proficient = 3; Basic = 2; Below Basic = 1)

9.16.3 With these weights assigned to the performance levels, a performance index for the school can be computed by multiplying the weights of the performance levels times the number of students scoring in the performance category.

9.16.4 The sum of the weighted student performance for each subject and grade in the school is divided by the total number of students testing the subjects and grades. The resulting average for the school is an index of performance that will range between 1.0 and 4.0.

9.17 Achievement Rating Weighted Average Approach

9.17.1 Assigned the following points:

4 points per student scoring in the advanced category,
3 points per student scoring in the proficient category;
2 points per student scoring in the basic category,
1 point per student scoring in the below basic category.

Points = Number of student scoring in category X points assigned to categories

9.17.2 Example

Number of Students	Scoring Category	Points Assigned to Categories	Total
10	Advanced	4	40
30	Proficient	3	90
40	Basic	2	80
20	Below Basic	1	20
Total points for the school for all categories			230

9.18 Achievement Rating: Weighted Average Approach Calculation

9.18.1 To calculate the rating score for each school, divide the total point for the school by the number of students in the school.

Points Received	Number of Students	Rating
230	100	2.3

9.18.2 At the direction of the state board, a panel of stakeholders was convened to review the statewide performance of schools and conduct the standard setting process. In the school standard setting process, stakeholders representing administrators, teachers, business, parents, and school board members served as panelists to decide on the quality level represented by various points within the distribution of school index scores. The state board reviewed and adopted the following standards recommended by the stakeholder's advisory panels for the annual performance rating.

Standard Setting Recommendations Stakeholder Advisory Panels

Cut Scores	Cut 1/2	Cut 2/3	Cut 3/4	Cut 4/5
Administrators	1.7	2.19	2.76	3.02
Teachers	1.6	2.25	3.0	3.5
Business	1.735	2.145	2.7	3.365
Parents	1.75	2.2	2.65	3.0
School Board	1.81	2.30	2.87	3.30
Median	1.735	2.2	2.755	3.300
Average	**1.719**	**2.21**	**2.79**	**3.23**

9.18.3 After the rating score has been calculated for each school, schools may calculate their annual performance level by locating the established performance standard (cut score) for placing each school in one of five performance categories.

9.18.4 In the example below, if the rating score of the school is between 3.5 and 4.0, it will be in the "schools of excellence" performance category level.

Expert Panel Cut Scores	Performance Categories
3.23 – 4.0	Schools of excellence
2.79 – 3.22	Schools exceeding the standards
2.21 – 2.78	Schools meeting standards
1.719 – 2.20	Schools approaching the standards (alert)
1.0 – 1.718	Schools in need of immediate improvement

9.18.5 The second category, growth, available in 2007-2008, shall be based on the schools' improvement gains tracked longitudinally and using value-added calculations on the criterion-referenced assessment. The working taskforce shall continue to assist in the rating system during the establishment of the second category.

9.19 School Choice

9.19.1 For all schools that have received an annual performance category levels of Level 1 for two (2) consecutive years, the students in these schools shall be offered the opportunity public school choice option with transportation provided pursuant to A.C.A. § 6-18-227 et seq.

9.20 Supplemental Educational Services

9.20.1 In addition, the school district board shall provide supplemental educational services, approved by the State Board, to affected students.

9.21 Recognition Awards

9.21.1 Schools that receive an annual performance category level of Level 5 or Level 4 are eligible for school recognition awards and performance-based funding pursuant to A.C.A. § 6-15-1907.

9.22 Sanctions

9.22.1 Any school or district that is involved in substantiated test security violations will not be eligible to receive the "school of excellence" performance rating.

10.0 School District Accountability

10.01 The Department annually reviews each district to determine whether it is making AYP in the following way.

10.01.1 Determine the collective status for all the schools within a district within each grade-level grouping (k-5; 6-8 and 9-12)

10.01.2 Determine the district percent of participation across each grade level group

10.01.3 Determine the district status on secondary indicator across each grade-level group.

10.01.4 A district shall be in school improvement when all levels within a district fail to meet performance standards for two consecutive years in the same subject. A district having status of School Improvement shall be removed from that status when any one level meets the performance standard for two consecutive years in that subject.

10.02 Before identifying a district for district improvement, the Department will provide the district with an opportunity to review the data on which the identification is based. The district may appeal the identification, and the Department will decide the appeal within 30 days.

10.03 Each district identified for school improvement shall within three months of identification develop or revise a district improvement plan that complies with the requirements of the No Child Left Behind Act, including the requirement that it spend not less than 10% of its Part A, Title I funds on professional development for each fiscal year in which the district is identified for improvement. The district shall initiate implementation of the plan expeditiously, but not later than the beginning of the next school year after the school year in which the district was identified for improvement. The Department will provide technical assistance to districts in developing and implementing improvement plans under this section.

10.04 Academic Distress – Procedures for Identification, Classification and Appeal of School Districts in Academic Distress

10.04.1 A school district for which 75% or more of the students completing the state's assessments perform at the below basic level shall be designated in Academic Distress. This computation shall collectively include students from each school in the district and from each grade for which a criterion-referenced assessment is given.

10.04.2 Within thirty calendar days (30) after the release of the state assessment results by the Department, the Department shall identify all school districts in Academic Distress and shall notify in writing each school district superintendent and board president via certified mail, return receipt requested.

10.04.3 A school district may appeal a determination of the Department identifying the district as an Academic Distress school district by filing an appeal in writing in the Office of the Commissioner of the Department within (30) calendar days after receiving the notification, justifying why the district should not be identified as being in Academic Distress.

10.04.4 The Board shall render a written decision of a classification on a district's appeal of identification as an Academic Distress school district within sixty (60) calendar days of the district's written request.

10.04.5 The decision of the Board shall be final with no further right of appeal, except a school district may appeal to the Circuit Court of Pulaski County pursuant to the Administrative Procedures Act, A.C. A. §25-15-201 et seq.

10.05 Time Limitation of Academic Distress Status

10.05.1 A public school district identified as in academic distress shall have no more than two (2) consecutive school years beginning on July 1 following the date of notice of identification to be removed from academic distress status.

10.05.2 The Board may at any time take enforcement action on any school district in academic distress status including, but not limited to, annexation, consolidation, or reconstitution of a school district pursuant to A.C.A. § 6-13-1401 et seq.

10.05.3 If a public school district fails to be removed from academic distress status within the allowed two (2) year time period, the Board shall annex, consolidate or reconstitute the academic distress school district prior to July 1 of the next school year unless the Board, at its discretion, issues a written finding supported by a majority of the board, explaining in detail that the school district could not remove itself from academic distress during the relevant time period due to external forces beyond the school district's control.

10.06 Procedures for assisting school districts in academic distress

10.06.1 Within thirty (30) calendar days of classification by the State Board, each Academic Distress school district shall develop and file with the Department a modified Comprehensive School Improvement Plan to target and address any area in which the district is experiencing academic distress.

10.06.2 Within fifteen (15) calendar days of classification by the State Board, the Department shall assign a team of educators to evaluate the district and determine the need for on-site technical assistance.

10.06.3 The team of educators shall evaluate and make recommendations to the district superintendent within sixty (60) calendar days following the district's classification as an Academic Distress school district.

10.06.4 School districts classified as Academic Distress shall provide access to all district assessment, instruction, personnel and academic records and reports to assist the team in the formulation of the recommendations for improvement.

10.06.5 The Department with assistance from the team of educators shall review the data relative to the academic status and performance of students in the Academic Distress school district.

10.06.6 Following the on-site review, the team of educators will submit a written set of recommendations to the Academic Distress school district.

10.06.7 The Department shall provide relevant technical assistance to each identified school district based upon the needs identified in the Comprehensive School Improvement Plan.

10.08 Procedures for evaluating and removal of school districts from academic distress status

10.08.1 The Department shall review and annually report to the Board the academic conditions existing in each Academic Distress school district and determine whether the district is making progress and has fewer than 75% of the students performing in the below basic performance level.

10.08.2 A school district designated in Academic Distress shall be removed from Academic Distress only if fewer than 75% of the students perform below basic for two consecutive years.

11.0 Board Authority

11.01 The Board shall have the following authority regarding any public school district in academic distress:

11.01.1 Require the superintendent of the school district to relinquish all authority with respect to the district, to appoint an individual to administratively operate the district under the supervision of the Commissioner of the Department, with the cost to be paid from school district funding;

11.01.2 Suspend or remove some or all of the current board of directors and call for the election of a new school board for the school district in which case the school district shall reimburse the county board of election commissioners for election costs as otherwise required by law.

11.01.3 Allow the school district to operate without the local school board under the supervision of the local school district administration or an administration chosen by the Commissioner of the Department.

11.01.4 Waive the application of Arkansas law, with the exception of the Teacher Fair Dismissal Act of 1983, A.C.A. § 6-17-1501 et seq., and the Public school Employee Fair Hearing Act, A.C.A. § 6-17-1701 et seq., or Department Rules.

11.01.5 The Board has exclusive jurisdiction to determine the boundary lines of the receiving or resulting school district and to allocate assets and liability of the district.

11.01.6 Require the annexation, consolidation, or reconstitution of the public school district.

11.01.7 Take any other necessary and proper action as determined by the Board that is allowed by law.

11.01.8 After providing thirty (30) calendar days written notice, via certified mail return receipt requested, to a school district, the Department may petition the Board or the Board on its own motion, at any time, may take action pursuant to 11.0 as allowed by Act 1467 of 2003, in order to secure and protect the best interest of students in the public school district or to secure and protect the best interest of the educational resources of the state.

11.01.9 The School District shall have a right of appeal to a public hearing before the Board after filing a written notice of appeal with the office of the Commissioner of the Department at least thirty (30) calendar days prior to the appeal hearing.

11.01.10 The State Board shall consolidate, annex or reconstitute a school district that fails to remove itself from the classification of a school district in academic distress within two (2) consecutive school years of receipt of notice of identification unless the Board, at its discretion, issues a written finding supported by a majority of the Board, explaining in detail that the school district could not remove itself from academic distress due to impossibility caused by external forces beyond the school district's control.

11.01.11 After a public hearing, the Board shall consolidate, annex, or reconstitute the school district in academic distress to another non-academic distress school district upon a majority vote of a quorum of the members of the Board as permitted or required by this subchapter.

11.01.12 The Board's classification of a school district in Academic Distress shall be final except that the school district shall have a right of appeal to the Circuit Court of Pulaski County pursuant to the Arkansas Administrative Procedures Act, A.C.A. § 25-15-201 et seq.

12.0 School Choice and Academic Distress

12.01 Any student attending a public school district classified as being in academic distress shall automatically be eligible and entitled pursuant to A.C.A. § 6-18-206, the "Arkansas Public School Choice Act", to transfer to another geographically contiguous school district not in academic distress during the time period a district is classified as being in academic distress, and therefore, not be required to file a petition by July 1 but shall meet all other requirements and conditions of the Arkansas Public School Choice Act.

12.02 The cost of student transportation to the nonresident district shall be borne by the resident district.

12.03 The nonresident district shall count the student for average daily membership purposes.

13.0 Emergency Clause

WHEREAS, the score tables set out in these Rules are critical to the Arkansas public educational system in that without these tables Arkansas public school districts would not be aware of the relevant scores to be used by the Arkansas Department of Education in determining the various levels of student competency on standardized tests it will administer during the Spring 2010 testing cycle. Therefore, without the revisions to these Rules, The Arkansas Department of Education would be impeded in its ability to carry out the educational accountability provisions of Act 1467 of 2003 (the Quality Education Act), Act 35 of the Second Extraordinary Session of 2003, and Act 1307 of 2009, thus directly impacting the education of children in said school districts, which may impact the fiscal welfare, and peril of certain students. As a result, the Arkansas State Board of Education hereby determines that imminent peril to the schools and school districts of this state, as articulated above, will exist if these Rules are not promulgated on an emergency basis. Therefore, pursuant to Ark. Code Ann. § 25-15-204, these Rules are to immediately take effect upon passage by the Arkansas State Board of Education.

PARTNERSHIP FOR ASSESSMENT OF READINESS FOR COLLEGE AND CAREERS
MEMORANDUM OF UNDERSTANDING

Purpose. This document commits states to participate in the Partnership for Assessment of Readiness for College and Career, a state-led consortium that will collaborate on the development of common, high-quality assessments aligned to the Common Core State Standards (CCSS) in English language arts and mathematics for grades 3-8 and high school. The primary goal of the Partnership's work is to measure and document students' college and career readiness against common academic standards and to measure students' progress toward this target throughout the rest of the system.

While participating in the Partnership demonstrates the state's commitment to pursue a common assessment system that enables comparisons against the CCSS across all Partnership states, it does not commit the state to a specific assessment design at this point. Partnership states are still considering several options for the design of a common assessment system in pursuit of the Race to the Top (RTTT) Comprehensive Assessments Grant and will not be asked to commit to the Partnership's application until a later date. Until that time, all participating states will have the opportunity to contribute to and shape the Partnership's proposal.

Preliminary Design Principles. Partnership states have identified the following major purposes and uses for the assessment system. As the Partnership collaborates to develop its application for the RTTT assessment competition, these purposes will guide its work.

- The primary purpose is to measure and document students' **college and career readiness** and to measure students' progress toward this target throughout the rest of the system. Students meeting the college and career readiness standards will be eligible for placement into entry-level credit-bearing, rather than remedial, courses in public 2- and 4-year postsecondary institutions in participating states.

- Additionally, the partnership is committed to ensuring that the assessment results:
  - Are **comparable across states** at the student level;
  - Meet **internationally rigorous benchmarks;**
  - Support valid assessment of **student longitudinal growth**; and
  - Serve as a **signal for good instructional** practices.

- The results must be able to support multiple levels and forms of accountability including:
  - Decisions about **promotion and graduation for individual students,**
  - **Teacher and leader evaluations**, and
  - **School accountability** determinations.

Roles and Responsibilities of Partnership States. The Partnership will employ a multi-level governance and management structure designed to guide the partnership through the submission of the proposal.

- The **Governing States** are comprised of a representative group of leaders from Partnership states that are committed to implementing the assessment system developed by the partnership, should it win a grant from the Race to the Top Comprehensive Assessment System competition, and are responsible for guiding the proposal development process. Each Governing State will commit a team comprised of the chief, assessment director, and other key officials from the SEA, Governor's office, and higher education as appropriate.
- The **Proposal Design Team** will include officials from partnership states who will work with an advisory group of national and international experts to create an assessment system design for the Partnership's proposal. The design team will include as many states as are interested in and capable of contributing to and shaping the design of the proposed next generation assessment system.

- **Participating States** will include other partnership states that are unable to provide staff time to the design team but will provide rapid feedback on drafts of the proposal through the development phase.

State Commitment. This memorandum of understanding is voluntary and non-binding for states. States signing this MOU should do so with the intent of continuing in the Partnership through the proposal development, assessment development, and implementation phases. However, there will be an opportunity for states re-assess their participation in the Partnership before it submits its application for a Race to the Top Comprehensive Assessment Systems Grant by June 23, 2010.

Agreement. The undersigned state leader agrees to the process and structure as described above and attests accordingly by his/her signature below.

Signature(s) for the State of: ARKANSAS	
Authorized State Signature: Tom W. Kimbrell	
Name: Dr. Tom W. Kimbrell	Date: 05/04/2010
Title: Commissioner of Education	

Appendix C

(b)(6)

Smart Course to Success: Arkansas's Race to the Top

C-1-1 High School to College Success

The ACT®

High School-to-College Success Report

Arkansas

2007-2008 Freshmen

ACT Code: 049999
All High School Composite

How well are Arkansas high schools preparing students for success in Arkansas postsecondary institutions?

ACT®

Report Overview

Introduction

The charts and tables in this report describe performance indicators for the ACT-tested high school graduates of 2007 who attended a participating postsecondary institution in Arkansas in fall 2007. Suggested next steps are provided to help guide your thinking as you work to improve the academic development of students and their success in college.

The importance of academic preparation for college or work is greater than ever today. Seventy percent of the 30 fastest growing jobs require education beyond high school. Clearly, students need to be ready for education beyond high school, and the goal of this report is to promote actions that will assist all students in being prepared for postsecondary education.

To measure academic preparation, this report uses ACT College Readiness Benchmark Scores and College Readiness Standards Score Ranges. These measures are explained below. This report also refers to taking core coursework which is defined as 4 or more years of English, 3 or more years of mathematics beyond pre-algebra, and 3 or more years of science and social studies.

What are College Readiness Benchmark Scores?

College Readiness refers to the level of student preparation needed to be ready to succeed–without remediation--in an introductory level course at a two or four-year institution, trade school, or technical school. A College Readiness Benchmark Score is the minimum score needed on an ACT subject-area test to indicate a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in the corresponding credit-bearing college courses. The corresponding credit-bearing college course used to determine College Readiness Benchmark Scores for English was College English Composition, for Math was College Algebra, for Reading was Social Studies, and for Science was College Biology. These scores were empirically derived based on the actual performance of students in these college courses.

What are College Readiness Standards (CRS) and CRS Score Ranges?

College Readiness Standards (CRS) are detailed research-based descriptions of the skills and knowledge associated with what students are likely to know and to be able to do based on their PLAN and/or ACT test scores. For each content area - English, mathematics, reading, and science - Standards are provided for score ranges along a scale common to the ACT (1-36); the ranges are 1-15, 16-19, 20-23, 24-27, 28-32, and 33-36. These ranges are CRS Score Ranges.

Chart and Table Topics Included in This Report

The charts and tables in this report describe performance indicators for the ACT-tested high school graduates of 2007 who attended a participating postsecondary institution in Arkansas in fall 2007. Each chart and table adds to a larger understanding of your students' academic strengths and weaknesses. To preserve individual confidentiality, summary data are only shown for table cells with five or more students.
Some topical questions are listed below with references to the relevent report charts and tables.

- How did fall college grade average for our students compare to those statewide and of other subset populations? (See Charts 1, 5, 6, 7b, 9, 10 and Tables 1, 2, 3, 4, 5, 6, 8, 9)

- Did students who achieve ACT College Readiness Benchmark Scores earn higher freshmen grades? (See Chart 2 and Table 3)

- How important was rigorous preparation in high school mathematics for success during the first year of college? (See Chart 3 and Table 4)

- How important was rigorous preparation in high school science for success during the first year of college? (See Chart 4 and Table 5)

- How did the ACT Composite scores of our students compare to those statewide and of other subset populations? (See Charts 7a, 8, and Tables 1, 2, 7, 8)

- By ACT College Readiness Standards Score Ranges, what were the first-term and first-year college GPAs of our students? (See Charts 5, 6, and Table 6)

- What percent of our enrolled students completed college preparatory (core) coursework? (See Charts 7a, 7b, and Table 2)

- Were students who took the recommended college preparatory (core) coursework more successful during their first-year at college? (See Chart 7b and Table 2)

- How many of our ACT-tested students were assigned to developmental coursework, and what were their ACT scores and fall college GPAs? (See Charts 1, 7a, 7b, 8, and Table 7)

- How many of our students persisted into the spring semester and what are the academic indicators for these students? (See Charts 9, 10, and Table 8)

- Were graduates who received state scholarships more successful than those who did not? (See Chart 11 and Table 9)

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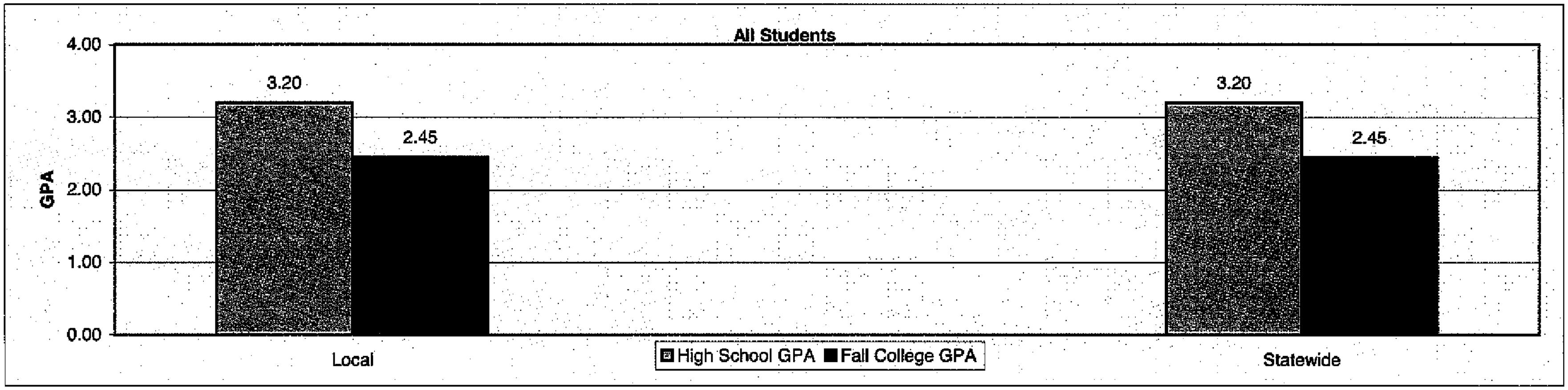
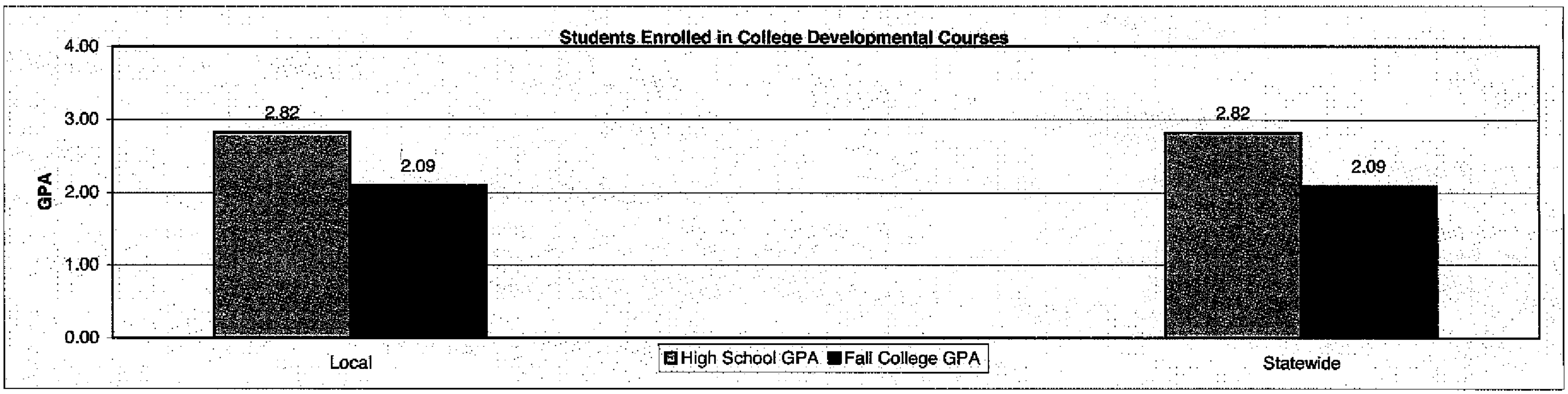
Chart 1: High School and Fall College GPAs for Local and Statewide Students - All Students and Those Assigned to Developmental Courses



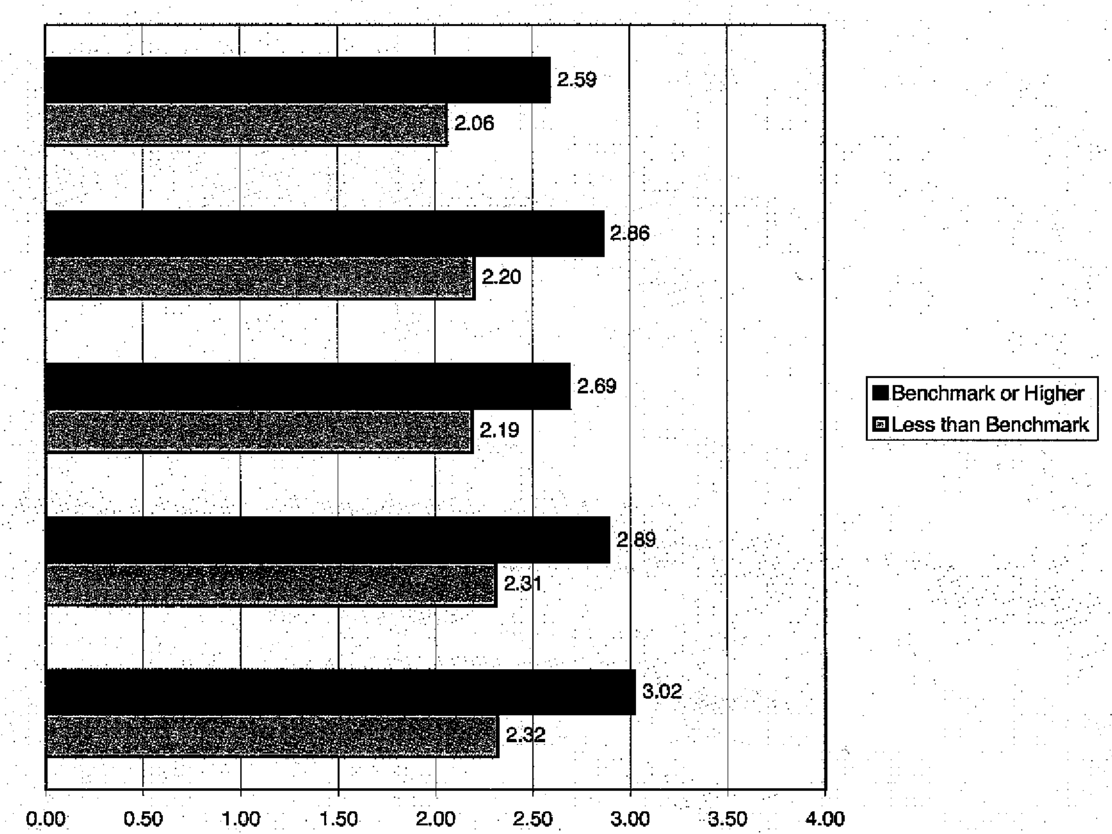


What This Chart Tells You:
Students who were assigned to developmental cousework generally earn lower grades in both high school and college. The need for developmental courses should be less if students take the recommended college preparatory courses: 4 or more years of English, 3 or more years of mathematics beyond pre-algebra, 3 or more years of science and social studies. Comparisons by campus are shown in Tables 2 and 7 (Appendix).

Your Next Steps:
1. Make sure all students are taking college-preparatory courses and are taught using a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.

Chart 2: Average Fall College GPA for Students Who Did/Did Not Earn ACT College Readiness Benchmark Scores Across Test Subjects

	Benchmark	N	%
English	18 or Higher	7628	74%
	Less than 18	2743	26%
Mathematics	22 or Higher	3884	37%
	Less than 22	6487	63%
Reading	21 or Higher	5339	51%
	Less than 21	5032	49%
Science	24 or Higher	2444	24%
	Less than 24	7927	76%
Met All Four Benchmarks	Did	1883	18%
	Did Not	8488	82%



What This Chart Tells You:

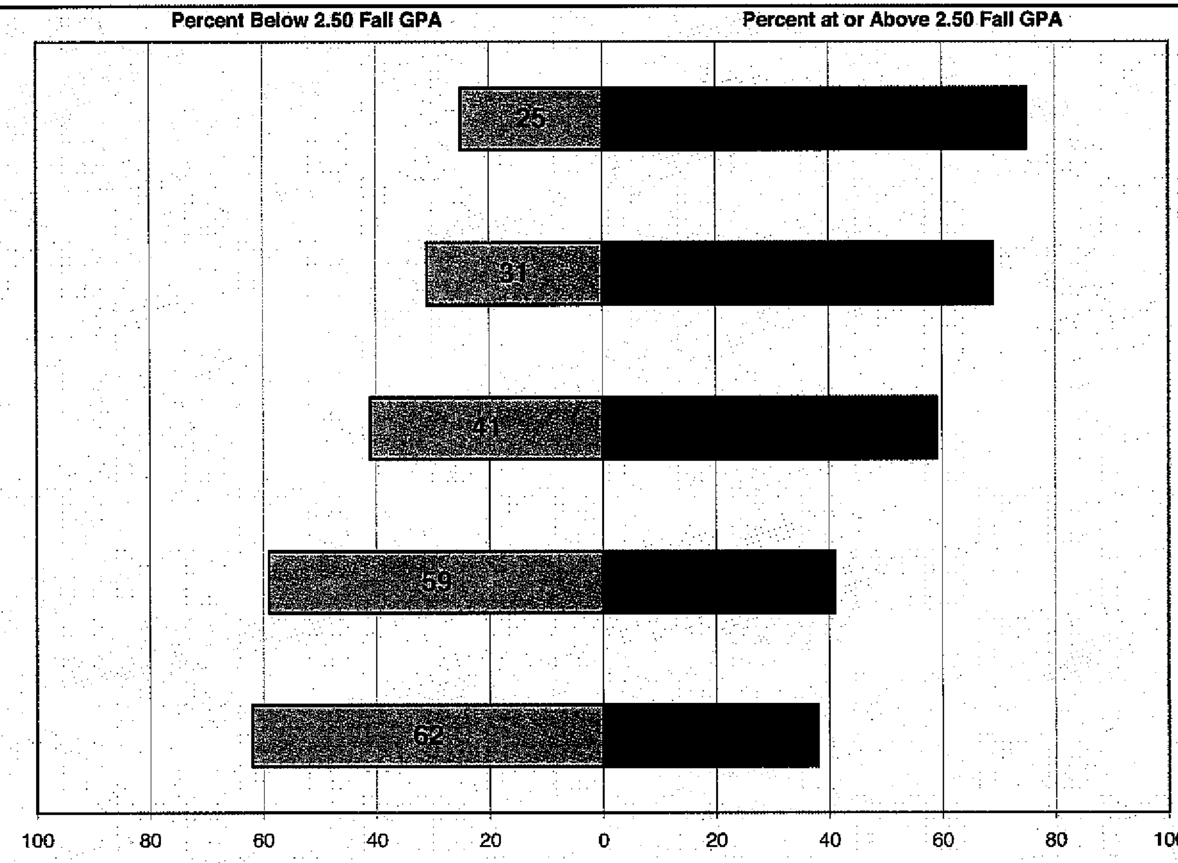
Students who earned the ACT College Readiness Benchmark Scores in high school earned higher freshmen grades that those who fell short of the benchmark scores. Comparisons by campus are shown in Table 3 (Appendix). The benchmark scores are associated with a 50% or more chance of earning a B or better in selected courses (Appendix pg. 23).

Your Next Steps:

1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards, review the skills needed to move your students to a higher score range.
3. Provide students with help both inside and outside the classroom (when needed) with tutors, teachers, and/or other helpers.

Chart 3: Percent 'Below' and 'At or Above' a Fall College GPA of 2.50 by Mathematics Course Sequence Patterns Studied in High School

	N	%	GPA
Algebra 1, Algebra 2, Geometry, Trigonometry Calculus	779	15%	2.98
Algebra 1, Algebra 2, Geometry, Trigonometry Other Advanced Math	1041	21%	2.75
Algebra 1, Algebra 2, Geometry, Trigonometry	1046	21%	2.47
Algebra 1, Algebra 2, Geometry	1550	31%	2.03
Less Than 3 Years	630	12%	1.93
Total	5046	100%	2.40

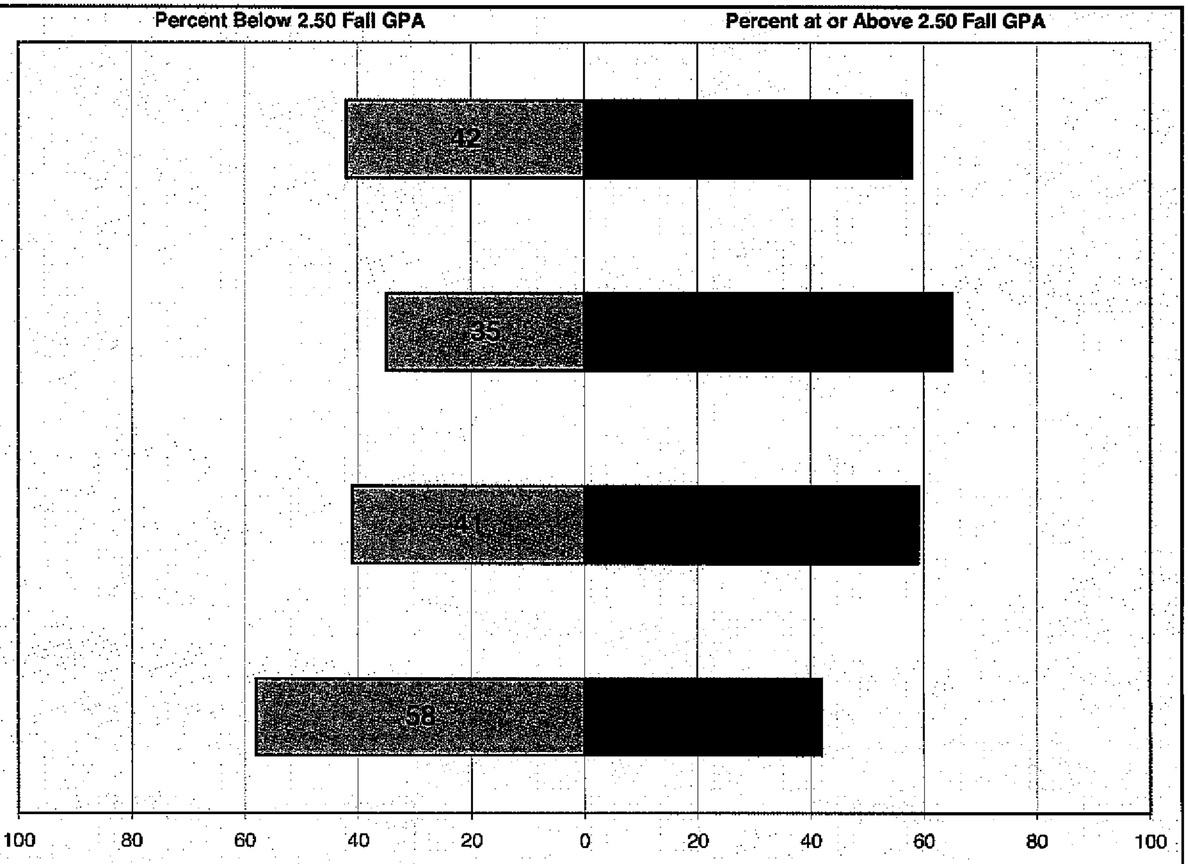


What This Chart Tells You:
Most students who took more rigorous mathematics courses in high school earn higher freshmen grades. Students who take more than 3 years of mathematics beyond pre-algebra in high school are more successful in college. See the reference to *On Course for Success* (Appendix pg. 23). Comparisons by campus are shown in Table 4 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Monitor students' achievement of college-readiness skills using EPAS-EXPLORE (grades 8/9), PLAN (grade 10), and ACT (grades 11/12). Use the information from EXPLORE and PLAN to help students make proper course selections.
3. Using ACT's College Readiness Standards for Mathematics, help the mathematics teachers in your high school ensure that the skills needed to be successful in first-year college mathematics courses are being taught.
4. Encourage all students to take more than 3 years of mathematics beyond pre-algebra.

Chart 4: Percent 'Below' and 'At or Above' a Fall College GPA of 2.50 by Science Course Sequence Patterns Studied in High School

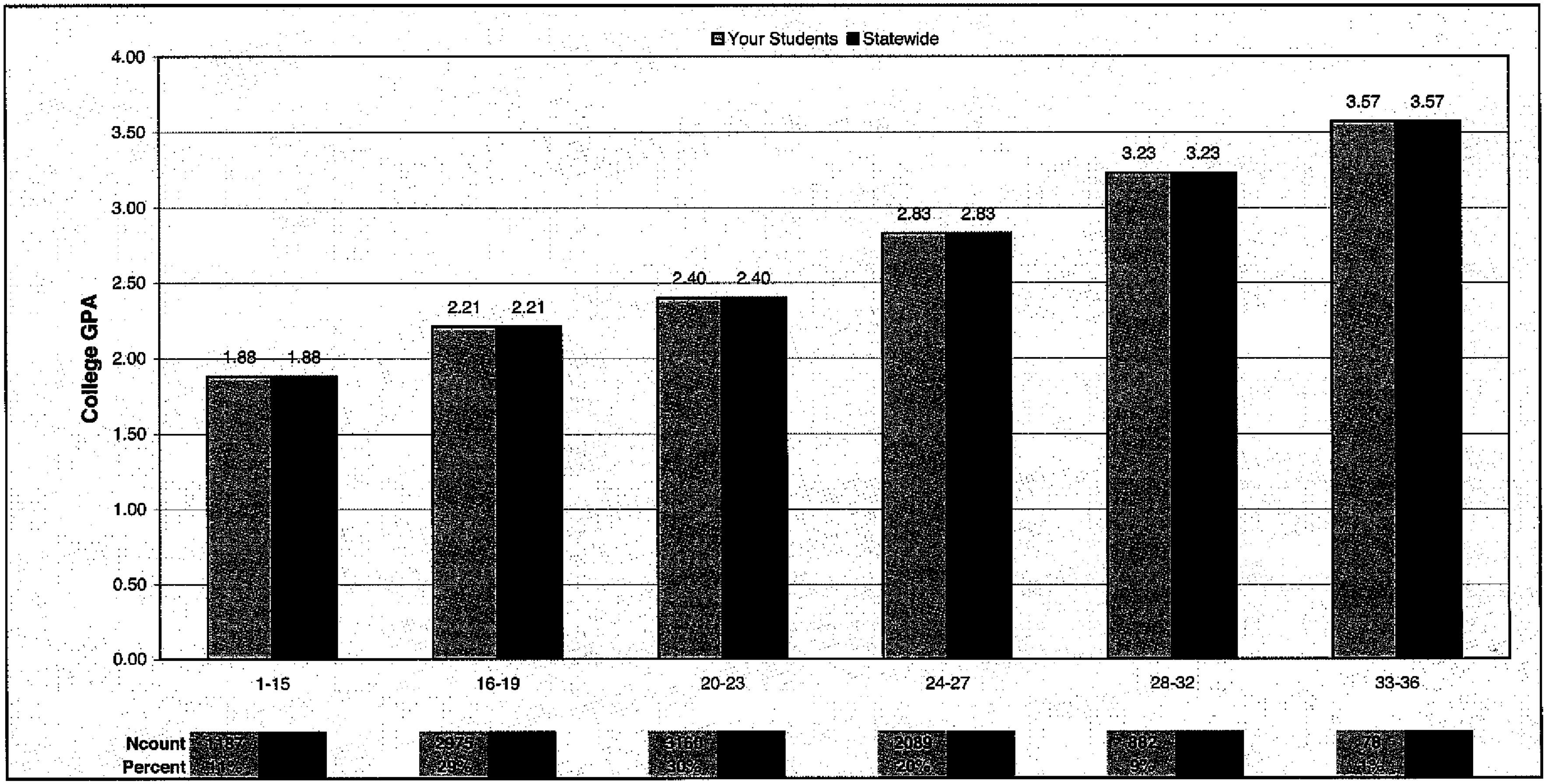
	N	%	GPA
Biology, Chemistry, Physics	246	3%	2.42
General Science, Biology, Chemistry, Physics	3170	35%	2.64
General Science, Biology, Chemistry	4375	48%	2.47
Less Than 3 Years	1247	14%	2.03
Total	9038	100%	2.47



What This Chart Tells You:
Students who took 3 or more years of science tend to earn higher grades in college. Comparisons by campus are shown in Table 5 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Monitor students' achievement of college-readiness skills using EPAS-EXPLORE (grades 8/9), PLAN (grade 10), and ACT (grades 11/12). Use the information from EXPLORE and PLAN to help students make proper course selections.
3. Using ACT's College Readiness Standards for Science, help the science teachers in your high school ensure that the skills needed to be successful in first-year college science courses are being taught.
4. Encourage all students to take more than 3 years of science beyond General Science.

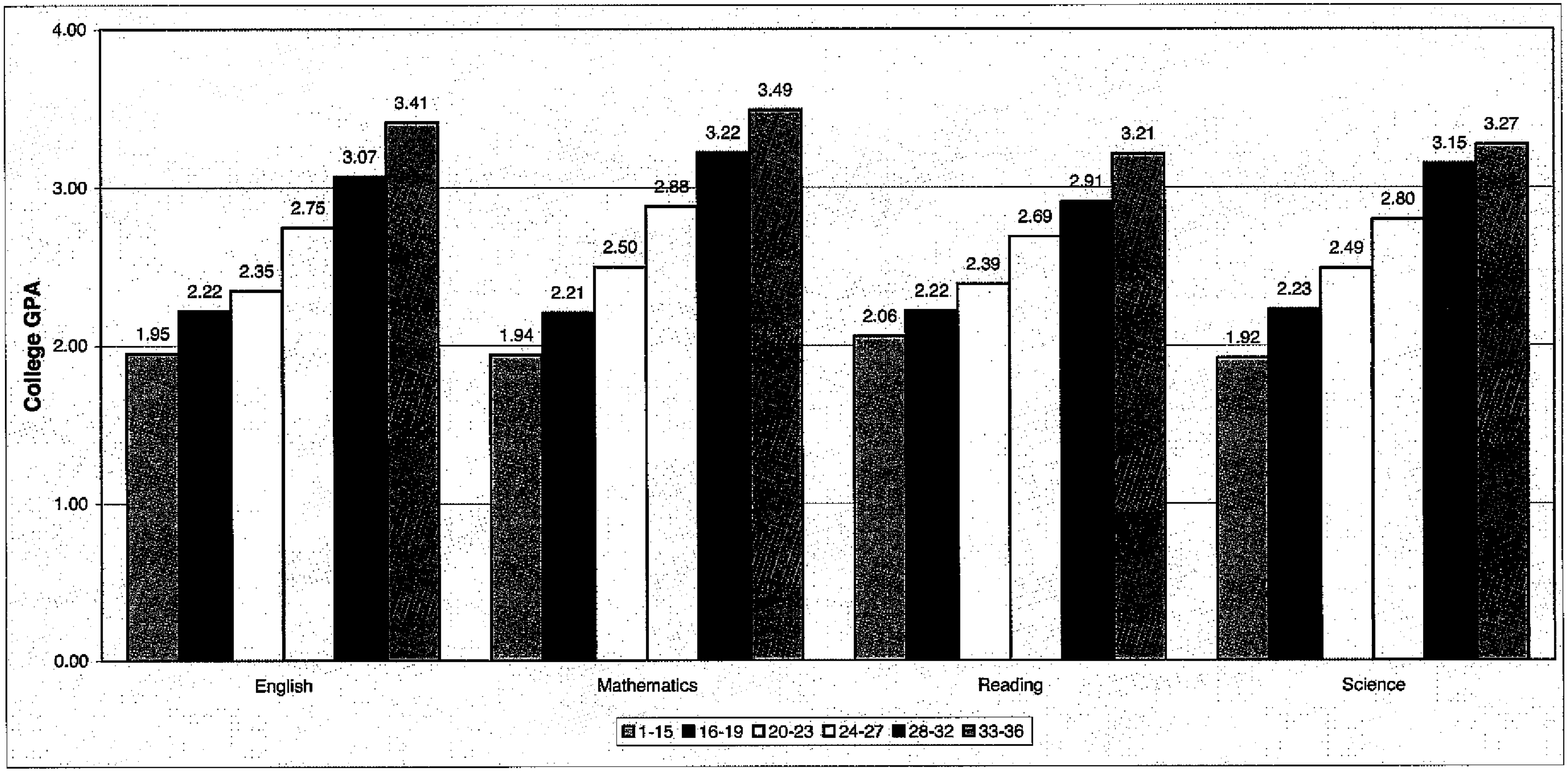
Chart 5: Local and Statewide Fall College GPAs by ACT College Readiness Standards Score Ranges



What This Chart Tells You:
Students in higher ACT College Readiness Standards (CRS) Score Ranges tend to earn higher college freshmen grades. College freshmen GPAs earned by your students and students statewide are shown by CRS Score Ranges. Comparisons by campus are shown in Table 6 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.
3. Using ACT's College Readiness Standards, review the skills needed to move your students to a higher score range. Higher scores can mean better grades in college.

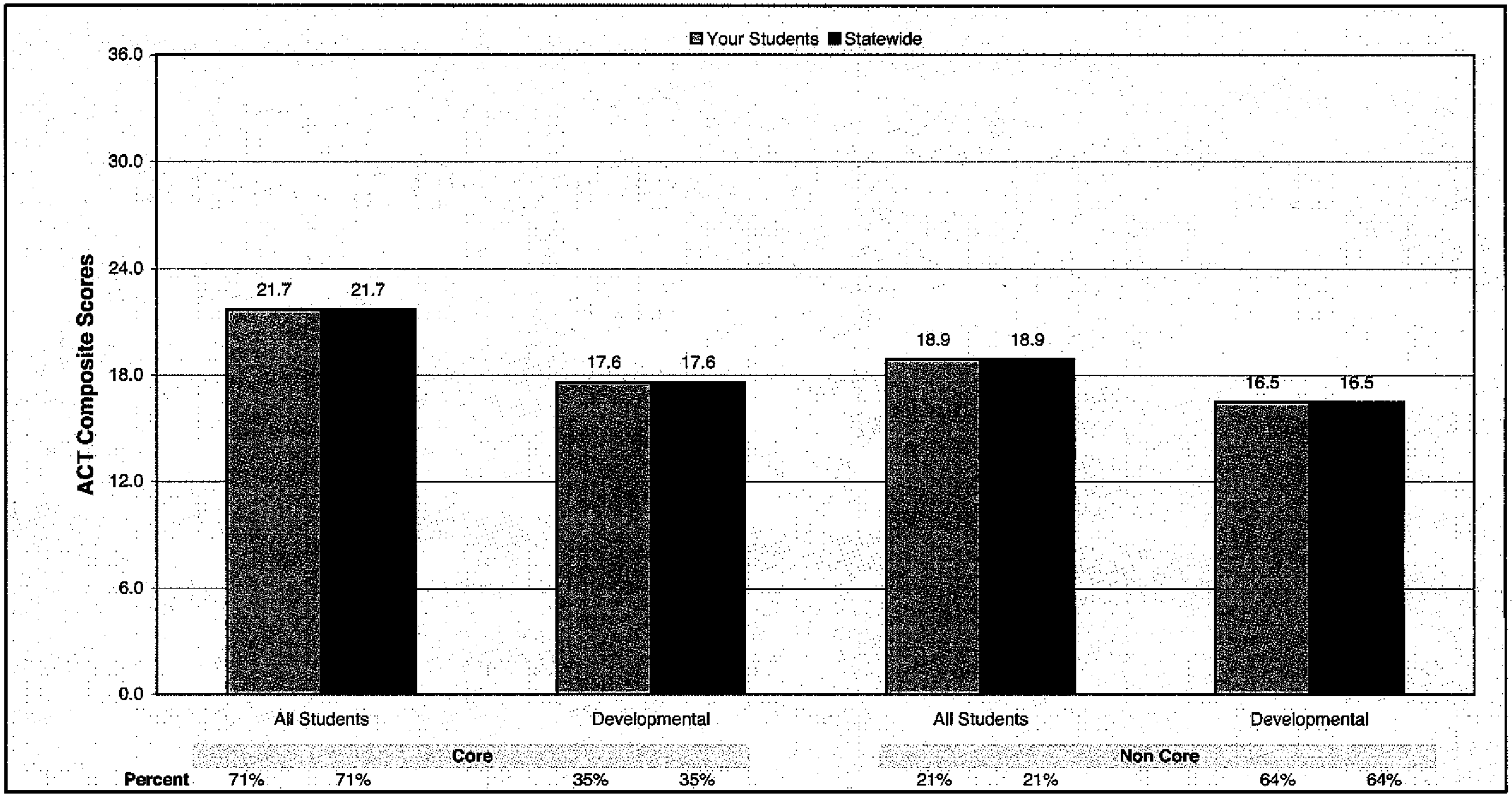
Chart 6: Fall College GPA by ACT College Readiness Standards Score Ranges and Test Subjects



What This Chart Tells You:
Across all test subjects, students with higher scores in each of the ACT College Readiness Standards (CRS) ranges tend to earn higher first year college grades. ACT scores are directly associated with freshmen success in college. Comparisons by campus are shown in Table 6 (Appendix).

Your Next Steps:
1. Monitor students' achievement of college-readiness skills using EPAS-EXPLORE (grades 8/9), PLAN (grade 10), and ACT (grades 11/12). Develop experiences for students to improve their skills in grades 8 through 12.
2. Using ACT's College Readiness Standards, review the skills needed to move your students, especially those in the lower two score ranges, to a higher score range. Higher scores generally mean higher college GPA.
3. Using ACT's College Readiness Standards, help teachers ensure that the skills needed to be successful in first-year college courses are being taught in their high school courses.

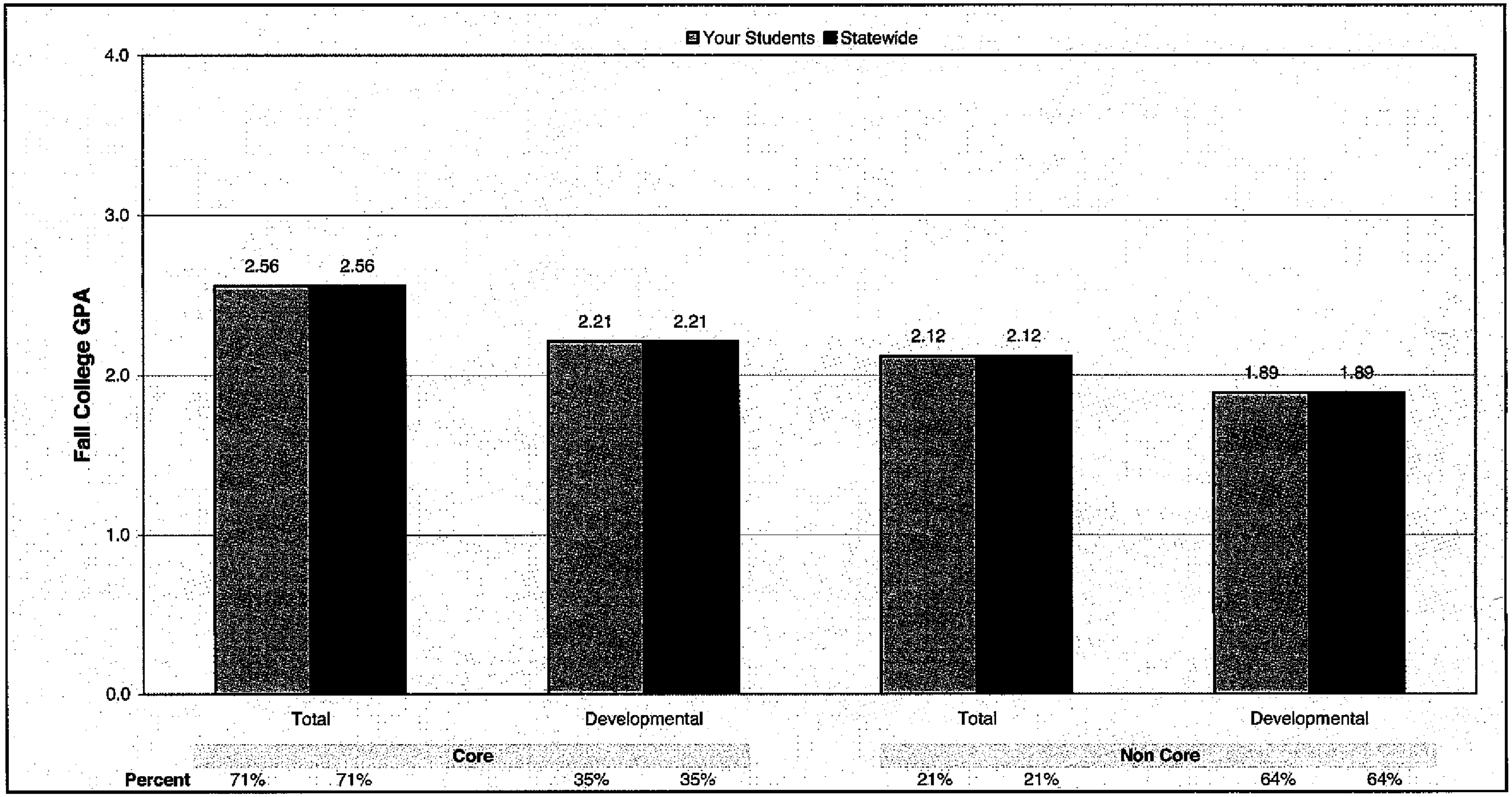
Chart 7a: Local and Statewide ACT Composite Test Scores for All Students and for Students Taking Developmental Courses by Core Course-Taking



What This Chart Tells You:
On average, students who completed the recommended core coursework earned higher ACT scores, higher college freshman grades, and are less likely to be assigned to developmental courses. Students assigned to developmental courses earned lower scores and grades compared to all students. The percentage of students listed as developmental are based on the total number in the core and non-core reference groups. Comparisons by campus are shown in Table 2 (Appendix).

Your Next Steps:
1. Make sure all students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards Ranges, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.

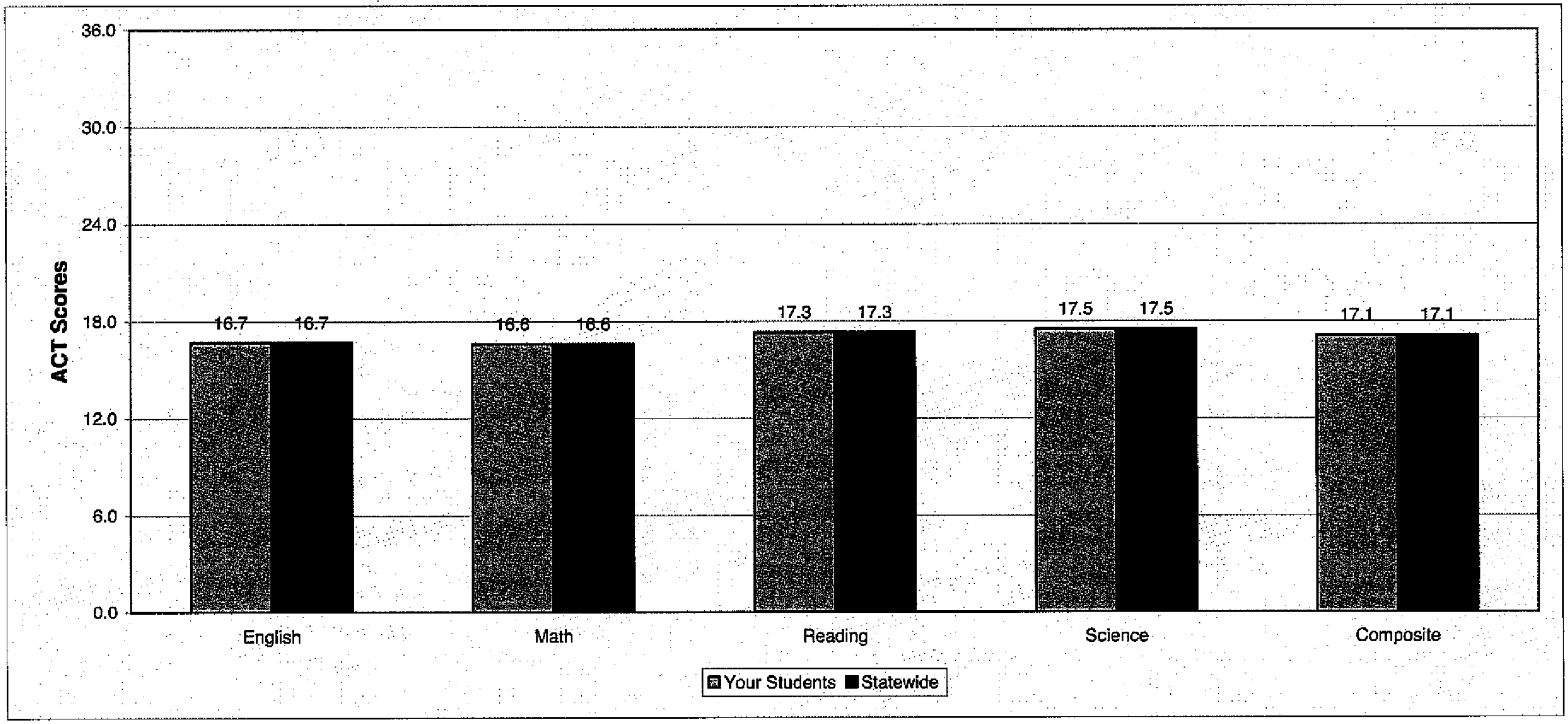
Chart 7b: Local and Statewide Fall College GPAs for All Students and for Students Taking Developmental Courses by Core Course-Taking



What This Chart Tells You:
On average, students who completed the recommended core coursework earned higher ACT scores, higher college freshman grades, and are less likely to be assigned to developmental courses. Students assigned to developmental courses earned lower scores and grades compared to all students. The percentage of students listed as developmental are based on the total number in the reference group. Comparisons by campus are shown in Table 2 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards Ranges, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.

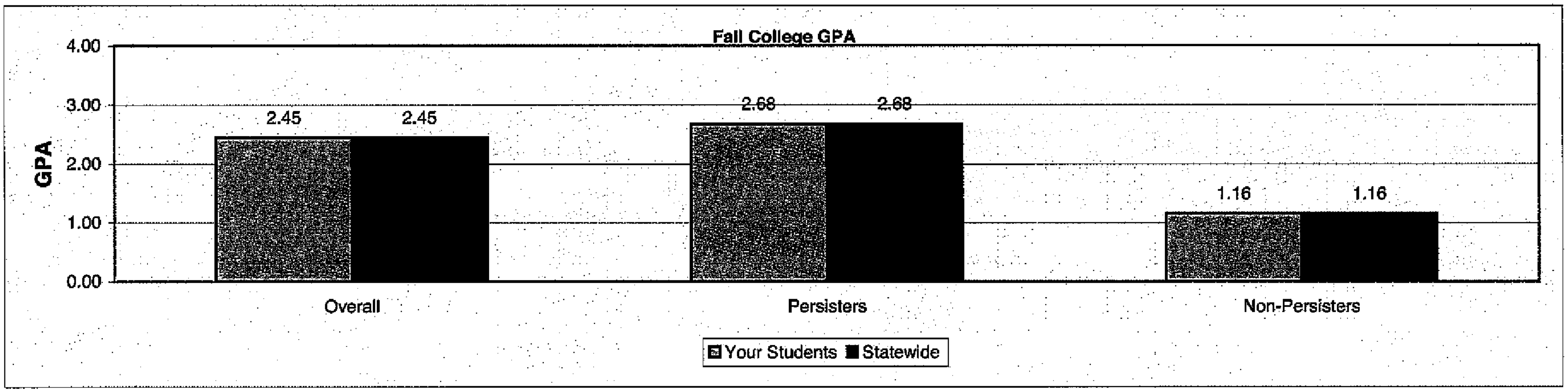
Chart 8: Local and Statewide Average ACT Scores for Students Assigned to Developmental Coursework in College Across Test Subjects

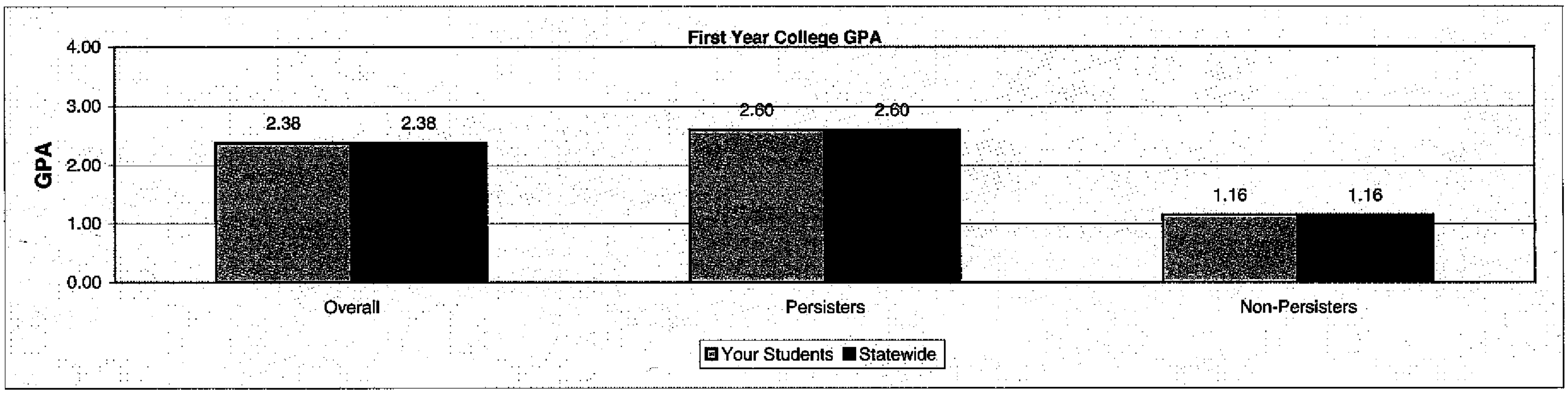


What This Chart Tells You:
Students who were identified as needing developmental coursework in college tend to earn lower ACT scores than those of all freshmen and are less likely to have taken the recommended rigorous coursework in high school. Comparisons by campus are shown in Tables 2 and 7 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Monitor students' achievement of college-readiness skills using EPAS-EXPLORE (grades 8/9), PLAN (grade 10), and ACT (grades 11/12).
3. Using ACT's College Readiness Standards, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.
4. Provide students with help both inside and outside the classroom (when needed) with tutors, teachers, and/or other helpers.

Chart 9: Local and Statewide Students Who Returned in the Spring Semester - Fall College GPA and First Year College GPA

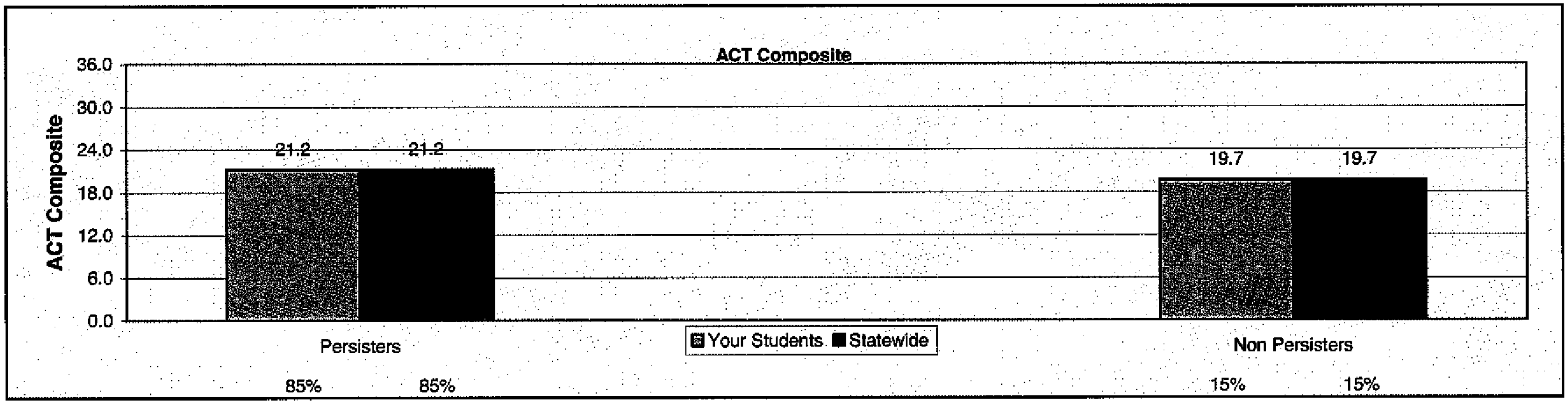


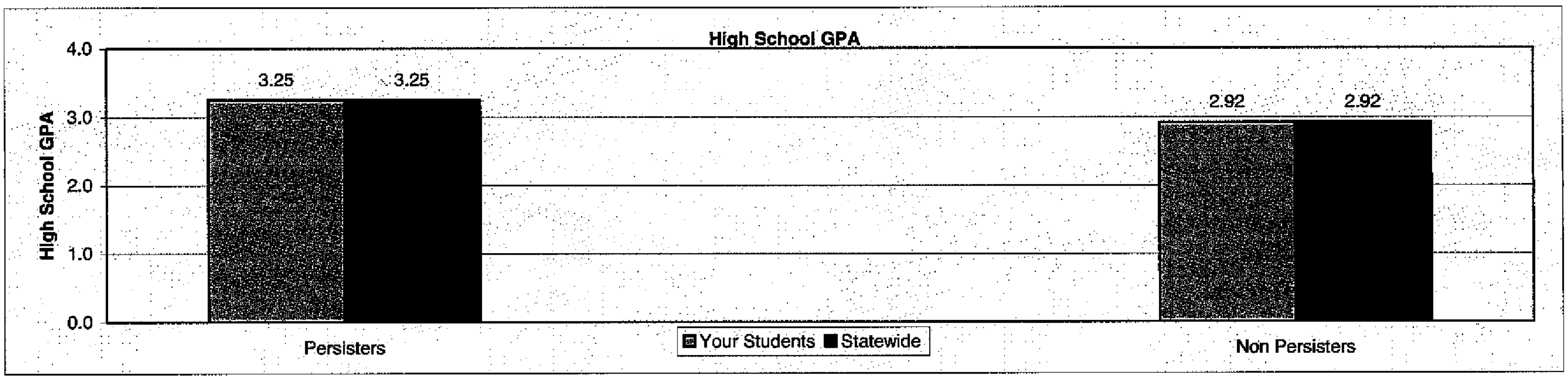


What This Chart Tells You:
This chart enables staff to compare your students to students statewide using first term GPA and first year GPA. Comparisons can be made for those who persisted into the spring semester with those who did not persist. Comparisons by campus are shown in Tables 1 and 8 (Appendix).

Your Next Steps:
1. Make sure all students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum. If scores and grades are not satisfactory, review your curriculum for rigor in the courses. Better academic readiness increases persistence.
2. Using ACT's College Readiness Standards, help teachers ensure that the skills needed to be successful in first-year college courses are being taught in their high school courses.

Chart 10: Local and Statewide Students Who Returned to the Same Campus in the Spring Semester (Persisters) and Those Who Did Not Return (Non-Persisters) - ACT Composite Score and High School GPA

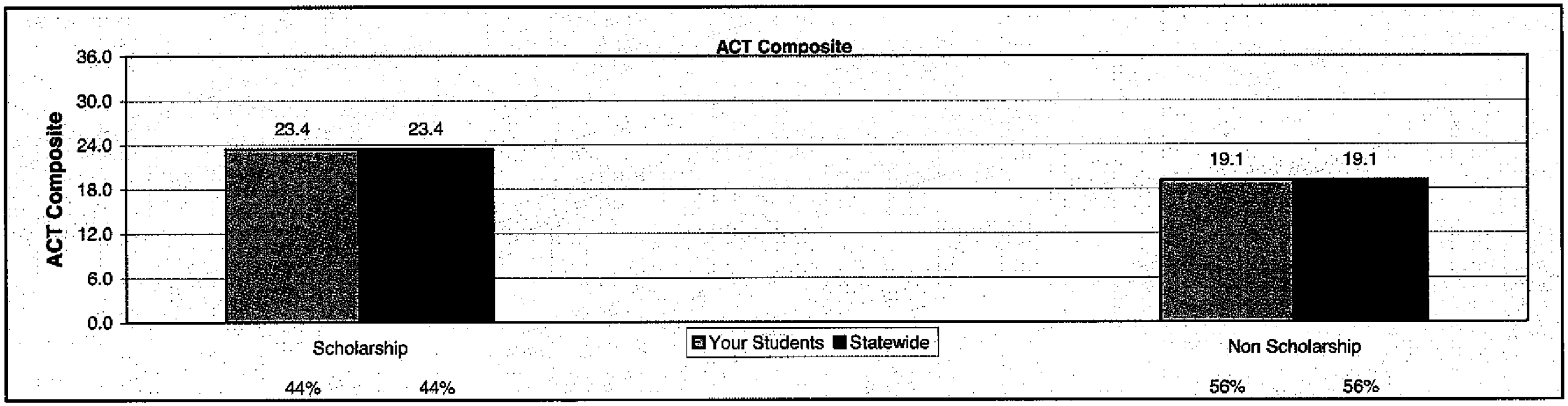


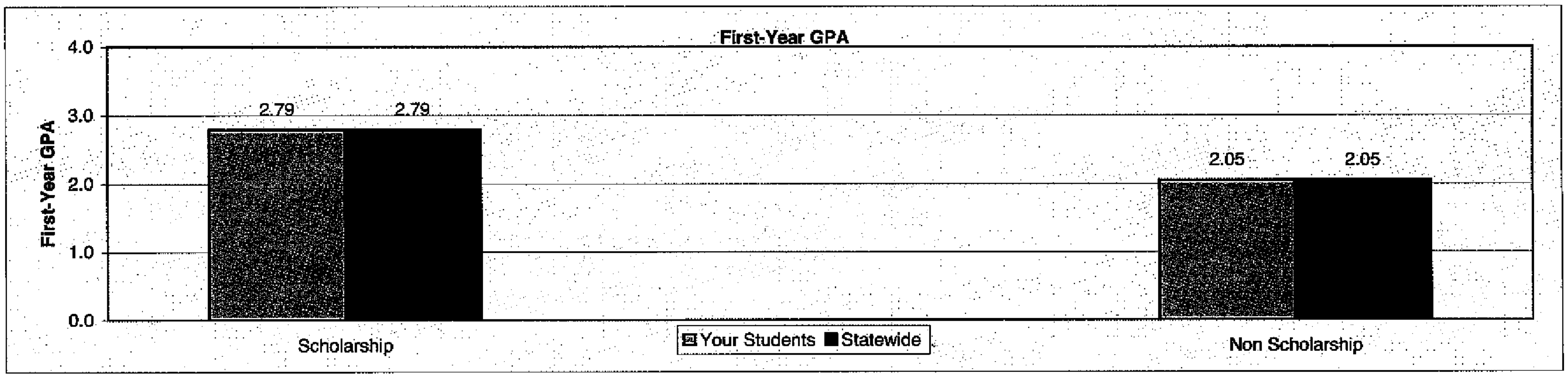


What This Chart Tells You:
Students who completed the freshman year of college and who returned for the spring semester tend to have higher ACT scores and higher high school grades than those who did not return. Comparisons by campus are shown in Table 8 (Appendix).

Your Next Steps:
1. Make sure all students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.
3. Using ACT's College Readiness Standards, help teachers ensure that the skills needed to be successful in first-year college courses are being taught in their high school courses.

Chart 11: Local and Statewide Students Who Did/Did Not Receive a State Scholarship - ACT Composite Score and First-Year GPA





What This Chart Tells You:
Students who received State Scholarships tend to have higher ACT scores and higher first year college GPAs than those who did not. Comparisons by campus are shown in Table 9 (Appendix).

Your Next Steps:
1. Make sure **all** students are taking college-preparatory courses and are taught a rigorous college-oriented curriculum.
2. Using ACT's College Readiness Standards, reevaluate your current high school course objectives, syllabi, and lesson plans for rigorous college-oriented content.
3. Using ACT's College Readiness Standards, help teachers ensure that the skills needed to be successful in first-year college courses are being taught in their high school courses.

Appendix

- **Detailed Summary Information by Campus**
- **Selected References and Resources**

Table 1: Summary Statistics for Your ACT-tested Students Compared to All Enrolled ACT-tested Students Statewide

Remarks: Table 1 allows you to address the following questions and evaluate the readiness of your students for college. Were average ACT composite scores for your students siimilar to all student freshmen? Did your students tend to earn less/more credit hours? How did your students compare with other freshmen on fall college GPA and first-year GPA?

		Your Students					All Enrolled Arkansas Students				
			Average					Average			
Code	Name	N	ACT Comp.	Credit Hrs	Fall GPA	Cum. GPA	N	ACT Comp.	Credit Hrs	Fall GPA	Cum. GPA
0144	UNIVERSITY OF ARKANSAS	1508	24.7	12.4	2.72	2.75	1508	24.7	12.4	2.72	2.75
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	22.4	12.4	2.61	2.56	1271	22.4	12.4	2.61	2.56
0116	ARKANSAS STATE UNIVERSITY	1150	21.3	12.2	2.62	2.52	1150	21.3	12.2	2.62	2.52
0114	ARKANSAS TECH UNIVERSITY	1028	22.0	12.2	2.55	2.48	1028	22.0	12.2	2.55	2.48
0122	UNIV OF ARKANSAS-FORT SMITH	659	21.1	11.3	2.37	2.24	659	21.1	11.3	2.37	2.24
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	20.3	9.8	2.38	2.30	569	20.3	9.8	2.38	2.30
0126	HENDERSON STATE UNIVERSITY	497	21.2	11.7	2.29	2.21	497	21.2	11.7	2.29	2.21
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	19.7	8.5	2.10	2.06	435	19.7	8.5	2.10	2.06
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	19.9	10.6	2.22	2.13	424	19.9	10.6	2.22	2.13
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	16.4	11.1	2.10	1.99	363	16.4	11.1	2.10	1.99
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	19.6	9.4	1.93	1.90	309	19.6	9.4	1.93	1.90
6364	PULASKI TECHNICAL COLLEGE	290	17.0	8.4	2.08	2.03	290	17.0	8.4	2.08	2.03
0142	SOUTHERN ARKANSAS UNIVERSITY	282	20.4	11.8	2.47	2.35	282	20.4	11.8	2.47	2.35
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	18.9	10.0	2.18	2.07	227	18.9	10.0	2.18	2.07
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	19.6	10.5	2.42	2.40	173	19.6	10.5	2.42	2.40
0115	NATIONAL PARK CC	109	18.2	11.5	2.36	2.20	109	18.2	11.5	2.36	2.20
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	17.6	10.1	2.45	2.42	108	17.6	10.1	2.45	2.42
0129	ARKANSAS NORTHEASTERN COLLEGE	107	18.2	9.3	2.26	2.16	107	18.2	9.3	2.26	2.16
4810	BLACK RIVER TECHNICAL COLLEGE	100	19.2	11.4	2.72	2.59	100	19.2	11.4	2.72	2.59
6011	MID-SOUTH COMMUNITY COLLEGE	84	17.4	8.8	2.21	2.02	84	17.4	8.8	2.21	2.02
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	17.1	11.8	2.39	2.28	80	17.1	11.8	2.39	2.28
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	20.1	9.0	1.95	1.88	73	20.1	9.0	1.95	1.88
6044	COSSATOT TECHNICAL COLLEGE	68	17.7	10.7	2.64	2.54	68	17.7	10.7	2.64	2.54
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	18.8	10.3	2.43	2.30	63	18.8	10.3	2.43	2.30
6026	OUACHITA TECHNICAL COLLEGE	62	18.5	11.3	2.53	2.37	62	18.5	11.3	2.53	2.37
5163	OZARKA COLLEGE	60	19.9	9.9	2.43	2.36	60	19.9	9.9	2.43	2.36
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	17.5	9.4	2.24	2.26	58	17.5	9.4	2.24	2.26
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	18.3	10.4	2.44	2.32	57	18.3	10.4	2.44	2.32
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	19.4	10.5	2.50	2.39	48	19.4	10.5	2.50	2.39
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	18.1	10.9	2.63	2.45	43	18.1	10.9	2.63	2.45
5568	SOUTHEAST ARKANSAS COLLEGE	37	17.8	10.3	2.25	2.13	37	17.8	10.3	2.25	2.13

Table 1: Summary Statistics for Your ACT-tested Students Compared to All Enrolled ACT-tested Students Statewide

Remarks: Table 1 allows you to address the following questions and evaluate the readiness of your students for college. Were average ACT composite scores for your students siimilar to all student freshmen? Did your students tend to earn less/more credit hours? How did your students compare with other freshmen on fall college GPA and first-year GPA?

		Your Students					All Enrolled Arkansas Students				
			Average					Average			
Code	Name	N	ACT Comp.	Credit Hrs	Fall GPA	Cum. GPA	N	ACT Comp.	Credit Hrs	Fall GPA	Cum. GPA
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	17.8	11.1	2.63	2.34	29	17.8	11.1	2.63	2.34
------	All Other Colleges	0	--	--	--	--	0	--	--	--	--
9999	All Institutions	10371	21.0	11.3	2.45	2.38	10371	21.0	11.3	2.45	2.38

Table 2: Summary Statistics for Your ACT-tested Students Who Did/Did Not Take Core Coursework

Remarks: On average, students who complete ACT recommended college preparatory coursework in high school (core) earn higher ACT composite scores, tend to earn more credit hours during the first semester of college, and earn higher first-term grades in college. Students who take core coursework in high school are also less likely to require developmental coursework during the first year of college. Proper college-readiness is strongly related to first-year college success. Every student should be challenged to take the necessary courses to be ready for college and the workplace.

		Your Students						Your Students Taking Core					Your Students Not Taking Core				
Code	Name	N	Avg. ACT Comp.	% Taking Core	Avg. Credit Hours	Avg. Fall GPA	Any Dev %	N	Avg. ACT Comp.	Avg. Credit Hours	Avg. Fall GPA	Any Dev %	N	Avg. ACT Comp.	Avg. Credit Hours	Avg. Fall GPA	Any Dev %
0144	UNIVERSITY OF ARKANSAS	1508	24.7	77	12.4	2.72	10	1159	24.9	12.6	2.76	9	203	24.2	11.7	2.64	10
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	22.4	76	12.4	2.61	26	966	22.8	12.8	2.70	22	219	20.3	11.3	2.31	44
0116	ARKANSAS STATE UNIVERSITY	1150	21.3	72	12.2	2.62	38	833	21.9	12.7	2.75	31	223	18.9	10.8	2.25	59
0114	ARKANSAS TECH UNIVERSITY	1028	22.0	75	12.2	2.55	34	772	22.6	12.8	2.66	26	168	19.7	10.2	2.09	61
0122	UNIV OF ARKANSAS-FORT SMITH	659	21.1	74	11.3	2.37	30	487	21.5	11.7	2.44	25	126	20.0	10.2	2.17	48
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	20.3	71	9.8	2.38	53	403	20.8	10.5	2.53	47	132	19.1	7.9	2.00	69
0126	HENDERSON STATE UNIVERSITY	497	21.2	76	11.7	2.29	33	377	21.6	12.2	2.39	29	84	19.6	9.9	1.87	51
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	19.7	66	8.5	2.10	59	288	20.4	8.8	2.19	51	114	18.1	7.9	1.97	81
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	19.9	72	10.6	2.22	47	306	20.5	11.3	2.43	40	82	18.1	8.6	1.65	72
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	16.4	62	11.1	2.10	91	224	17.1	11.7	2.28	87	110	15.1	10.1	1.78	98
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	19.6	70	9.4	1.93	54	215	20.4	10.3	2.11	44	81	17.4	6.9	1.49	80
6364	PULASKI TECHNICAL COLLEGE	290	17.0	61	8.4	2.08	80	178	17.5	8.9	2.13	78	91	16.1	7.3	1.90	85
0142	SOUTHERN ARKANSAS UNIVERSITY	282	20.4	71	11.8	2.47	47	200	21.1	12.1	2.56	36	54	17.9	10.6	2.20	78
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	18.9	64	10.0	2.18	71	145	19.3	10.5	2.29	68	66	18.0	8.5	1.88	79
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	19.6	66	10.5	2.42	59	114	20.4	11.0	2.52	49	42	17.9	9.6	2.18	76
0115	NATIONAL PARK CC	109	18.2	64	11.5	2.36	70	70	18.9	12.1	2.43	59	36	16.7	10.5	2.25	92
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	17.6	67	10.1	2.45	80	72	18.4	10.6	2.52	74	32	16.4	9.4	2.40	91
0129	ARKANSAS NORTHEASTERN COLLEGE	107	18.2	59	9.3	2.26	70	63	19.1	9.6	2.32	60	29	16.6	9.0	2.20	90
4810	BLACK RIVER TECHNICAL COLLEGE	100	19.2	70	11.4	2.72	62	70	19.7	11.7	2.76	56	20	17.7	10.5	2.37	80
6011	MID-SOUTH COMMUNITY COLLEGE	84	17.4	46	8.8	2.21	77	39	18.6	9.3	2.24	64	34	15.9	7.8	2.10	91
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	17.1	46	11.8	2.39	85	37	17.9	12.1	2.30	78	37	16.2	11.4	2.42	92
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	20.1	67	9.0	1.95	58	49	20.7	10.0	2.23	47	17	18.9	6.8	1.45	76
6044	COSSATOT TECHNICAL COLLEGE	68	17.7	62	10.7	2.64	68	42	18.5	11.1	2.84	60	20	16.1	10.0	2.37	80
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	18.8	65	10.3	2.43	63	41	19.8	10.8	2.58	54	17	16.8	9.4	2.08	82
6026	OUACHITA TECHNICAL COLLEGE	62	18.5	60	11.3	2.53	74	37	18.9	11.8	2.71	70	20	17.9	10.4	2.26	75
5163	OZARKA COLLEGE	60	19.9	67	9.9	2.43	57	40	20.2	10.6	2.49	55	13	18.9	8.7	2.43	69
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	17.5	57	9.4	2.24	79	33	18.6	10.5	2.43	67	22	16.1	8.3	2.07	95
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	18.3	68	10.4	2.44	70	39	18.4	10.3	2.47	69	15	18.2	10.1	2.28	67
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	19.4	73	10.5	2.50	60	35	19.9	11.5	2.66	54	12	17.9	8.2	2.15	75
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	18.1	67	10.9	2.63	74	29	18.8	11.2	2.74	66	11	16.0	10.7	2.51	100

Table 2: Summary Statistics for Your ACT-tested Students Who Did/Did Not Take Core Coursework

Remarks: On average, students who complete ACT recommended college preparatory coursework in high school (core) earn higher ACT composite scores, tend to earn more credit hours during the first semester of college, and earn higher first-term grades in college. Students who take core coursework in high school are also less likely to require developmental coursework during the first year of college. Proper college-readiness is strongly related to first-year college success. Every student should be challenged to take the necessary courses to be ready for college and the workplace.

		Your Students						Your Students Taking Core					Your Students Not Taking Core				
Code	Name	N	Avg. ACT Comp.	% Taking Core	Avg. Credit Hours	Avg. Fall GPA	Any Dev %	N	Avg. ACT Comp.	Avg. Credit Hours	Avg. Fall GPA	Any Dev %	N	Avg. ACT Comp.	Avg. Credit Hours	Avg. Fall GPA	Any Dev %
5568	SOUTHEAST ARKANSAS COLLEGE	37	17.8	51	10.3	2.25	73	19	17.9	11.7	2.55	74	12	17.3	7.4	1.52	75
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	17.8	52	11.1	2.63	83	15	17.6	10.1	2.69	80	12	18.1	12.1	2.33	92
------	All Other Colleges	0	--	--	--	--	--	0	--	--	--	--	0	--	--	--	--
9999	All Institutions	10371	21.0	71	11.3	2.45	42	7397	21.7	11.8	2.56	35	2154	18.9	9.8	2.12	64

Table 3: Average Fall GPA and Hours Completed for Your ACT-tested Students by ACT College Readiness Benchmark Scores

Remarks: As shown in the table, students who obtained the benchmark scores tended to earn higher grades in college and enrolled in more credit hours. Students become ready for college by taking rigorous coursework--especially in mathematics and science. Students who earn an English score of 18 or higher have at least a 50% chance of earning a B or higher in freshmen English composition. Students who earn a mathematics score of 22 or higher have a 50% chance or higher of earning a B or higher in college algebra. Students who earn a reading score of 21 or higher have a 50% chance or higher of earning a B or higher in college level social studies. Students who earn a science score of 24 or higher have a 50% chance or higher of earning a B or higher in college biology. Suggestions for improving ACT scores and college readiness skills are contained in the references given in the Appendix (pg. 23).

		ACT Benchmark Scores																							
		English						Mathematics						Reading						Science					
		Less Than 18			18 or Higher			Less Than 22			22 or Higher			Less Than 21			21 or Higher			Less Than 24			24 or Higher		
Code	Name	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS
0144	UNIVERSITY OF ARKANSAS	46	1.98	11.2	1462	2.74	12.4	475	2.37	11.6	1033	2.88	12.7	348	2.41	11.9	1160	2.81	12.5	816	2.48	11.9	692	3.00	12.9
0118	UNIVERSITY OF CENTRAL ARKANSA	234	2.12	10.6	1037	2.72	12.9	696	2.27	11.3	575	3.02	13.7	509	2.26	11.1	762	2.85	13.3	862	2.39	11.8	409	3.07	13.9
0116	ARKANSAS STATE UNIVERSITY	255	2.21	10.8	895	2.74	12.5	680	2.32	11.0	470	3.05	13.8	489	2.34	11.2	661	2.83	12.9	871	2.50	11.7	279	3.01	13.7
0114	ARKANSAS TECH UNIVERSITY	217	2.12	10.4	811	2.66	12.7	561	2.21	11.0	467	2.96	13.8	410	2.19	10.8	618	2.79	13.2	703	2.37	11.5	325	2.94	13.7
0122	UNIV OF ARKANSAS-FORT SMITH	148	2.10	9.5	511	2.45	11.8	383	2.19	10.3	276	2.63	12.7	324	2.18	10.2	335	2.57	12.4	500	2.27	10.7	159	2.69	13.1
0132	UNIVERSITY OF ARKANSAS AT LITTL	179	2.06	8.3	390	2.53	10.5	398	2.16	8.9	171	2.90	11.8	296	2.15	8.8	273	2.63	10.9	447	2.26	9.2	122	2.84	11.9
0126	HENDERSON STATE UNIVERSITY	106	1.90	9.8	391	2.40	12.2	308	2.04	10.8	189	2.70	13.1	213	2.04	10.8	284	2.48	12.4	378	2.18	11.2	119	2.63	13.2
4726	NORTHWEST ARKANSAS COMMUNIT	148	1.98	8.2	287	2.16	8.6	331	1.99	8.2	104	2.47	9.4	264	2.02	8.4	171	2.23	8.6	387	2.08	8.3	48	2.28	9.7
0117	ARKANSAS STATE UNIVERSITY-BEE	127	1.80	9.4	297	2.40	11.1	305	2.03	9.8	119	2.71	12.4	237	1.97	9.6	187	2.54	11.8	363	2.14	10.2	61	2.70	12.9
0108	UNIVERSITY OF ARKANSAS AT PINE	232	1.82	10.2	131	2.60	12.6	345	2.05	10.9	18	3.02	14.4	314	2.00	10.8	49	2.72	13.1	359	2.10	11.1	4	--	--
0110	UNIVERSITY OF ARKANSAS AT MON	103	1.39	7.0	206	2.20	10.5	220	1.70	8.4	89	2.52	11.6	182	1.66	8.3	127	2.33	10.9	264	1.83	8.9	45	2.54	12.0
6364	PULASKI TECHNICAL COLLEGE	159	1.93	7.7	131	2.27	9.2	270	2.08	8.3	20	2.18	9.4	223	2.02	8.1	67	2.29	9.2	278	2.09	8.4	12	1.94	8.8
0142	SOUTHERN ARKANSAS UNIVERSITY	82	2.15	10.6	200	2.60	12.3	192	2.30	11.2	90	2.83	13.1	158	2.33	11.4	124	2.65	12.2	243	2.39	11.5	39	2.99	13.4
5531	UNIV OF ARKANSAS COMM COLL-MC	94	2.08	10.0	133	2.24	10.0	184	2.14	9.8	43	2.35	10.9	150	2.17	10.2	77	2.18	9.5	206	2.16	9.9	21	2.30	10.5
0113	NORTH ARKANSAS COMMUNITY/TEC	63	2.16	9.6	110	2.57	11.1	132	2.36	10.2	41	2.63	11.8	96	2.26	10.0	77	2.62	11.3	154	2.36	10.4	19	2.87	11.8
0115	NATIONAL PARK CC	51	2.12	10.7	58	2.56	12.2	97	2.31	11.3	12	2.74	12.9	83	2.31	11.2	26	2.51	12.3	102	2.32	11.3	7	2.87	13.6
0109	EAST ARKANSAS COMMUNITY COLL	58	2.29	9.7	50	2.62	10.5	95	2.35	9.8	13	3.16	11.6	85	2.31	9.8	23	2.93	11.0	101	2.40	10.0	7	3.12	10.7
0129	ARKANSAS NORTHEASTERN COLLE	49	2.06	8.7	58	2.43	9.8	95	2.30	9.4	12	1.98	8.1	73	2.17	9.0	34	2.47	10.0	101	2.28	9.3	6	2.03	9.3
4810	BLACK RIVER TECHNICAL COLLEGE	35	2.60	10.5	65	2.78	11.9	78	2.68	11.3	22	2.85	11.7	63	2.75	11.6	37	2.67	11.2	89	2.81	11.7	11	2.03	8.9
6011	MID-SOUTH COMMUNITY COLLEGE	44	2.37	8.8	40	2.04	8.9	74	2.22	8.8	10	2.13	9.2	62	2.34	9.0	22	1.84	8.2	79	2.28	9.0	5	1.16	6.4
6031	SOUTHERN ARKANSAS UNIVERSITY	49	2.32	11.3	31	2.51	12.7	74	2.35	11.6	6	2.90	14.8	61	2.42	11.8	19	2.30	11.9	79	2.38	11.7	1	--	--
4723	ARKANSAS STATE UNIVERSITY-MOU	20	1.41	6.1	53	2.15	10.1	56	1.91	8.4	17	2.10	10.8	36	1.64	7.2	37	2.25	10.7	61	1.97	8.8	12	1.85	9.8
6044	COSSATOT TECHNICAL COLLEGE	33	2.36	9.9	35	2.91	11.4	61	2.55	10.2	7	3.43	14.4	55	2.69	10.9	13	2.42	9.6	64	2.67	10.7	4	--	--
5161	UNIV OF ARKANSAS COMM COLL-BA	27	2.26	9.8	36	2.56	10.7	51	2.37	10.2	12	2.70	10.8	37	2.27	10.2	26	2.66	10.5	58	2.46	10.4	5	2.16	9.2
6026	OUACHITA TECHNICAL COLLEGE	27	2.34	10.3	35	2.67	12.0	49	2.46	10.8	13	2.79	12.8	43	2.40	11.0	19	2.80	11.8	60	2.51	11.1	2	--	--
5163	OZARKA COLLEGE	22	2.33	9.6	38	2.49	10.0	49	2.22	9.4	11	3.35	11.7	31	2.19	9.1	29	2.68	10.7	47	2.25	9.4	13	3.06	11.5
6609	SOUTH ARKANSAS COMMUNITY COL	34	1.95	8.3	24	2.65	11.1	47	2.12	9.0	11	2.75	11.3	43	2.10	8.7	15	2.64	11.7	52	2.14	8.9	6	3.07	14.0
6271	UNIVERSITY OF ARKANSAS COMM C	20	1.67	8.1	37	2.85	11.7	50	2.41	10.6	7	2.65	9.4	40	2.27	9.4	17	2.83	12.8	54	2.37	10.4	3	--	--
6207	RICH MOUNTAIN COMMUNITY COLLE	20	2.51	10.7	28	2.50	10.4	36	2.58	10.4	12	2.27	10.8	30	2.45	10.6	18	2.59	10.4	46	2.53	10.7	2	--	--
4720	ARKANSAS STATE UNIVERSITY-NEW	28	2.67	11.3	15	2.54	10.1	36	2.67	11.1	7	2.42	9.7	30	2.68	11.5	13	2.49	9.4	38	2.64	10.9	5	2.52	10.4

Table 3: Average Fall GPA and Hours Completed for Your ACT-tested Students by ACT College Readiness Benchmark Scores

Remarks: As shown in the table, students who obtained the benchmark scores tended to earn higher grades in college and enrolled in more credit hours. Students become ready for college by taking rigorous coursework--especially in mathematics and science. Students who earn an English score of 18 or higher have at least a 50% chance of earning a B or higher in freshmen English composition. Students who earn a mathematics score of 22 or higher have a 50% chance or higher of earning a B or higher in college algebra. Students who earn a reading score of 21 or higher have a 50% chance or higher of earning a B or higher in college level social studies. Students who earn a science score of 24 or higher have a 50% chance or higher of earning a B or higher in college biology. Suggestions for improving ACT scores and college readiness skills are contained in the references given in the Appendix (pg. 23).

		ACT Benchmark Scores																							
		English						Mathematics						Reading						Science					
		Less Than 18			18 or Higher			Less Than 22			22 or Higher			Less Than 21			21 or Higher			Less Than 24			24 or Higher		
Code	Name	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS	N	CGPA	HRS
5568	SOUTHEAST ARKANSAS COLLEGE	17	2.44	10.7	20	2.08	10.0	32	2.16	10.1	5	2.78	11.6	28	2.16	10.3	9	2.51	10.6	37	2.25	10.3	0	--	--
0125	PHILLIPS COMMUNITY COLLEGE OF	16	2.71	12.3	13	2.53	9.7	27	2.57	11.1	2	--	--	19	2.77	12.3	10	2.36	9.0	28	2.62	11.1	1	--	--
------	All Other Colleges	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--	0	--	--
9999	All Institutions	2743	2.06	9.6	7628	2.59	11.9	6487	2.20	10.3	3884	2.86	12.9	5032	2.19	10.3	5339	2.69	12.2	7927	2.31	10.8	2444	2.89	13.0

Table 4: Fall College GPA by Mathematics Course Patterns Taken by Your ACT-tested Students

Remarks: Students who elect to take more rigorous coursework in mathematics tend to earn higher ACT mathematics scores, higher ACT composite scores, and higher first-term college grades. ACT recommends that all high school students complete 3 or more years of mathematics beyond pre-algebra in high school. Many colleges and universities now want students to have completed 4 years of mathematics while in high school. Many academic majors in the Associate of Science programs in community colleges also demand a strong background in high school mathematics. Encourage all students to take 4 years of mathematics in high school.

		First-Term College Fall GPA by Mathematics Course Sequence Patterns									
		Less Than 3 yrs.		Algebra 1, Algebra 2, Geometry		Algebra 1, Algebra 2, Geometry, Trigonometry		Algebra 1, Algebra 2, Geometry, Trigonometry, Other Adv. Math		Algebra 1, Algebra 2, Geometry, Trigonometry, Calculus	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA
0144	UNIVERSITY OF ARKANSAS	46	2.65	52	2.52	136	2.53	200	2.69	201	2.93
0118	UNIVERSITY OF CENTRAL ARKANSAS	54	2.10	132	1.96	135	2.59	152	3.06	97	3.21
0116	ARKANSAS STATE UNIVERSITY	54	1.89	167	2.21	122	2.59	110	2.89	140	3.15
0114	ARKANSAS TECH UNIVERSITY	45	2.05	129	2.05	109	2.38	108	2.90	75	3.17
0122	UNIV OF ARKANSAS-FORT SMITH	37	2.23	75	1.99	64	2.06	73	2.59	43	2.70
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	33	1.91	100	1.77	50	2.82	59	2.66	27	2.73
0126	HENDERSON STATE UNIVERSITY	19	1.40	62	1.86	74	2.32	59	2.61	30	2.77
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	38	1.61	77	2.11	40	1.99	54	2.65	9	2.38
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	25	1.26	92	1.69	27	2.61	28	2.71	18	2.58
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	50	1.72	86	1.74	33	2.53	9	2.01	29	2.91
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	27	1.31	60	1.42	39	2.14	24	2.62	19	2.96
6364	PULASKI TECHNICAL COLLEGE	28	1.44	65	2.16	19	2.36	11	2.48	7	2.39
0142	SOUTHERN ARKANSAS UNIVERSITY	18	2.08	49	2.06	32	2.44	35	2.78	16	3.09
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	17	1.74	43	2.00	23	2.47	19	2.21	9	2.57
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	16	2.24	48	2.02	18	2.68	17	2.23	14	3.02
0115	NATIONAL PARK CC	15	2.17	37	2.43	11	2.60	3	--	2	--
0109	EAST ARKANSAS COMMUNITY COLLEGE	14	2.14	28	2.59	8	2.28	11	3.19	2	--
0129	ARKANSAS NORTHEASTERN COLLEGE	7	1.57	26	2.24	12	1.80	4	--	5	2.25
4810	BLACK RIVER TECHNICAL COLLEGE	10	2.36	20	2.51	8	3.12	8	3.01	12	2.25
6011	MID-SOUTH COMMUNITY COLLEGE	10	2.30	25	2.00	12	2.50	4	--	2	--
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	11	2.12	33	2.27	3	--	9	2.19	1	--
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	5	0.54	15	1.69	5	2.11	7	1.86	1	--
6044	COSSATOT TECHNICAL COLLEGE	6	2.21	16	2.16	11	3.03	4	--	4	--
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	8	1.50	10	2.35	3	--	9	3.10	2	--
6026	OUACHITA TECHNICAL COLLEGE	8	2.38	13	2.48	7	2.88	2	--	1	--
5163	OZARKA COLLEGE	3	--	14	2.44	7	3.36	2	--	4	--
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	6	1.62	18	1.94	10	2.74	6	2.57	1	--
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	6	2.25	14	2.14	10	2.39	3	--	1	--

Table 4: Fall College GPA by Mathematics Course Patterns Taken by Your ACT-tested Students

Remarks: Students who elect to take more rigorous coursework in mathematics tend to earn higher ACT mathematics scores, higher ACT composite scores, and higher first-term college grades. ACT recommends that all high school students complete 3 or more years of mathematics beyond pre-algebra in high school. Many colleges and universities now want students to have completed 4 years of mathematics while in high school. Many academic majors in the Associate of Science programs in community colleges also demand a strong background in high school mathematics. Encourage all students to take 4 years of mathematics in high school.

		First-Term College Fall GPA by Mathematics Course Sequence Patterns									
		Less Than 3 yrs.		Algebra 1, Algebra 2, Geometry		Algebra 1, Algebra 2, Geometry, Trigonometry		Algebra 1, Algebra 2, Geometry, Trigonometry, Other Adv. Math		Algebra 1, Algebra 2, Geometry, Trigonometry, Calculus	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA
6207	RICH MOUNTAIN COMMUNITY COLLEGE	4	--	12	1.71	2	--	4	--	4	--
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	4	--	12	2.71	6	2.55	5	2.82	1	--
5568	SOUTHEAST ARKANSAS COLLEGE	4	--	12	2.44	4	--	1	--	2	--
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	2	--	8	2.27	6	2.96	1	--	0	--
------	All Other Colleges	0	--	0	--	0	--	0	--	0	--
9999	All Institutions	630	1.93	1550	2.03	1046	2.47	1041	2.75	779	2.98

Table 5: Fall College GPA by Science Course Patterns Taken by Your ACT-tested Students

Remarks: Students who elect to take a more rigorous pattern of science courses earn higher grades during the first-term (fall) of college. ACT recommends that students take at least 3 years of science in high school. The ACT Science benchmark score of 24 is associated with a 50% chance or higher of earning a B or higher in college Biology. See "On Course for Success," referenced in the Appendix (pg. 23), for the science skills needed to be successful in college.

		First-Term College Fall GPA by Science Course Sequence Patterns							
		Less Than 3 yrs.		General Science, Biology, Chemistry		General Science, Biology, Chemistry, Physics		Biology, Chemistry, Physics	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA
0144	UNIVERSITY OF ARKANSAS	78	2.71	550	2.70	614	2.79	53	2.95
0118	UNIVERSITY OF CENTRAL ARKANSAS	120	2.15	535	2.63	441	2.78	41	2.41
0116	ARKANSAS STATE UNIVERSITY	138	2.08	475	2.63	389	2.89	16	2.67
0114	ARKANSAS TECH UNIVERSITY	86	1.86	443	2.59	343	2.75	15	2.78
0122	UNIV OF ARKANSAS-FORT SMITH	61	2.08	286	2.42	205	2.39	5	2.83
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	69	2.02	222	2.40	184	2.59	32	2.06
0126	HENDERSON STATE UNIVERSITY	41	1.81	212	2.28	167	2.51	16	1.55
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	59	1.92	218	2.15	86	2.31	9	1.72
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	49	1.39	223	2.31	97	2.56	2	--
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	66	1.85	137	2.15	93	2.28	17	2.62
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	53	1.45	162	2.05	67	2.18	1	--
6364	PULASKI TECHNICAL COLLEGE	54	2.05	101	2.05	68	2.26	34	1.97
0142	SOUTHERN ARKANSAS UNIVERSITY	39	2.09	132	2.53	75	2.62	0	--
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	46	1.89	108	2.28	43	2.21	0	--
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	34	2.15	78	2.52	41	2.48	0	--
0115	NATIONAL PARK CC	25	2.19	45	2.45	24	2.30	0	--
0109	EAST ARKANSAS COMMUNITY COLLEGE	21	2.38	40	2.73	30	2.18	4	--
0129	ARKANSAS NORTHEASTERN COLLEGE	23	2.07	46	2.42	19	2.06	0	--
4810	BLACK RIVER TECHNICAL COLLEGE	12	2.27	57	2.78	15	2.48	0	--
6011	MID-SOUTH COMMUNITY COLLEGE	27	1.98	28	2.43	17	2.05	0	--
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	30	2.49	19	2.19	16	2.44	0	--
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	12	1.23	39	2.16	10	2.38	1	--
6044	COSSATOT TECHNICAL COLLEGE	11	2.25	30	2.81	17	2.66	0	--
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	11	1.85	30	2.53	15	2.76	0	--
6026	OUACHITA TECHNICAL COLLEGE	16	2.15	25	2.65	14	2.88	0	--
5163	OZARKA COLLEGE	8	2.44	31	2.39	14	2.67	0	--
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	16	1.95	25	2.47	13	2.39	0	--
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	9	2.28	23	2.31	12	2.53	0	--
6207	RICH MOUNTAIN COMMUNITY COLLEGE	8	1.84	12	2.67	17	2.97	0	--

Table 5: Fall College GPA by Science Course Patterns Taken by Your ACT-tested Students

Remarks: Students who elect to take a more rigorous pattern of science courses earn higher grades during the first-term (fall) of college. ACT recommends that students take at least 3 years of science in high school. The ACT Science benchmark score of 24 is associated with a 50% chance or higher of earning a B or higher in college Biology. See "On Course for Success," referenced in the Appendix (pg. 23), for the science skills needed to be successful in college.

		First-Term College Fall GPA by Science Course Sequence Patterns							
		Less Than 3 yrs.		General Science, Biology, Chemistry		General Science, Biology, Chemistry, Physics		Biology, Chemistry, Physics	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	10	2.55	17	2.57	13	2.92	0	--
5568	SOUTHEAST ARKANSAS COLLEGE	7	1.76	18	2.10	4	--	0	--
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	8	2.24	8	3.02	7	2.23	0	--
------	All Other Colleges	0	--	0	--	0	--	0	--
9999	All Institutions	1247	2.03	4375	2.47	3170	2.64	246	2.42

Table 6: Average Fall GPA for Your ACT-tested Students by ACT College Readiness Standards Score Ranges

Remarks: The ACT College Readiness Standards (CRS) Score Ranges are directly associated with average first semester grade point average. Higher scores are associated with higher grades. To help secondary school students develop better educational backgrounds, see the "College Readiness Standards", referenced in the Appendix. Depending on the score range, suggestions are provided to help students strengthen their skills to reach the next score range level. All secondary students can develop better college readiness by taking more rigorous courses in high school, which in turn leads to higher ACT test scores and better preparation for college.

		College Freshmen Fall GPA by ACT CRS Score Ranges											
		1-15		16-19		20-23		24-27		28-32		33-36	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA
0144	UNIVERSITY OF ARKANSAS	7	1.55	123	2.35	515	2.40	469	2.71	334	3.22	60	3.59
0118	UNIVERSITY OF CENTRAL ARKANSAS	80	2.20	299	2.13	385	2.38	297	2.96	200	3.37	10	3.57
0116	ARKANSAS STATE UNIVERSITY	106	2.10	304	2.29	360	2.51	288	3.09	90	3.25	2	--
0114	ARKANSAS TECH UNIVERSITY	71	1.95	258	2.09	288	2.40	310	2.98	98	3.24	3	--
0122	UNIV OF ARKANSAS-FORT SMITH	38	1.85	202	2.18	250	2.37	127	2.64	42	3.01	0	--
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	86	1.85	183	2.18	155	2.43	105	2.77	39	3.19	1	--
0126	HENDERSON STATE UNIVERSITY	42	1.77	130	1.93	167	2.32	126	2.66	31	2.91	1	--
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	46	1.88	173	1.94	154	2.14	56	2.62	5	2.27	1	--
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	52	1.41	143	2.10	155	2.32	66	2.77	8	3.22	0	--
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	157	1.67	155	2.31	44	2.84	7	2.51	0	--	0	--
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	55	1.29	111	1.74	82	2.12	51	2.53	10	3.01	0	--
6364	PULASKI TECHNICAL COLLEGE	99	1.71	118	2.28	65	2.20	8	2.81	0	--	0	--
0142	SOUTHERN ARKANSAS UNIVERSITY	26	1.94	106	2.27	88	2.58	48	2.74	14	3.30	0	--
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	35	1.94	96	2.16	69	2.18	27	2.51	0	--	0	--
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	21	2.05	68	2.30	61	2.55	21	2.64	2	--	0	--
0115	NATIONAL PARK CC	25	2.32	50	2.21	25	2.50	7	2.77	2	--	0	--
0109	EAST ARKANSAS COMMUNITY COLLEGE	30	1.92	56	2.52	15	2.94	6	2.99	1	--	0	--
0129	ARKANSAS NORTHEASTERN COLLEGE	30	1.88	37	2.52	32	2.36	6	1.77	2	--	0	--
4810	BLACK RIVER TECHNICAL COLLEGE	14	2.48	37	2.66	38	2.83	11	2.83	0	--	0	--
6011	MID-SOUTH COMMUNITY COLLEGE	30	2.06	27	2.84	25	1.83	2	--	0	--	0	--
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	23	2.36	40	2.33	16	2.55	1	--	0	--	0	--
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	6	1.67	27	1.47	27	2.37	11	2.40	2	--	0	--
6044	COSSATOT TECHNICAL COLLEGE	16	2.34	33	2.72	17	2.71	2	--	0	--	0	--
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	9	1.74	29	2.52	21	2.61	4	--	0	--	0	--
6026	OUACHITA TECHNICAL COLLEGE	10	2.25	31	2.43	19	2.77	2	--	0	--	0	--
5163	OZARKA COLLEGE	6	1.65	22	2.45	20	2.24	11	3.01	1	--	0	--
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	22	1.72	16	2.52	15	2.30	5	3.47	0	--	0	--
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	11	1.66	28	2.45	17	2.82	1	--	0	--	0	--
6207	RICH MOUNTAIN COMMUNITY COLLEGE	2	--	25	2.57	16	2.10	5	3.22	0	--	0	--
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	11	2.09	20	3.11	8	2.32	4	--	0	--	0	--

Table 6: Average Fall GPA for Your ACT-tested Students by ACT College Readiness Standards Score Ranges

Remarks: The ACT College Readiness Standards (CRS) Score Ranges are directly associated with average first semester grade point average. Higher scores are associated with higher grades. To help secondary school students develop better educational backgrounds, see the "College Readiness Standards", referenced in the Appendix. Depending on the score range, suggestions are provided to help students strengthen their skills to reach the next score range level. All secondary students can develop better college readiness by taking more rigorous courses in high school, which in turn leads to higher ACT test scores and better preparation for college.

		College Freshmen Fall GPA by ACT CRS Score Ranges											
		1-15		16-19		20-23		24-27		28-32		33-36	
Code	Name	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA	N	CGPA
5568	SOUTHEAST ARKANSAS COLLEGE	10	2.27	18	2.20	6	2.21	3	--	0	--	0	--
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	11	2.55	10	2.63	5	2.55	2	--	1	--	0	--
-------	All Other Colleges	0	--	0	--	0	--	0	--	0	--	0	--
9999	All Institutions	1187	1.88	2975	2.21	3160	2.40	2089	2.83	882	3.23	78	3.57

Table 7: Summary Statistics for Your ACT-tested Students Who Were Identified as Needing Developmental Coursework

Remarks: Colleges have different standards for assigning incoming freshmen to developmental coursework. Generally, lower ACT scores are associated with students assigned to developmental courses. ACT recommends all students take rigorous courses in high school to reduce the risk of being assigned to developmental courses in college. The data is this table enable staff to determine how many ACT-tested graduates were assigned to one or more developmental courses at each postsecondary institution. The content of courses taken in high school courses should be designed to help build readiness skills to take college level courses. The "College Readiness Standards" (referenced in the Appendix) provides suggestions for improving college readiness skills.

			Average ACT Scores				
Code	Name	N	English	Mathematics	Reading	Science	Composite
0144	UNIVERSITY OF ARKANSAS	148	20.2	18.3	19.8	19.3	19.6
0118	UNIVERSITY OF CENTRAL ARKANSAS	333	17.5	16.1	18.0	17.8	17.5
0116	ARKANSAS STATE UNIVERSITY	433	16.9	16.6	17.7	17.7	17.3
0114	ARKANSAS TECH UNIVERSITY	346	16.8	17.1	17.5	18.1	17.5
0122	UNIV OF ARKANSAS-FORT SMITH	197	17.0	16.9	17.7	18.1	17.5
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	304	16.6	16.6	17.2	17.4	17.1
0126	HENDERSON STATE UNIVERSITY	165	16.7	16.5	17.5	17.3	17.1
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	257	17.0	17.5	17.6	18.1	17.7
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	199	16.7	16.5	17.5	17.5	17.2
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	330	15.3	15.8	15.8	16.2	15.9
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	166	16.2	16.5	16.9	16.8	16.8
6364	PULASKI TECHNICAL COLLEGE	231	15.2	15.6	16.2	16.3	16.0
0142	SOUTHERN ARKANSAS UNIVERSITY	132	17.0	17.1	17.4	17.8	17.4
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	162	17.2	17.2	18.0	17.9	17.7
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	102	16.8	17.4	17.7	17.4	17.5
0115	NATIONAL PARK CC	76	16.3	16.5	16.7	17.1	16.7
0109	EAST ARKANSAS COMMUNITY COLLEGE	86	16.3	16.3	16.6	16.4	16.5
0129	ARKANSAS NORTHEASTERN COLLEGE	75	15.9	15.9	16.7	16.7	16.4
4810	BLACK RIVER TECHNICAL COLLEGE	62	16.9	17.2	17.1	17.5	17.3
6011	MID-SOUTH COMMUNITY COLLEGE	65	15.6	16.4	16.9	16.8	16.5
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	68	15.6	16.4	16.4	16.5	16.3
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	42	17.5	17.2	18.3	18.3	17.9
6044	COSSATOT TECHNICAL COLLEGE	46	15.3	16.3	17.1	17.3	16.6
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	40	16.1	17.2	16.9	17.9	17.0
6026	OUACHITA TECHNICAL COLLEGE	46	16.7	16.5	18.0	18.1	17.4
5163	OZARKA COLLEGE	34	17.7	16.9	18.4	18.4	18.0
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	46	15.3	16.1	16.6	16.8	16.3
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	40	17.0	16.6	16.8	17.5	17.1
6207	RICH MOUNTAIN COMMUNITY COLLEGE	29	16.5	17.0	18.0	18.3	17.6
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	32	15.6	16.8	17.0	16.5	16.6

Table 7: Summary Statistics for Your ACT-tested Students Who Were Identified as Needing Developmental Coursework

Remarks: Colleges have different standards for assigning incoming freshmen to developmental coursework. Generally, lower ACT scores are associated with students assigned to developmental courses. ACT recommends all students take rigorous courses in high school to reduce the risk of being assigned to developmental courses in college. The data is this table enable staff to determine how many ACT-tested graduates were assigned to one or more developmental courses at each postsecondary institution. The content of courses taken in high school courses should be designed to help build readiness skills to take college level courses. The "College Readiness Standards" (referenced in the Appendix) provides suggestions for improving college readiness skills.

			Average ACT Scores				
Code	Name	N	English	Mathematics	Reading	Science	Composite
5568	SOUTHEAST ARKANSAS COLLEGE	27	15.8	15.3	15.6	16.9	16.1
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	24	16.3	15.7	17.4	16.9	16.8
------	All Other Colleges	0	--	--	--	--	--
9999	All Institutions	4343	16.7	16.6	17.3	17.5	17.1

Table 8: Summary Statistics for Your ACT-tested Students Who Returned/Did Not Return for the Spring Semester

Remarks: Nationally about 25% of first-term college students do not return to the same college in year 2. Persisters tend to have higher ACT scores, higher high school grades, and higher first-year college grades. To increase a student's chances of staying in college, all students need to take rigorous coursework in high school. Such academic preparation leads to higher test scores, better grades, and better college-readiness skills. Suggestions for the proper courses to take in high school and the recommended content covered in those courses are referenced in "College Readiness Standards" in the Appendix.

			Persisters					Non-Persisters				
			% Meeting		Average			% Meeting		Average		
			All Four	HS	Fall	ACT		All Four	HS	Fall	ACT	
Code	Name	N	N	Benchmarks	GPA	GPA	Comp	N	Benchmarks	GPA	GPA	Comp
0144	UNIVERSITY OF ARKANSAS	1508	1388	41	3.61	2.83	24.8	120	21	3.36	1.40	23.1
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	1114	27	3.35	2.78	22.5	157	17	3.07	1.43	21.5
0116	ARKANSAS STATE UNIVERSITY	1150	988	21	3.33	2.85	21.6	162	10	2.95	1.22	19.9
0114	ARKANSAS TECH UNIVERSITY	1028	876	26	3.36	2.78	22.3	152	14	2.99	1.21	20.1
0122	UNIV OF ARKANSAS-FORT SMITH	659	559	18	3.38	2.62	21.2	100	12	3.12	0.99	20.7
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	482	18	3.09	2.63	20.6	87	7	2.83	0.97	18.7
0126	HENDERSON STATE UNIVERSITY	497	393	19	3.26	2.58	21.4	104	13	2.90	1.19	20.5
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	344	6	3.01	2.37	19.7	91	8	2.82	1.10	19.5
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	352	9	3.00	2.50	20.1	72	6	2.77	0.86	19.0
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	286	0	2.78	2.38	16.5	77	0	2.42	1.05	15.8
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	244	12	3.13	2.18	19.7	65	8	2.96	1.00	18.9
6364	PULASKI TECHNICAL COLLEGE	290	234	0	2.71	2.36	16.9	56	4	2.67	0.94	17.6
0142	SOUTHERN ARKANSAS UNIVERSITY	282	232	11	3.17	2.70	20.5	50	6	2.97	1.41	20.0
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	178	6	3.07	2.54	18.9	49	4	2.85	0.86	19.1
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	133	8	3.13	2.71	19.7	40	8	2.93	1.46	19.0
0115	NATIONAL PARK CC	109	87	2	2.88	2.60	18.1	22	5	2.89	1.40	18.7
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	97	3	2.94	2.54	17.4	11	9	2.98	1.53	19.7
0129	ARKANSAS NORTHEASTERN COLLEGE	107	88	2	3.07	2.58	18.3	19	11	2.80	0.64	17.6
4810	BLACK RIVER TECHNICAL COLLEGE	100	89	3	3.06	2.89	19.0	11	18	2.97	1.36	20.5
6011	MID-SOUTH COMMUNITY COLLEGE	84	68	3	2.89	2.48	17.3	16	0	2.53	0.99	17.8
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	71	1	2.77	2.54	17.4	9	0	2.45	1.13	15.1
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	59	8	2.91	2.25	20.2	14	14	2.66	0.73	19.9
6044	COSSATOT TECHNICAL COLLEGE	68	57	2	3.09	2.90	17.8	11	0	2.67	1.32	17.1
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	58	0	2.91	2.57	18.9	5	20	2.45	0.79	18.0
6026	OUACHITA TECHNICAL COLLEGE	62	50	2	2.94	2.75	18.3	12	0	2.85	1.58	19.1
5163	OZARKA COLLEGE	60	50	8	3.04	2.76	20.1	10	10	2.64	0.77	19.0
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	49	8	2.93	2.43	17.5	9	0	2.89	1.23	17.3
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	50	2	3.19	2.64	18.4	7	0	2.61	0.99	17.0
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	39	3	3.14	2.82	19.3	9	0	3.00	1.13	19.6

Table 8: Summary Statistics for Your ACT-tested Students Who Returned/Did Not Return for the Spring Semester

Remarks: Nationally about 25% of first-term college students do not return to the same college in year 2. Persisters tend to have higher ACT scores, higher high school grades, and higher first-year college grades. To increase a student's chances of staying in college, all students need to take rigorous coursework in high school. Such academic preparation leads to higher test scores, better grades, and better college-readiness skills. Suggestions for the proper courses to take in high school and the recommended content covered in those courses are referenced in "College Readiness Standards" in the Appendix.

			Persisters					Non-Persisters				
				Average					Average			
			% Meeting All Four	HS	Fall	ACT		% Meeting All Four	HS	Fall	ACT
Code	Name	N	N	Benchmarks	GPA	GPA	Comp	N	Benchmarks	GPA	GPA	Comp
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	35	9	3.06	3.00	18.0	8	0	2.90	1.00	18.8
5568	SOUTHEAST ARKANSAS COLLEGE	37	32	0	2.57	2.43	17.6	5	0	2.04	1.07	19.2
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	21	5	2.68	3.01	17.9	8	0	2.44	1.63	17.6
------	All Other Colleges	0	0	--	--	--	--	0	--	--	--	--
9999	All Institutions	10371	8803	20	3.25	2.68	21.2	1568	10	2.92	1.16	19.7

Table 9: Summary Statistics for Your ACT-tested Students Who Did/Did Not Receive a State Scholarship

Remarks: The state provides scholarships to students based on specific criteria. This table summarizes selected statistics on those graduates who did/did not receive state scholarship funds. The comparisons are made on the number who completed the recommended core coursework in high school, high school GPA, Fall College GPA, and average ACT Composite score.

			Scholarship					No Scholarship				
				% Meeting All Four	Average				% Meeting All Four	Average		
Code	Name	N	N	Benchmarks	HS GPA	Fall GPA	ACT Comp	N	Benchmarks	HS GPA	Fall GPA	ACT Comp
0144	UNIVERSITY OF ARKANSAS	1508	740	58	3.77	3.00	26.7	768	22	3.42	2.45	22.8
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	609	49	3.63	3.09	25.2	662	5	3.02	2.17	19.7
0116	ARKANSAS STATE UNIVERSITY	1150	628	33	3.63	3.07	23.9	522	2	2.84	2.08	18.2
0114	ARKANSAS TECH UNIVERSITY	1028	643	37	3.61	2.95	24.0	385	3	2.80	1.88	18.5
0122	UNIV OF ARKANSAS-FORT SMITH	659	0	--	--	--	--	659	17	3.35	2.37	21.1
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	323	28	3.31	2.75	22.6	246	1	2.70	1.90	17.4
0126	HENDERSON STATE UNIVERSITY	497	244	34	3.38	2.56	23.8	253	1	2.99	2.03	18.8
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	55	13	3.36	2.60	21.4	380	5	2.91	2.03	19.4
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	217	16	3.21	2.63	22.0	207	1	2.71	1.79	17.7
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	157	1	3.00	2.56	17.5	206	0	2.47	1.75	15.6
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	196	17	3.33	2.27	21.3	113	0	2.71	1.34	16.5
6364	PULASKI TECHNICAL COLLEGE	290	8	0	2.66	1.92	15.0	282	1	2.70	2.09	17.1
0142	SOUTHERN ARKANSAS UNIVERSITY	282	185	15	3.34	2.65	22.0	97	0	2.71	2.13	17.2
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	122	9	3.27	2.44	20.4	105	1	2.72	1.87	17.2
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	79	18	3.35	2.79	21.8	94	0	2.85	2.11	17.6
0115	NATIONAL PARK CC	109	32	6	3.30	2.60	20.3	77	1	2.70	2.25	17.4
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	63	6	3.09	2.63	18.0	45	0	2.74	2.19	17.0
0129	ARKANSAS NORTHEASTERN COLLEGE	107	54	7	3.23	2.38	19.3	53	0	2.78	2.15	17.0
4810	BLACK RIVER TECHNICAL COLLEGE	100	50	10	3.30	2.66	20.6	50	0	2.81	2.78	17.7
6011	MID-SOUTH COMMUNITY COLLEGE	84	18	6	3.21	2.44	19.9	66	2	2.69	2.14	16.7
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	7	0	2.47	2.18	16.7	73	1	2.76	2.42	17.1
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	0	--	--	--	--	73	10	2.86	1.95	20.1
6044	COSSATOT TECHNICAL COLLEGE	68	39	0	3.23	2.96	18.2	29	3	2.74	2.21	17.1
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	22	0	3.36	2.90	20.5	41	2	2.65	2.18	17.9
6026	OUACHITA TECHNICAL COLLEGE	62	0	--	--	--	--	62	2	2.92	2.53	18.5
5163	OZARKA COLLEGE	60	41	12	3.16	2.72	20.8	19	0	2.56	1.81	18.1
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	0	--	--	--	--	58	7	2.93	2.24	17.5
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	50	2	3.24	2.58	18.7	7	0	2.28	1.41	15.1
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	26	4	3.24	2.74	19.6	22	0	2.92	2.23	19.1

Table 9: Summary Statistics for Your ACT-tested Students Who Did/Did Not Receive a State Scholarship

Remarks: The state provides scholarships to students based on specific criteria. This table summarizes selected statistics on those graduates who did/did not receive state scholarship funds. The comparisons are made on the number who completed the recommended core coursework in high school, high school GPA, Fall College GPA, and average ACT Composite score.

			Scholarship					No Scholarship				
				% Meeting	Average				% Meeting	Average		
Code	Name	N	N	All Four Benchmarks	HS GPA	Fall GPA	ACT Comp	N	All Four Benchmarks	HS GPA	Fall GPA	ACT Comp
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	0	--	--	--	--	43	7	3.04	2.63	18.1
5568	SOUTHEAST ARKANSAS COLLEGE	37	2	--	--	--	--	35	0	2.44	2.19	17.6
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	0	--	--	--	--	29	3	2.61	2.63	17.8
------	All Other Colleges	0	0	--	--	--	--	0	--	--	--	--
9999	All Institutions	10371	4610	32	3.50	2.84	23.4	5761	7	2.95	2.13	19.1

Suggested References for Developing College Readiness Skills

A. **On Course for Success: A Close Look at Selected High School Courses That Prepare All Students for College**
http://www.act.org/path/policy/reports/success.html

B. **Preparing All High School Students for College and Work: What High-Performing High Schools Are Teaching**
http://www.act.org/news/releases/2005/2-23-05.html

C. **Crisis at the Core: Preparing All Students for College and Work**
http://www.act.org/path/policy/reports/crisis.html

D. **The following website provides information about ACT's College Readiness Standards and how they can be used to link assessment to instruction for ACT's EPAS programs.**
http://www.act.org/standard

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Addendum Table 1: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses

Remarks: The criteria for assignment of students to a developmental (remedial) course is an ACT score below 19 in English, Mathematics, or Reading.

			Any Developmental		English				Mathematics				Reading			
					College		Developmental		College		Developmental		College		Developmental	
Code	Name	N	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0144	UNIVERSITY OF ARKANSAS	1508	148	10	1479	98	29	2	1410	94	98	6	1468	97	40	3
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	333	26	1234	97	37	3	954	75	317	25	1202	95	69	5
0116	ARKANSAS STATE UNIVERSITY	1150	433	38	926	81	224	19	803	70	347	30	924	80	226	20
0114	ARKANSAS TECH UNIVERSITY	1028	346	34	827	80	201	20	761	74	267	26	842	82	186	18
0122	UNIV OF ARKANSAS-FORT SMITH	659	197	30	572	87	87	13	502	76	157	24	584	89	75	11
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	304	53	382	67	187	33	338	59	231	41	387	68	182	32
0126	HENDERSON STATE UNIVERSITY	497	165	33	405	81	92	19	360	72	137	28	410	82	87	18
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	257	59	298	69	137	31	231	53	204	47	302	69	133	31
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	199	47	313	74	111	26	254	60	170	40	335	79	89	21
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	330	91	105	29	258	71	60	17	303	83	98	27	265	73
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	166	54	203	66	106	34	176	57	133	43	206	67	103	33
6364	PULASKI TECHNICAL COLLEGE	290	231	80	147	51	143	49	72	25	218	75	147	51	143	49
0142	SOUTHERN ARKANSAS UNIVERSITY	282	132	47	205	73	77	27	186	66	96	34	210	74	72	26
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	162	71	143	63	84	37	76	33	151	67	150	66	77	34
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	102	59	111	64	62	36	98	57	75	43	116	67	57	33
0115	NATIONAL PARK CC	109	76	70	59	54	50	46	38	35	71	65	73	67	36	33
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	86	80	51	47	57	53	33	31	75	69	54	50	54	50
0129	ARKANSAS NORTHEASTERN COLLEGE	107	75	70	66	62	41	38	37	35	70	65	66	62	41	38
4810	BLACK RIVER TECHNICAL COLLEGE	100	62	62	60	60	40	40	53	53	47	47	61	61	39	39
6011	MID-SOUTH COMMUNITY COLLEGE	84	65	77	41	49	43	51	25	30	59	70	46	55	38	45
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	68	85	32	40	48	60	19	24	61	76	33	41	47	59
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	42	58	51	70	22	30	40	55	33	45	53	73	20	27
6044	COSSATOT TECHNICAL COLLEGE	68	46	68	36	53	32	47	29	43	39	57	40	59	28	41
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	40	63	41	65	22	35	32	51	31	49	40	63	23	37
6026	OUACHITA TECHNICAL COLLEGE	62	46	74	37	60	25	40	17	27	45	73	45	73	17	27
5163	OZARKA COLLEGE	60	34	57	37	62	23	38	34	57	26	43	45	75	15	25
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	46	79	26	45	32	55	18	31	40	69	28	48	30	52
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	40	70	40	70	17	30	28	49	29	51	36	63	21	37
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	29	60	33	69	15	31	30	63	18	38	37	77	11	23
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	32	74	17	40	26	60	18	42	25	58	26	60	17	40
5568	SOUTHEAST ARKANSAS COLLEGE	37	27	73	19	51	18	49	11	30	26	70	20	54	17	46

Addendum Table 1: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses

Remarks: The criteria for assignment of students to a developmental (remedial) course is an ACT score below 19 in English, Mathematics, or Reading.

			Any Developmental		English				Mathematics				Reading			
					College		Developmental		College		Developmental		College		Developmental	
Code	Name	N	N	%	N	%	N	%	N	%	N	%	N	%	N	%
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	24	83	10	34	19	66	7	24	22	76	11	38	18	62
	Total counts across institutions	10371	4343	42	8006	77	2365	23	6750	65	3621	35	8095	78	2276	22

Addendum Table 2: Summary Statistics for Your ACT-tested Students Who Were Placed in Any Developmental Courses by Academic Preparation

Remarks: The Smart Core curriculum (22 units) consists of 4 units of English, 1/2 unit of Oral Communication, 4 units of Mathematics beyond Pre-Algebra, 3 units of Science including a Lab Experience, 3 units of Social Studies, 1/2 unit of Physical Education, Health and Safety, Fine Arts, and 6 units of Career Focus.

			High School Course Patterns					
			Less than Smart Core Any Developmental		Smart Core Any Developmental		More than Smart Core Any Developmental	
Code	Name	N	N	%	N	%	N	%
0144	UNIVERSITY OF ARKANSAS	1508	0	0%	0	0%	0	0%
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	0	0%	0	0%	0	0%
0116	ARKANSAS STATE UNIVERSITY	1150	0	0%	0	0%	0	0%
0114	ARKANSAS TECH UNIVERSITY	1028	0	0%	0	0%	0	0%
0122	UNIV OF ARKANSAS-FORT SMITH	659	0	0%	0	0%	0	0%
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	0	0%	0	0%	0	0%
0126	HENDERSON STATE UNIVERSITY	497	0	0%	0	0%	0	0%
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	0	0%	0	0%	0	0%
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	0	0%	0	0%	0	0%
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	0	0%	0	0%	0	0%
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	0	0%	0	0%	0	0%
6364	PULASKI TECHNICAL COLLEGE	290	0	0%	0	0%	0	0%
0142	SOUTHERN ARKANSAS UNIVERSITY	282	0	0%	0	0%	0	0%
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	0	0%	0	0%	0	0%
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	0	0%	0	0%	0	0%
0115	NATIONAL PARK CC	109	0	0%	0	0%	0	0%
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	0	0%	0	0%	0	0%
0129	ARKANSAS NORTHEASTERN COLLEGE	107	0	0%	0	0%	0	0%
4810	BLACK RIVER TECHNICAL COLLEGE	100	0	0%	0	0%	0	0%
6011	MID-SOUTH COMMUNITY COLLEGE	84	0	0%	0	0%	0	0%
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	0	0%	0	0%	0	0%
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	0	0%	0	0%	0	0%
6044	COSSATOT TECHNICAL COLLEGE	68	0	0%	0	0%	0	0%
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	0	0%	0	0%	0	0%
6026	OUACHITA TECHNICAL COLLEGE	62	0	0%	0	0%	0	0%
5163	OZARKA COLLEGE	60	0	0%	0	0%	0	0%
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	0	0%	0	0%	0	0%
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	0	0%	0	0%	0	0%
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	0	0%	0	0%	0	0%
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	0	0%	0	0%	0	0%
5568	SOUTHEAST ARKANSAS COLLEGE	37	0	0%	0	0%	0	0%

Addendum Table 2: Summary Statistics for Your ACT-tested Students Who Were Placed in Any Developmental Courses by Academic Preparation

Remarks: The Smart Core curriculum (22 units) consists of 4 units of English, 1/2 unit of Oral Communication, 4 units of Mathematics beyond Pre-Algebra, 3 units of Science including a Lab Experience, 3 units of Social Studies, 1/2 unit of Physical Education, Health and Safety, Fine Arts, and 6 units of Career Focus.

			High School Course Patterns					
			Less than Smart Core Any Developmental		Smart Core Any Developmental		More than Smart Core Any Developmental	
Code	Name	N	N	%	N	%	N	%
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	0	0%	0	0%	0	0%
	Total counts across institutions	10371	0	0%	0	0%	0	0%

Addendum Table 3: Distribution of ACT Scores of Your ACT-tested Students Who Enrolled in College

Remarks: Generally, students with high test scores are more successful in college.

			English						Mathematics						Reading					
Code	Name	N	1-15	16-18	19	20-23	24-27	28-36	1-15	16-18	19	20-23	24-27	28-36	1-15	16-18	19	20-23	24-27	28-36
0144	UNIVERSITY OF ARKANSAS	1508	19	57	57	434	444	497	14	159	89	418	520	308	46	131	46	411	365	509
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	143	133	79	333	278	305	120	330	95	287	307	132	130	184	55	341	254	307
0116	ARKANSAS STATE UNIVERSITY	1150	163	136	84	343	246	178	139	307	100	279	256	69	155	182	44	320	268	181
0114	ARKANSAS TECH UNIVERSITY	1028	132	126	74	271	243	182	72	266	77	261	262	90	123	152	47	272	223	211
0122	UNIV OF ARKANSAS-FORT SMITH	659	87	97	44	246	114	71	46	190	47	190	162	24	91	131	40	185	118	94
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	120	93	44	136	103	73	107	176	52	117	87	30	110	100	33	152	106	68
0126	HENDERSON STATE UNIVERSITY	497	69	58	30	151	131	58	48	147	47	126	109	20	57	78	34	136	112	80
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	96	70	45	150	48	26	41	172	43	124	47	8	94	85	27	129	55	45
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	84	61	27	151	78	23	70	129	40	112	66	7	70	83	32	142	62	35
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	179	74	32	58	18	2	155	151	20	29	8	0	175	88	21	55	16	8
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	71	52	24	89	50	23	58	98	28	75	43	7	72	56	21	83	42	35
6364	PULASKI TECHNICAL COLLEGE	290	124	55	25	65	18	3	115	110	19	37	9	0	114	63	19	67	23	4
0142	SOUTHERN ARKANSAS UNIVERSITY	282	48	46	22	86	47	33	36	81	32	75	52	6	48	61	18	75	43	37
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	59	47	19	71	24	7	37	98	15	58	19	0	52	47	23	55	38	12
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	40	34	13	57	25	4	21	59	17	58	16	2	32	44	7	46	33	11
0115	NATIONAL PARK CC	109	35	27	10	27	4	6	22	55	6	21	3	2	34	27	5	28	9	6
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	37	29	6	22	13	1	32	49	6	15	6	0	36	27	5	30	6	4
0129	ARKANSAS NORTHEASTERN COLLEGE	107	38	18	8	25	15	3	34	40	13	16	4	0	29	24	7	25	14	8
4810	BLACK RIVER TECHNICAL COLLEGE	100	22	23	14	25	14	2	11	40	13	24	12	0	24	23	8	26	11	8
6011	MID-SOUTH COMMUNITY COLLEGE	84	36	16	7	18	7	0	25	35	5	16	3	0	36	14	6	18	8	2
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	32	19	7	16	6	0	22	40	5	10	3	0	25	26	3	20	6	0
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	13	11	4	29	14	2	7	31	7	19	7	2	11	15	4	23	12	8
6044	COSSATOT TECHNICAL COLLEGE	68	28	7	9	19	5	0	14	32	7	12	3	0	19	22	4	17	4	2
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	16	13	8	19	7	0	7	28	7	18	3	0	18	8	7	21	4	5
6026	OUACHITA TECHNICAL COLLEGE	62	19	16	3	16	8	0	15	27	6	6	6	2	15	15	3	24	3	2
5163	OZARKA COLLEGE	60	12	14	3	18	10	3	7	27	5	12	9	0	10	10	7	17	8	8
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	24	12	2	13	6	1	24	19	1	6	8	0	24	11	4	13	3	3
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	12	13	6	23	3	0	14	21	8	13	1	0	17	11	5	21	2	1
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	11	10	8	14	5	0	8	16	3	14	7	0	10	10	3	16	7	2
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	15	13	4	8	3	0	9	19	2	11	2	0	13	8	6	8	3	5
5568	SOUTHEAST ARKANSAS COLLEGE	37	15	5	5	8	4	0	17	10	3	4	3	0	14	11	0	8	3	1

Addendum Table 3: Distribution of ACT Scores of Your ACT-tested Students Who Enrolled in College

Remarks: Generally, students with high test scores are more successful in college.

			English						Mathematics						Reading					
Code	Name	N	1-15	16-18	19	20-23	24-27	28-36	1-15	16-18	19	20-23	24-27	28-36	1-15	16-18	19	20-23	24-27	28-36
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	10	9	0	7	2	1	12	12	1	3	0	1	10	6	0	8	2	3
	Total counts across institutions	10371	1809	1394	723	2948	1993	1504	1359	2974	819	2466	2043	710	1714	1753	544	2792	1863	1705
	Percent across institutions	100	17	13	7	28	19	15	13	29	8	24	20	7	17	17	5	27	18	16

Addendum Table 4: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School Math Course Sequence Taken

Remarks: Students who take more rigorous patterns of courses in mathematics are less likely to require developmental (remedial) course assignment in college.

Key: A1 = Algebra 1, A2 = Algebra 2, G = Geometry, T = Trigonometry

			High School Mathematics Taken									
			Less Than A1, A2, G *		A1, A2, G *		A1, A2, G, T *		Other combinations of 4 years of math *		Other combinations of 5 or more years of math *	
Code	Name	N	College	Developmental	College	Developmental	College	Developmental	College	Developmental	College	Developmental
0144	UNIVERSITY OF ARKANSAS	1508	42	4	38	14	124	12	754	25	106	1
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	26	28	54	78	114	21	433	59	51	7
0116	ARKANSAS STATE UNIVERSITY	1150	16	38	71	96	92	30	358	56	34	5
0114	ARKANSAS TECH UNIVERSITY	1028	18	27	52	77	90	19	322	22	47	4
0122	UNIV OF ARKANSAS-FORT SMITH	659	18	19	40	35	55	9	218	18	15	4
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	10	23	35	65	34	17	155	32	26	6
0126	HENDERSON STATE UNIVERSITY	497	8	11	25	37	63	11	152	25	13	2
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	5	33	18	59	27	13	80	27	10	2
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	5	20	31	61	21	6	71	17	7	4
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	4	46	6	80	13	20	23	52	4	9
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	7	20	22	38	27	12	68	19	7	2
6364	PULASKI TECHNICAL COLLEGE	290	5	23	10	55	8	11	17	21	2	6
0142	SOUTHERN ARKANSAS UNIVERSITY	282	7	11	13	36	23	9	79	9	7	0
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	1	16	9	34	10	13	28	18	2	4
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	4	12	20	28	14	4	36	10	2	0
0115	NATIONAL PARK CC	109	2	13	8	29	6	5	8	5	3	0
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	1	14	7	21	4	4	8	13	1	2
0129	ARKANSAS NORTHEASTERN COLLEGE	107	1	7	5	21	7	5	8	8	0	0
4810	BLACK RIVER TECHNICAL COLLEGE	100	1	9	10	10	5	3	20	7	0	1
6011	MID-SOUTH COMMUNITY COLLEGE	84	0	10	2	23	9	3	5	6	0	0
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	1	11	4	30	1	2	7	7	1	2
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	2	3	7	8	3	2	9	4	4	1
6044	COSSATOT TECHNICAL COLLEGE	68	0	6	3	13	8	3	9	4	1	1
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	0	8	2	8	1	2	15	3	2	0
6026	OUACHITA TECHNICAL COLLEGE	62	1	7	3	10	4	3	3	6	0	0
5163	OZARKA COLLEGE	60	1	2	7	7	6	1	6	5	0	2
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	1	5	3	15	6	4	5	4	1	0
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	3	3	7	7	6	4	5	5	0	1
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	1	3	7	5	1	1	9	3	1	1
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	0	4	2	10	4	2	8	2	0	0
5568	SOUTHEAST ARKANSAS COLLEGE	37	1	3	1	11	3	1	2	2	0	0

Addendum Table 4: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School Math Course Sequence Taken

Remarks: Students who take more rigorous patterns of courses in mathematics are less likely to require developmental (remedial) course assignment in college.

Key: A1 = Algebra 1, A2 = Algebra 2, G = Geometry, T = Trigonometry

			High School Mathematics Taken									
			Less Than A1, A2, G *		A1, A2, G *		A1, A2, G, T *		Other combinations of 4 years of math *		Other combinations of 5 or more years of math *	
Code	**Name**	**N**	College	Developmental	College	Developmental	College	Developmental	College	Developmental	College	Developmental
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	0	2	1	7	0	6	4	2	0	0
	Total counts across institutions	10371	192	441	523	1028	789	258	2925	496	347	67
	Percent across institutions		2	4	5	10	8	2	28	5	3	1

Addendum Table 5: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School English Course Sequence Taken

Remarks: Generally, taking more English courses in high school will better prepare students for college-level English.

			High School English Taken							
			Less Than 4 years of English		Eng 9, Eng 10, Eng 11, Eng 12		Eng 9, Eng 10, Eng 11, Eng 12, & Other Eng		No English Information	
Code	Name	N	College	Developmental	College	Developmental	College	Developmental	College	Developmental
0144	UNIVERSITY OF ARKANSAS	1508	109	2	803	18	422	5	145	4
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	79	6	774	23	293	5	88	3
0116	ARKANSAS STATE UNIVERSITY	1150	53	15	537	172	261	18	75	19
0114	ARKANSAS TECH UNIVERSITY	1028	39	17	518	126	212	28	58	30
0122	UNIV OF ARKANSAS-FORT SMITH	659	48	5	354	61	130	14	40	7
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	26	11	251	146	83	17	22	13
0126	HENDERSON STATE UNIVERSITY	497	25	6	247	65	105	13	28	8
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	17	16	211	96	53	8	17	17
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	14	7	226	83	50	8	23	13
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	6	13	69	192	24	28	6	25
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	15	13	131	81	48	8	9	4
6364	PULASKI TECHNICAL COLLEGE	290	9	9	112	107	18	13	8	14
0142	SOUTHERN ARKANSAS UNIVERSITY	282	6	4	120	55	61	8	18	10
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	8	6	105	64	20	8	10	6
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	5	2	83	45	16	5	7	10
0115	NATIONAL PARK CC	109	3	2	46	44	7	4	3	0
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	2	2	37	43	12	8	0	4
0129	ARKANSAS NORTHEASTERN COLLEGE	107	3	4	41	26	14	4	8	7
4810	BLACK RIVER TECHNICAL COLLEGE	100	2	2	42	28	12	4	4	6
6011	MID-SOUTH COMMUNITY COLLEGE	84	1	4	27	32	4	3	9	4
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	0	1	22	38	6	6	4	3
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	4	3	32	16	10	1	5	2
6044	COSSATOT TECHNICAL COLLEGE	68	2	3	20	22	11	4	3	3
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	1	0	28	18	9	2	3	2
6026	OUACHITA TECHNICAL COLLEGE	62	4	1	26	20	5	1	2	3
5163	OZARKA COLLEGE	60	2	1	24	16	7	3	4	3
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	2	1	16	27	7	2	1	2
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	5	1	27	12	5	3	3	1
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	0	1	26	11	7	2	0	1
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	0	1	12	19	3	5	2	1
5568	SOUTHEAST ARKANSAS COLLEGE	37	1	1	12	12	4	1	2	4

Addendum Table 5: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School English Course Sequence Taken

Remarks: Generally, taking more English courses in high school will better prepare students for college-level English.

			High School English Taken							
			Less Than 4 years of English		Eng 9, Eng 10, Eng 11, Eng 12		Eng 9, Eng 10, Eng 11, Eng 12, & Other Eng		No English Information	
Code	Name	N	College	Developmental	College	Developmental	College	Developmental	College	Developmental
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	0	3	5	15	4	0	1	1
	Total counts across institutions	10371	491	163	4984	1733	1923	239	608	230
	Percent across institutions		5	2	48	17	19	2	6	2

Addendum Table 6: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School GPA Range

Remarks: This table show the number of students who were assigned to college-level / developmental coursework in English, Mathematics, or Reading by ACT high school grade averages (based on self-reported grades).

			High School GPA Ranges																	
			Less than 2.99						3.00 - 3.49						3.50 or higher					
			English		Mathematics		Reading		English		Mathematics		Reading		English		Mathematics		Reading	
Code	Name	N	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev
0144	UNIVERSITY OF ARKANSAS	1508	133	12	128	17	137	8	447	12	395	64	438	21	899	5	887	17	893	11
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	339	24	165	198	318	45	371	10	281	100	363	18	521	3	506	18	519	5
0116	ARKANSAS STATE UNIVERSITY	1150	204	156	141	219	200	160	266	60	232	94	272	54	456	8	430	34	452	12
0114	ARKANSAS TECH UNIVERSITY	1028	147	140	112	175	167	120	260	45	230	75	252	53	420	16	419	17	423	13
0122	UNIV OF ARKANSAS-FORT SMITH	659	95	23	83	35	99	19	181	15	162	34	178	18	227	8	224	11	225	10
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	115	135	95	155	127	123	146	44	126	64	144	46	121	8	117	12	116	13
0126	HENDERSON STATE UNIVERSITY	497	112	65	85	92	116	61	129	23	113	39	128	24	164	4	162	6	166	2
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	117	83	79	121	125	75	100	37	84	53	100	37	62	9	60	11	58	13
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	114	81	86	109	129	66	126	27	103	50	133	20	73	3	65	11	73	3
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	34	199	14	219	41	192	24	34	16	42	22	36	40	11	27	24	30	21
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	44	72	39	77	49	67	76	29	63	42	76	29	74	3	66	11	74	3
6364	PULASKI TECHNICAL COLLEGE	290	77	127	33	171	83	121	48	12	22	38	42	18	21	4	16	9	21	4
0142	SOUTHERN ARKANSAS UNIVERSITY	282	51	54	45	60	55	50	66	20	58	28	67	19	83	1	80	4	83	1
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	47	53	18	82	50	50	61	28	30	59	63	26	33	3	28	8	35	1
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	34	47	30	51	37	44	44	13	37	20	48	9	33	2	31	4	31	4
0115	NATIONAL PARK CC	109	24	29	10	43	30	23	17	12	13	16	24	5	9	1	9	1	9	1
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	18	39	13	44	24	33	19	15	12	22	19	15	14	3	8	9	11	6
0129	ARKANSAS NORTHEASTERN COLLEGE	107	23	22	8	37	18	27	24	17	16	25	29	12	17	1	12	6	17	1
4810	BLACK RIVER TECHNICAL COLLEGE	100	23	25	16	32	20	28	21	8	18	11	22	7	16	7	19	4	19	4
6011	MID-SOUTH COMMUNITY COLLEGE	84	13	19	10	22	15	17	14	5	6	13	14	5	6	1	6	1	6	1
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	15	40	7	48	16	39	11	5	7	9	11	5	6	3	5	4	6	3
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	26	15	17	24	29	12	18	6	15	9	18	6	7	1	8	0	6	2
6044	COSSATOT TECHNICAL COLLEGE	68	15	16	11	20	18	13	9	14	8	15	10	13	12	2	10	4	12	2
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	16	17	12	21	17	16	13	3	10	6	13	3	8	0	5	3	5	3
6026	OUACHITA TECHNICAL COLLEGE	62	12	21	3	30	21	12	18	4	9	13	17	5	7	0	5	2	7	0
5163	OZARKA COLLEGE	60	11	17	10	18	17	11	15	6	14	7	17	4	11	0	10	1	11	0
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	8	22	6	24	10	20	7	9	5	11	7	9	11	1	7	5	11	1
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	7	13	8	12	9	11	22	3	11	14	17	8	10	1	8	3	9	2
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	8	6	9	5	9	5	16	6	14	8	17	5	7	0	6	1	6	1
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	2	13	3	12	6	9	11	10	12	9	15	6	3	2	3	2	4	1
5568	SOUTHEAST ARKANSAS COLLEGE	37	14	16	7	23	15	15	3	2	2	3	3	2	2	0	2	0	2	0

Addendum Table 6: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School GPA Range

Remarks: This table show the number of students who were assigned to college-level / developmental coursework in English, Mathematics, or Reading by ACT high school grade averages (based on self-reported grades).

			High School GPA Ranges																	
			Less than 2.99						3.00 - 3.49						3.50 or higher					
			English		Mathematics		Reading		English		Mathematics		Reading		English		Mathematics		Reading	
Code	Name	N	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	5	16	5	16	6	15	3	2	2	3	3	2	2	1	0	3	2	1
	Total counts across institutions	10371	1903	1617	1308	2212	2013	1507	2586	536	2126	996	2582	540	3375	112	3241	246	3342	145
	Percent across institutions		18	16	13	21	19	15	25	5	20	10	25	5	33	1	31	2	32	1

Addendum Table 7: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School Rank

Remarks: This table show the number of students who were assigned to college-level / developmental coursework in English, Mathematics, or Reading by ACT self-reported class rank.

			High School Class Rank																	
			Bottom Half						Third Quarter						Top (Fourth) Quarter					
			English		Mathematics		Reading		English		Mathematics		Reading		English		Mathematics		Reading	
Code	Name	N	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev
0144	UNIVERSITY OF ARKANSAS	1508	44	2	36	10	40	6	326	12	305	33	326	12	857	7	834	30	851	13
0118	UNIVERSITY OF CENTRAL ARKANSAS	1271	121	8	51	78	114	15	375	18	244	149	361	32	565	6	526	45	559	12
0116	ARKANSAS STATE UNIVERSITY	1150	69	70	55	84	83	56	256	90	199	147	249	97	475	25	433	67	465	35
0114	ARKANSAS TECH UNIVERSITY	1028	49	57	37	69	54	52	216	74	185	105	224	66	470	32	453	49	467	35
0122	UNIV OF ARKANSAS-FORT SMITH	659	64	33	43	54	73	24	179	31	149	61	184	26	247	12	236	23	248	11
0132	UNIVERSITY OF ARKANSAS AT LITTLE ROCK	569	38	55	31	62	45	48	131	78	112	97	137	72	166	25	151	40	161	30
0126	HENDERSON STATE UNIVERSITY	497	39	22	28	33	44	17	117	46	96	67	117	46	193	12	187	18	194	11
4726	NORTHWEST ARKANSAS COMMUNITY COLLEGE	435	51	47	29	69	59	39	124	56	97	83	118	62	76	10	66	20	77	9
0117	ARKANSAS STATE UNIVERSITY-BEEBE BRANCH	424	38	36	24	50	45	29	121	48	97	72	128	41	118	10	105	23	120	8
0108	UNIVERSITY OF ARKANSAS AT PINE BLUFF	363	17	88	5	100	21	84	26	102	15	113	27	101	49	28	33	44	39	38
0110	UNIVERSITY OF ARKANSAS AT MONTICELLO	309	15	36	14	37	20	31	57	46	51	52	61	42	112	6	95	23	103	15
6364	PULASKI TECHNICAL COLLEGE	290	30	49	11	68	35	44	60	52	31	81	61	51	33	18	18	33	30	21
0142	SOUTHERN ARKANSAS UNIVERSITY	282	18	21	13	26	21	18	56	37	53	40	62	31	98	9	92	15	97	10
5531	UNIV OF ARKANSAS COMM COLL-MORRILTON	227	21	25	5	41	23	23	55	35	25	65	58	32	37	13	29	21	41	9
0113	NORTH ARKANSAS COMMUNITY/TECHNICAL COLL	173	14	15	13	16	15	14	41	24	38	27	46	19	45	11	38	18	44	12
0115	NATIONAL PARK CC	109	11	19	4	26	16	14	29	19	19	29	35	13	14	6	10	10	15	5
0109	EAST ARKANSAS COMMUNITY COLLEGE	108	4	15	2	17	7	12	14	30	11	33	18	26	30	11	17	24	27	14
0129	ARKANSAS NORTHEASTERN COLLEGE	107	7	5	3	9	7	5	17	13	7	23	13	17	28	11	19	20	33	6
4810	BLACK RIVER TECHNICAL COLLEGE	100	6	11	3	14	8	9	22	13	19	16	19	16	23	10	23	10	26	7
6011	MID-SOUTH COMMUNITY COLLEGE	84	4	14	3	15	6	12	14	15	4	25	14	15	17	7	13	11	19	5
6031	SOUTHERN ARKANSAS UNIVERSITY TECH	80	4	15	2	17	3	16	16	24	9	31	18	22	10	5	8	7	10	5
4723	ARKANSAS STATE UNIVERSITY-MOUNTAIN HOME	73	7	7	4	10	6	8	18	8	12	14	21	5	16	6	16	6	16	6
6044	COSSATOT TECHNICAL COLLEGE	68	8	5	6	7	7	6	12	18	9	21	14	16	13	4	9	8	14	3
5161	UNIV OF ARKANSAS COMM COLL-BATESVILLE	63	5	7	3	9	5	7	17	6	12	11	16	7	14	3	12	5	14	3
6026	OUACHITA TECHNICAL COLLEGE	62	5	8	0	13	7	6	18	11	10	19	24	5	13	4	7	10	13	4
5163	OZARKA COLLEGE	60	5	7	3	9	7	5	9	6	9	6	11	4	17	4	16	5	19	2
6609	SOUTH ARKANSAS COMMUNITY COLLEGE	58	1	13	0	14	2	12	10	11	7	14	11	10	13	5	9	9	14	4
6271	UNIVERSITY OF ARKANSAS COMM COLL-HOPE	57	3	4	2	5	3	4	19	8	12	15	17	10	16	2	12	6	14	4
6207	RICH MOUNTAIN COMMUNITY COLLEGE	48	7	6	6	7	8	5	11	5	10	6	12	4	11	2	9	4	11	2
4720	ARKANSAS STATE UNIVERSITY-NEWPORT	43	1	5	0	6	3	3	7	8	8	7	10	5	7	7	8	6	9	5
5568	SOUTHEAST ARKANSAS COLLEGE	37	7	7	2	12	6	8	6	4	6	4	7	3	1	0	1	0	1	0

Addendum Table 7: Summary Statistics for Your ACT-tested Students Who Were Placed in College-level or Developmental Courses by High School Rank

Remarks: This table show the number of students who were assigned to college-level / developmental coursework in English, Mathematics, or Reading by ACT self-reported class rank.

			High School Class Rank																	
			Bottom Half						Third Quarter						Top (Fourth) Quarter					
			English		Mathematics		Reading		English		Mathematics		Reading		English		Mathematics		Reading	
Code	Name	N	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev	Coll	Dev
0125	PHILLIPS COMMUNITY COLLEGE OF THE UA	29	1	3	0	4	1	3	4	12	4	12	3	13	4	2	2	4	5	1
	Total counts across institutions	10371	714	715	438	991	794	635	2383	960	1865	1478	2422	921	3788	313	3487	614	3756	345
	Percent across institutions		7	7	4	10	8	6	23	9	18	14	23	9	37	3	34	6	36	3

Department of Information Systems
Arkansas: A State of Technology

Project Charter

Project Name: Arkansas Education to Employment Tracking and Trends Initiative- AEETT (Phase I)

Reference: **DIS Service Request 2010-002 GWC-AEETT**

Agency:
Arkansas Department of Career Education
Arkansas Economic Development Commission
Arkansas Department of Education
Arkansas Department of Higher Education
Arkansas Department of Workforce Services

Prepared by: Judy A. Whitaker, Senior Project Manager, PMP
Arkansas Department of Information Systems (DIS)

Date: August 31, 2009

Project Background

The Governor's Workforce Cabinet has been "charged to analyze Arkansas's current delivery of workforce development and find new and better ways to provide these services." This task force must understand the current conditions.

Currently, the state has pockets of information being collected and studied but does not have a collective effort reflecting the total picture. Data analysis has been requested to fill in the gaps from K-20 education to employment.

Oklahoma has a "Employment Outcome Report" that contains a number of Education and Employment statistical reports. This document contains excellent examples of the types of reports that would benefit Arkansas.

The success of this effort is dependent on the sharing of information across multiple state agencies and ability to match select data.

The following are some of the many questions the data analysis initiative is expected to help answer:

- What percentage of Arkansas residents and non-Arkansas residents remain in Arkansas?
- What are the education levels, degrees and skill sets of those who remain and who do not remain in Arkansas?
- What degrees, training and skill sets are needed to meet the employments needs by region today and in the future?
- What degrees and skill sets exist to attract new business to Arkansas by region?

- Need Information provided by region visually represented on an Arkansas Map view and other graphical views?

Goal

Unify Arkansas's current education, employment and workforce development statistical results to aid in providing new and better services.

Project Scope

The AEETT initiative will be developed in a phased approach.

Phase I of the initiative will include:

- Design, build and implement a Data Mart data repository containing selected education and employment data from the following agencies:
    - Arkansas Department of Higher Education
    - Arkansas Department of Education
    - Arkansas Department of Workforce Services
    - Arkansas Department of Finance and Administration (Income Tax System)
- Selected extracted files from each agency's data files will be matched and merged for the project data analysis and storage of non-identity results. Data will only be included after official documented approval from the owner of the data of each agency.
- Once completed, the data repository may be used by participating agency users for approved custom report views. Only authorized individuals may have access for ad hoc data queries and reporting.
- Identification of data sources to produce select reports
- Identification of missing data sources for select reports
- Documentation of methodology and approach for data storage and metadata
- Documentation of reports to be produced in this phase.
- Defined specifics of Phase II scope: Phase II will be to add additional agencies' information that will contribute toward the goal of this effort.

Charter Purpose

The purpose of this document is to:

- Authorize the project known as Arkansas Education to Employment Tracking and Trends Initiative (AEETT)
- Define the scope of the project
- Establish the success factors of the project
- Define the constraints, assumptions and risks
- Define the project team's roles and responsibilities
- Establish decision making authorities
- Establish project communication requirements

Project Success Factor

The Arkansas Education to Employment Tracking and Trends Initiative (AEETT) is deemed successful based on:

- A central repository of AEETT information and meta data that is useful to authorizes agencies
- Sensitive information is not accessible
- Business Objects Licenses are provided to authorized individuals
- Authorized individuals are trained for accessing custom reports and creating basic ad-hoc reporting through Business Objects.
- Data matching process is based on SSN and/or other sensitive information for linking Agency information without displaying the sensitive information.
- Information extracts and data build processes are in place for on-going rebuilds of data as required to refresh information.
- On-going access and support is fully funded and supported by participating agencies.
- At least 5 Custom reports can be produced providing statistical information representing the current education and workforce conditions.
- Reports provide information that aids in providing better ways in improving related services

Participating Stakeholders

Arkansas Department of Career Education
Arkansas Economic Development Commission
Arkansas Department of Education
Arkansas Department of Higher Education
Arkansas Department of Workforce Services

Outside of Scope:

If it is discovered that key fields are not populated with the data needed to produce the reports requested, a decision must be made how to address the missing information. Either a separate effort or a project change request may be needed to add that scope and cost.

The Oklahoma report has a number of reports that this effort plans to ultimately replicate. However, Phase I of this effort is to produce a limited number of custom reports with the information provided. Additional custom reports maybe added; additional resource time will be needed.
If the fields needed for Arkansas reporting are not included in the files defined for this effort, either a separate effort or a project change request will be needed to add that scope and cost.

It is requested that Phase II and scope additions be held until the initial custom reports and results are produced to the stakeholders' satisfaction.

A Project Change Request (PCR) form will be used for scope additions.

Change Management:

Approved Project Change Requests (PCR) will be used to document and track any change to project scope, cost or milestone schedule. Any change to the scope may impact the cost and schedule.

Project Constraints, Assumptions and Risks

Constraints

- Subject Matter Expert (SME) availability
- Lack of Resources availability can affect duration of effort;
  - Data warehouse resources needed; will impact other efforts
- Budget
- Some data fields critical to select matching and reporting may not be populated
- Contract(s) with Department of Workforce Services must be approved before DWS information can be accessed and shared. Need to verify if other agencies sharing data have the same requirements.
- Laws protecting the information must be identified and followed.

Assumptions

- Agencies' Executive Participants will have buy-in, support and participation during and after implementation.
- Existing business processes may be redefined to achieve needed results and benefits.
- The Project Manager will have sufficient authority necessary to keep the project within scope and time.
- Stakeholders will make every effort to respond to questions within one business day.
- Issues will be documented and resolved in a timely manner.
- Project budget authorizations will be approved
- Project will begin after project funding is approved.
- While the SSN and other identifying information will be used to match information across agencies, the sensitive information will not be shared.
- Zipcode-plus4 is needed to identify the most accurate location within state for GIS presentation of information

Risks

Identify the expected risks to which the project will be exposed. Assess the likelihood of each risk occurring and its impact on the project.

- Complexities of multi-agency involvement;
  - Agreed upon understanding of meta data of common fields among agencies
  - Subject Matter Expertise availability
  - Availability of agency resources for training to access and produce ad-hoc reports

- The primary risks after implementation include:
  - Key data must be available to produce the expected results. Data fields that are not populated will impact reported results.

  - Availability of agency resources to produce ad-hoc reports
  - Information needed where no field exist that matches that need. Capturing additional data may be considered.
- Funding for development
- Funding for ongoing support cost

Project Funding Source

For development, each month's labor charges will be billed to an ADWS account to be determined.

The cost breakdown by agency for maintenance will be finalized before project is implemented to production.

The DIS shared billing code for maintenance will be:
Account: 499520000 DIS Agency Code 0385 System Sub: CG51 Project: 2AX

If any agency has the opportunity to provide grant funds in support of this effort, that agency is encouraged to apply the funds to this effort. The remaining will then be divided among the customers as agreed upon.

Project Authority

Authorization

Owner/Stakeholders:

The Governor's Workforce Cabinet will have ownership of this initiative.

Governor's Workforce Cabinet participants consider the project charter for approval.

Shared financial support will be agreed upon by the participating agencies.

Participating agency directors and authorized stakeholders will have authority to approve the decision making factors of this effort.

Project Manager

The Project Manager will have the authority to require tasks, time estimates, and statuses from participants for reporting requirements.

Project Team

The Project Team will have the authority to make business and technical decisions to promote the success of this effort.

Key Project Team Roles & Responsibilities

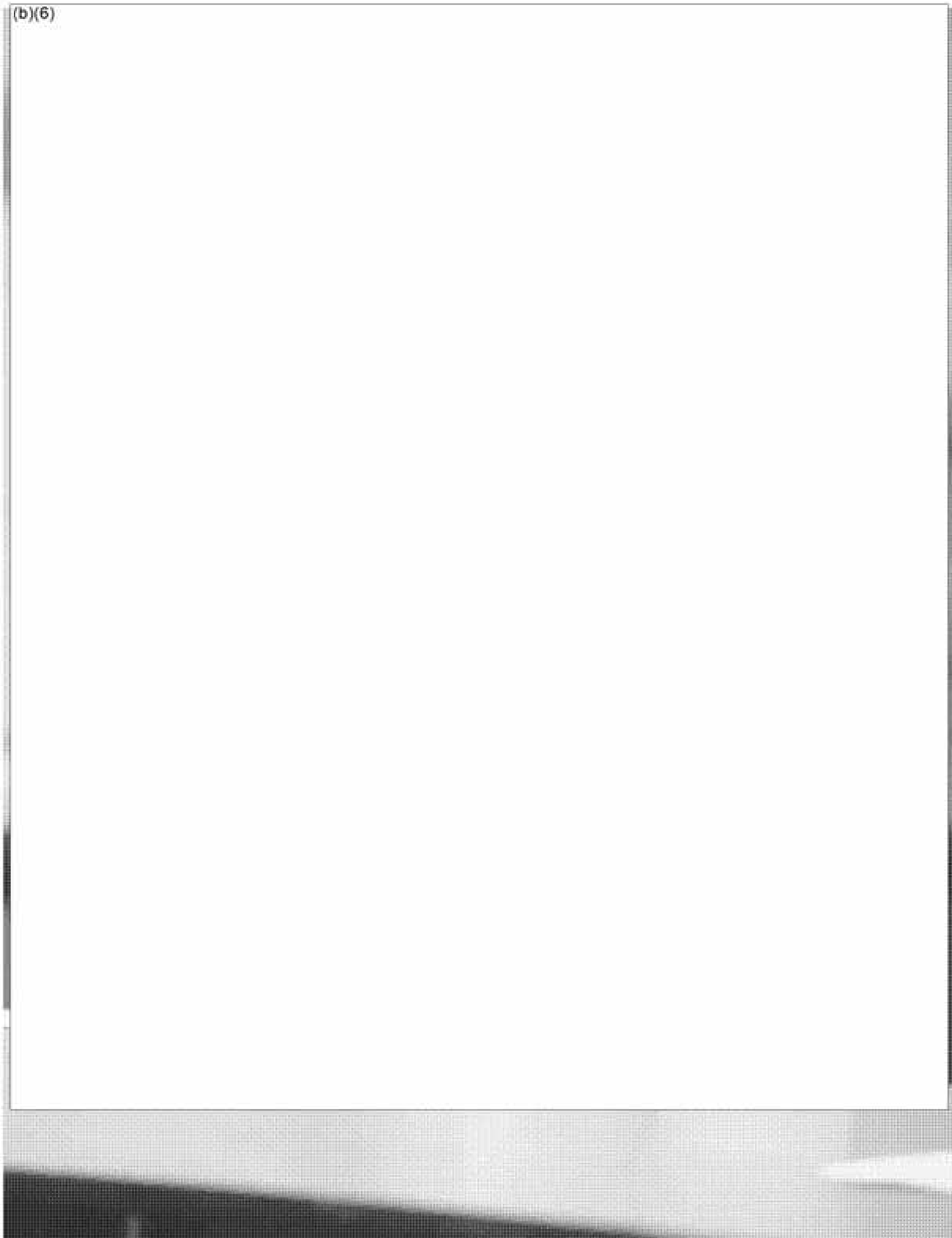
Title	Name	Role(s)
Participating Agencies		• Approves DIS Service Requests; Project Charter, Authorizes project funding • Provides requirements; evaluates deliverables for acceptance.
DIS Project Manager		• Develops project charter and project plan. • Ensures project deliverables, budget, and timeline are met. • Manages Project Schedule; • Communicates project progress and unresolved issues to executive sponsor. • Monitors and reports the project progress
Business Analysis		Interview customers, documentation and program specifications • Documents detailed requirements • Documents Custom Reports • Documents Meta Data capture process
Data Warehouse Architect		• Creates and maintains the agency data files and Data Warehouse • Design Business Objects Universe • Helps the developer find practical solutions for user requirements
Data Base Administration		• Data Management, database creation, development, deployment
Data Warehouse Analyst		• Develop data transformation processes & load to Data Warehouse • Transition to Production • Training Preparation & class
Reporting Participants		• Individuals who will be trained to use Business Objects to access custom reports and to use tool for ad-hoc reporting.

Signatures

The signatures of the people below relay an understanding in the purpose and content of this document by those signing it. By signing this document you agree to this as the formal charter statement to begin work on the project described within.

Name	Title/Agency	Signature	Date
Dr. Jim Purcell	Director, Arkansas Department of Higher Education		9-10-09
Artee Williams	Director, Arkansas Department of Workforce Services		9-14-09
Maria Haley	Executive Director, Arkansas Economic Development Commission		9-10-09
Dr. Diana Julian	Interim Director Arkansas Department of Education		9-10-09
William "Bill" Walker, Jr.	Director, Arkansas Department of Career Education		9/14/09

Appendix D



Smart Course to Success: Arkansas's Race to the Top

Memorandum of Understanding
For the 2009-10 Academic Year
Between
The Arkansas Department of Education and Teach For America, Inc.

The purpose of this Memorandum of Understanding is to formalize the partnership between the Arkansas Department of Education (ADE) and Teach For America, Inc. (TFA).

WHEREAS, the ADE seeks to recruit qualified new teachers for hard to staff districts and schools in the Delta and to equip them with the ongoing support and professional development necessary to ensure that they succeed in the classroom;

WHEREAS, Teach For America has a proven history of successfully recruiting, training, and professionally developing high quality teachers who are specifically equipped to positively impact student achievement in under-resourced communities and developing a pipeline of people with the potential to serve as future leaders in the Delta and beyond; and

BOTH PARTIES HEREBY RESOLVE to enter into this Memorandum of Understanding to continue using the Delta region of Arkansas as a placement site for teachers participating in Teach For America for the 2009-10 academic year.

I. Responsibilities of the Arkansas Department of Education:

A. Hiring and Placement Process:

1. Facilitate the following goals at the district level:

   a.) Teach For America teachers will be hired to fill provisional or initial licensure areas across the full range of grade levels and subject matters, including non-critical shortage areas where a highly qualified, suitable AR teacher cannot be found locally or by relocation to fill the teaching vacancy.

   b.) When possible Teach For America teachers will be "clustered" in groups of at least two or more at individual schools with an eye toward continuity in a school and district over time. That said, district administrators will guide the desired balance of TFA and non-TFA teaching staff in any given year, keeping in mind that the ADE requests that a majority of their staff should remain highly-qualified, effective, veteran teachers as opposed to novice teachers.

c.) Teach For America teachers will be placed within districts in numbers adequate to impact their students' academic achievement and to create synergy around the district's reform efforts.

d.) Teach For America teachers will receive the same salary and benefits as other full-time licensed first-year teachers. Teach For America teachers returning for their second year of service will have the same seniority rights and salary as other full-time licensed second-year teachers.

2. Help TFA identify districts in the Delta with significant needs for Teach For America's services and to facilitate communication with those potential placement areas including superintendents and principals when incoming numbers allow for expansion to new districts:

a.) Give partnership priority to districts that are contiguous or near current partnering districts that meet TFA's needs profile.

b.) Make sure superintendents and principals remain current on licensure requirements and procedures, e.g.,when appropriate, have districts provide conditional enrollment letter; have principal & TFA representative sign-off if a 2nd secondary subject is being added to a license, and etc.

B. Financial Obligations:

1. Commit to pay Teach For America $3000 per year per teacher during each of the two years of their TFA commitment. The Arkansas Department of Education will pay the amount of $3000 per Arkansas contracted teacher up to a maximum of 100 teachers (total sum not to exceed $300,000) for the 2009-2010 academic year.

II. Responsibilities of Teach For America:

A. Recruitment and Selection of New Teachers:

1. Recruit and select applicants from diverse backgrounds with a proven track record of personal and academic achievement and a commitment to work relentlessly to close the achievement gap between their students and students in more affluent school districts.

2. Select individuals for hiring and placement who meet federal guidelines for "Highly Qualified" and state and district requirements for new teacher hires under Arkansas' non-traditional route for Teach For America. This

route allows Teach For America teachers to apply for and enter teaching with proper Criminal Background Checks, a bachelor's degree or higher from a regionally accredited college/university, a 2.5 G.P.A., and successful completion of Praxis I and appropriate Praxis II tests and passing scores as deemed necessary (this includes content knowledge Praxis II tests for Arkansas or satisfying the qualifying Praxis II content knowledge for Mississippi licensure as an initial test to open the door for licensure in Arkansas.) Teach for America teachers may be placed only in teaching positions allowable for teachers holding an Arkansas provisional license. (This excludes placement of a TFA teacher in a position such as special education, guidance counselor, library media, etc. unless said teacher can be licensed through reciprocity.) Following the initial Praxis II tests, Teach For America teachers will continue to follow Arkansas approved policies for additional Praxis II tests. Before they receive their second provisional license the individual teacher must complete all required Praxis II tests for Arkansas and any required course work appropriate to their licensure areas. (This includes the reading courses for P-4 and Middle Level teachers, plus the Arkansas History course for P-4, Middle Level and Secondary social studies teachers.) Teach For America will track and submit proof of completion to the Non-Traditional Licensure Unit in the Office of Teacher Quality under the required timelines in order for a candidate to receive their second provisional AR license.

B. Pre-Service Training and On-going Professional Development:

1. Require all Teach For America teachers to participate in an intensive five-week summer institute designed to prepare new teachers to enter the classroom. During the institute, teachers will work in teams of 3-4 to assume full responsibility for teaching a class of students in morning summer schools operated by Teach For America under the supervision of a faculty of experienced teachers. Simultaneously, teachers will also participate in a full schedule of professional development activities in the morning and afternoons centered upon Teach For America's training curriculum. Teach For America teachers will receive a total of nine (9) graduate credits from the University of St. Thomas, Houston, for the following courses: Classroom Management; Literacy Development (which is the equivalent to the AR Reading I course) and Instructional Planning, unless they already acquired equivalent courses work through prior university study.

2. Hold a weeklong induction for teachers assigned to Arkansas to orient them to the state and the district. Teach For America regional staff will organize activities designed to introduce new teachers to the resources and history of the communities in which they will teach. (An Arkansas

administrator or teacher from this region will be invited to assist in this orientation. Also, a representative from the ADE will be invited to attend and co-present the AR licensure session to the AR corps members.)

3. Provide ongoing professional development for all Teach For America teachers throughout the school year, including periodic and structured classroom observations by regional program staff, observations of and by other teachers within their schools and at schools widely considered excellent, one-on-one reflective discussions thrice yearly, monthly content-area/grade level meetings facilitated by veteran teachers, regular community group meetings with Teach For America teachers to discuss/share best practices and other corps-building activities. Additionally, provide first -quarter weekly structure, called New Teacher Support Groups, for first-year teachers that focus on readings, trouble-shooting, and building strong classroom management. (Participation in the professional development training by TFA does not exempt the candidate from the professional development training offered by the employing school district.)

4. Engage TFA teachers in structured process of diagnosing students, assessing students' progress throughout year, and measuring students' academic growth at year's end.

5. Ensure that Teach For America teachers have access to local teaching resources and professional development opportunities available in the district and the surrounding areas, including participation in the ADE's PATHWISE mentoring program. AR districts are responsible for assigning appropriate building and grade level/subject mentors as part of the State's requirement for PATHWISE and the ADE provides the mentor/mentee funding as with any other non-traditional/novice teacher in the state.

C. Hiring and Placement Process

1. Work with partner districts in April, May and June to assess upcoming grade/subject teacher needs. Communicate to the ADE and partner districts the estimated number of entering teachers and expected placements for the upcoming school year. TFA will provide placement updates to the ADE during the months of May, June and July. Note: Because the numbers of teachers who will matriculate and complete the summer institute cannot be determined with complete certainty, Teach For America may place fewer teachers in the fall than originally estimated.

2. Provide accurate and timely information about new teachers – including teacher's name, the name of hiring district and subject or grade level

assignment - to the ADE in late August in conjunction with the annual invoice – to be paid by September 30th for inclusion in TFA's fiscal year - for TFA teachers under contract in Arkansas districts.

Both parties have read this Memorandum of Understanding and agree to hold each other harmless from any legal action that may arise from implementing this agreement.

Representatives of the Arkansas Department of Education and Teach For America, Inc. have approved this Memorandum of Understanding.

Dated:____________________

Dr. Diana Julian Interim Commissioner, ADE	Ron Nurnberg Executive Director, TFA•Delta

Agency # 005.16

ARKANSAS DEPARTMENT OF EDUCATION RULES GOVERNING THE NON-TRADITIONAL LICENSURE PROGRAM

July 2007

1.0 PURPOSE

1.01 The purpose of these rules is to establish the requirements and procedures for obtaining teacher licensure through the Arkansas Department of Education (ADE) Non-Traditional Licensure Program.

2.0 REGULATORY AUTHORITY

2.01 These rules shall be known as the Arkansas Department of Education Rules Governing The Non-Traditional Licensure Program.

2.02 These rules are enacted pursuant to the authority of the State Board of Education under Ark. Code Ann. § 6-11-105, Ark. Code Ann. § 6-17-401, Ark. Code Ann. § 6-17-409 and Ark. Code Ann. § 25-15-204.

3.0 DEFINITIONS

For the purpose of these Rules the following terms shall be defined to mean:

3.01 **Area of Licensure** - a particular content field as identified in Appendix A, Areas and Levels of Licensure/Endorsement.

3.02 **Induction** - the period of time beginning with a teacher's first employment as the teacher of record in an Arkansas public school, cooperative or agency that requires an Arkansas teaching license. The novice teacher, operating under an Initial License, is provided mentoring support and accelerated professional development during the Initial license period. The induction period concludes with successful completion of the state-mandated performance assessment.

3.03 **Initial Teaching License** - a three-year teaching license, issued by the State Board of Education, which allows one to teach in Arkansas public schools.

3.03.1 The Initial license is issued only in areas and levels of licensure as approved by the State Board of Education as referenced in Appendix A, Areas and Levels of Licensure/Endorsement, which are hereby incorporated into these rules.

3.03.2 The Initial license may be issued to:

3.03.2.1 Teachers who have completed an approved teacher education program from a regionally and/or National Council for Accreditation of Teacher Education accredited college or university (including the appropriate state-mandated assessments).

3.03.2.2 Teachers who have completed the Non-Traditional Licensure Program (including the appropriate state-mandated assessments).

3.03.2.3 Teachers who were prepared out of state but did not license.

3.04 **Level of Licensure** - the grade/age level parameter of the teaching license as identified in Appendix A, Areas and Levels of Licensure/Endorsement.

3.05 **Mentor** - a licensed master teacher with a minimum of three years successful teaching experience who is trained in the state-adopted mentoring model. Mentors are assigned in their districts to assist a novice teacher by providing focused feedback with regard to instructional skills, classroom management and professional behaviors.

3.06 **Mentoring** - the act of a certified mentor providing support and focused feedback to a novice teacher (through the state-adopted mentoring model) with the goal of enhanced instructional skills, competency and professional development.

3.07 **Non-Traditional Licensure Program (NTLP)** - the program administered by the Arkansas Department of Education, whose participants hold a minimum of a baccalaureate degree (and have passed the appropriate state-mandated assessments) and are allowed to teach in an Arkansas school via a Provisional license. The program requirements consist of two years of teaching and instructional modules, which must be completed within three years.

3.08 **(Non-Traditional) Provisional License** – the provisional teaching license issued to participants in the Non-Traditional Licensure Program.

3.09 **Novice Teacher** - any licensed teacher-of-record with less than one year of public school, or accredited private school, classroom-teaching experience, not including student internship or substitute teaching.

3.10 **Out-of-Country Candidate** - a person from a foreign country who holds the equivalent of a four-year degree, and who comes from a foreign country that does not have reciprocity with Arkansas.

3.11 **Performance Assessment** - an assessment tool used for evaluation of the classroom performance of a novice teacher, conducted by a trained assessor who utilizes a framework of essential teaching skills in which the novice teacher must demonstrate competency in an authentic classroom setting.

3.11.1 Successful completion of the performance assessment is defined as meeting the state-adopted cut-score/minimum passing score.

3.12 **Professional Teaching Permit** – a one-year permit issued to an experienced professional to teach one or two classes per semester as teacher-of-record in an Arkansas public school. This may be issued under the auspices of the Non-

Traditional Licensure Program to any active professional in the field related to the teaching/licensure subject area or any retired professional with at least three years of experience in the field related to the teaching/licensure subject area.

3.13 **Program of Study** - a state-approved teacher preparation curriculum offered at an Arkansas college or university, based on the *Arkansas Licensure Standards*. The program requires a candidate to demonstrate and document competency in the specific knowledge, skills and dispositions for a particular licensure area and level.

3.14 **Provisional Teaching License** - a temporary teaching license available to candidates who have not completed all requirements for the Initial or Standard Arkansas teaching license.

3.14 **Standard Teaching License** - a five-year renewable license, issued by the State Board of Education, which allows one to teach in Arkansas public schools. The Standard License is issued to:

3.14.1 Initial License holders who have successfully completed the state required induction for novice teachers and the performance assessment.

3.14.2 Provisional License holders who have successfully completed the Non-Traditional Licensure Program (including all appropriate assessments), the state required induction for novice teachers, and the performance assessment .

3.14.3 Teachers who have completed all requirements for standard licensure through reciprocity.

3.15 **Teacher of Record** - an instructional teacher, who is officially responsible for a class and its grades, employed under contract (in a licensed staff position) by a school, school district or other Arkansas agency or organization requiring an Arkansas teaching license.

4.0 REQUIREMENTS FOR ADMISSION TO THE NTL PROGRAM

4.01 The following is required for admission to the NTL program:

4.01.1 A completed Non-Traditional Licensure Program application with all required accompanying documentation.

4.01.2 Official transcript(s) documenting an awarded four-year college bachelor's degree or higher from a regionally and/or National Council for Accreditation of Teacher Education (NCATE) accredited institution.

4.01.2.1 For out-of-country candidates, an official college transcript evaluation from a private credential evaluation agency documenting that the bachelor's degree is equivalent to a four-year degree from an accredited institution of higher learning in the United States. The degree is to be evaluated by a private credential evaluation agency. This must be a course-by-course-evaluation prepared in English indicating the candidate's major course of study to include documentation of the candidate's cumulative Grade Point Average (GPA).

4.01.3 Documentation of a minimum cumulative undergraduate or graduate grade point average (GPA) of 2.50 or a minimum GPA of 2.75 on the last 60 credit hours of coursework.

4.01.3.1 Candidates for the NTLP may be exempt from the standard minimum GPA requirement if all the following conditions are met:

4.01.3.1.1 Have at least fifteen (15) years of experience in the field related to the teaching/licensure subject area.

4.01.3.1.2 Demonstrate a minimum of a 2.0 undergraduate or graduate grade point average.

4.01.3.1.3 Submit one (1) letter of justification from the applicant expressing the relevance of the applicants' credentials to teach the subject in question.

4.01.3.1.4 Have two (2) professional letters of recommendation submitted by references to the NTL office.

4.01.3.1.5 Complete the regular NTL application process.

4.01.4 An official score report reflecting passing scores, as approved by the State Board of Education, on the following state required assessments:

4.01.4.1 The basic skills assessment (all parts)

4.01.4.1.1 If a candidate holds a Master's Degree or above, and has taken the graduate level assessment, and has scored at or above the State Board established cut-score/minimum passing score, that assessment be accepted in lieu of the basic skills assessment(s).

4.01.4.2 The state required subject-content-area assessment(s) for the specific licensure area(s) sought.

4.01.5 Documentation of passing the required background checks by the Arkansas State Police and the Federal Bureau of Investigation as required by Ark. Code Ann.§ 6-17-410.

4.01.6 Payment of the Non-Traditional Licensure Program Fee which is established annually by the Arkansas Department of Education.

4.01.7 Applicable college/university coursework (in advance) from a regionally/nationally accredited institution recognized by the U. S. Department of Education or the Council for Higher Education Accreditation. Required coursework includes:

4.01.7.1 Three (3) college credit-hours of *Arkansas History* (in advance) for the licenses of: Early Childhood Education (P-4), Middle Childhood Education (4-8), and Social Studies (7-12). Ark. Code Ann. § 6-17-418

4.01.7.2 Six (6) college credit-hours in *Methods of Teaching Reading* (in advance, completed with a grade of "C" or better) for the licenses of: Early Childhood Education (P-4) and/or Middle Childhood Education (4-8).

5.0 PROFESSIONAL TEACHING PERMIT

5.01 A Professional Teaching Permit (PTP):

5.01.1 Is a one-year permit issued to an experienced professional for the purpose of teaching one or two classes per semester as teacher-of-record in an Arkansas public school.

5.01.2 Is issued for licensure content areas in grades 9-12 only.

5.01.2.1 Any candidate who teaches for three (3) years with a PTP and applies to the Non-Traditional Licensure Program (NTLP) would be eligible for the NTLP "one-year" track.

5.02 To obtain a Professional Teaching Permit a candidate must:

5.02.1 A Bachelors degree with a minimum of three years of working experience in the content area of the class to be taught.

5.02.2 Be offered employment to teach one (1) or no more than two (2) regularly scheduled, for-credit classes in an AR public school.

5.02.3 Submit to the Office of Teacher Quality a complete PTP application.

5.02.4 Submit one (1) letter of justification from the applicant expressing the relevance of the applicants' credentials to teach the subject in question.

5.02.5 Have two (2) professional letters of recommendation submitted by references to the Office of Teacher Quality.

5.02.6 Pass the appropriate Praxis II Content Knowledge test for the class to be taught.

5.02.7 Pass a non-criminal background check.

5.02.8 Successfully complete a forty (40)-hour PTP pedagogy training within the first year of teaching. Reinforcement of pedagogical skills will be scheduled as needed by the ADE, Office of Teacher Quality.

6.0 REQUIREMENTS FOR OBTAINING A (NON-TRADITIONAL) PROVISIONAL TEACHING LICENSE

6.01 To obtain a Provisional Teaching License through NTLP a candidate must:

6.01.1 Be admitted into the Arkansas Department of Education's Non-Traditional Teacher Licensure Program (NTLP)

6.01.2 Successfully complete the summer instructional modules

6.01.3 Document appropriate employment as teacher-of-record, teaching a minimum of five hours per day in the appropriate licensure area(s), with a certified mentor approved by the ADE in an Arkansas public school or a private school within the state of Arkansas accredited by a nationally recognized accrediting association during the provisional licensure period.

6.01.3.1 If employment is not secured by September 1, of the year of admission into the NTLP, the participant shall accept teaching employment (if offered) working in conjunction with the ADE Office of Teacher Recruitment.

6.01.3.2 If the candidate does not accept said employment, he or she may be administratively withdrawn from the program.

6.01.3.3 If appropriate employment is not found by the candidate or the Office of Teacher Recruitment, the candidate shall be maintained on "hold" (one year only), until the following year.

6.01.3.4 A candidate on "hold" shall not be issued a license and shall be required to teach the following year. (The candidate shall still be required to complete two years of teaching within a three-year period.)

6.02 A one-year Provisional teaching license is:

6.02.1 Issued to NTL participants at the beginning of each year of the program

6.02.2 Effective as of August first of the year of issue

6.02.3 Active for one year

6.03 Provisional licenses are issued to participants (in one license area, except as follows) based upon the areas and levels of teaching assignment ~~as~~ according to Appendix A, NTL Teaching Areas and Levels of Licensure/Endorsement.

6.03.1 Secondary NTLP participants teaching in the content licensure areas of Mathematics, English, Science, Social Studies Speech/ Drama or any Foreign Language may be issued a license in two (2) of these areas. Participants may be licensed in both areas if they have successfully completed all content specific licensure Praxis exams, and have a teaching assignment, in both licensure areas. (Those candidates wishing to add social studies must also complete the required three (3) college credit-hours of *Arkansas History*, in advance of licensure.)

6.03.1.1 A Journalism endorsement may be added as the second area of licensure to any of these five areas if the required program of study for Journalism has been_successfully completed (including the required Praxis II assessment*)* and the teacher has a teaching assignment in Journalism.

6.03.1.2 An English Second Language (ESL) endorsement (grades 7-12) may be added as the second area of licensure to any of these five areas if the required program of study for ESL, or the ESL Academy for college credit, has been successfully completed (including the required Praxis II assessment*)* and the teacher has a teaching assignment in ESL.

6.03.2 An ESL endorsement (P-8) may be added to an Early Childhood (P-4) or Middle Childhood (4-8) provisional license if the required program of study for ESL, or the ESL Academy for college credit, has been successfully completed and the teacher has a teaching assignment in ESL.

6.03.2.1 The ESL endorsement does not allow teachers licensed in Early Childhood or Middle Childhood to "test-out" in any Secondary Licensure area.

6.03.3 A Coaching endorsement may be added as the second area of licensure to any license area if the required program of study for Coaching and the appropriate Praxis II assessment are successfully completed and the teacher has a position that requires a Coaching endorsement.

6.04 NTLP participants may not file an ALP or teach out-of- licensure area while enrolled in the NTLP.

7.0 GENERAL POLICIES AND PROCEDURES RELATING TO THE NON-TRADITIONAL LICENSURE PROGRAM

7.01 There are two tracks in the NTLP, a one-year program or a two-year program.

7.01.1 Candidates with a four-year degree who have completed a program of study in the field of Education (all coursework with the exception of Student Teaching) may be eligible to complete a one-year program if their degree was awarded within five years of the date of application.

7.01.2 Candidates with a four-year degree, who have not completed a program of study in the field of Education, or those whose Education degree was awarded more than five years before the date of application, must complete a two-year program.

7.02 Participants in the Non-Traditional Licensure Program shall:

7.02.1 Be employed as the teacher of record in an Arkansas school

7.02.2 Teach a minimum of five hours per day in their licensure area(s)

7.02.2.1 Teach for one year, if in the one-year program

7.02.2.2 Teach for two years, if in the two-year program

7.02.3 Be assigned to, and attend a Non-Traditional Licensure Program satellite site for instructional modules

7.02.4 Be mentored according to the Arkansas Department of Education Teacher Induction Guidelines

7.02.5 Complete all instructional modules prescribed by the Arkansas Department of Education

7.02.6 Pass the appropriate state mandated pedagogical assessment~~(s)~~

7.02.7 Become eligible to participate in the state-mandated performance assessment in their final semester in the program, after the pedagogical assessment has been successfully completed

7.02.8 Adhere to and abide by all the policies and procedures as outlined in the published NTL Handbook for the year of admission

7.03 The required NTL program prescribed by the Arkansas Department of Education includes:

7.03.1 Required Instructional Modules during the summer

7.03.2 Required Instructional Modules during the school year
7.03.3 Development of a professional portfolio
7.03.4 Novice Teacher Induction (which includes Mentoring by a trained and certified mentor)
7.03.5 Teaching a minimum of five hours per day (or the equivalent) in the licensure area(s)

7.04 Successful completion of the Non-Traditional Licensure Program may yield either an Initial or a Standard Teaching license:
7.04.1 To receive an Initial teaching license, the participant shall:
7.04.1.1 Complete all NTL program requirements prescribed by the Arkansas Department of Education, and
7.04.1.2 Pass the appropriate state mandated pedagogical assessment(s).
7.04.2 To receive a Standard teaching license, the participant shall:
7.04.2.1 Complete all NTL program requirements prescribed by the Arkansas Department of Education
7.04.2.2 Pass the appropriate state mandated pedagogical assessment(s)
7.04.2.3 Successfully complete Induction and the state required performance assessment
7.04.3 If the pedagogical assessment is not successfully completed within the NTLP program period, a subsequent license will not be issued. The participant will be allowed to attend ADE-scheduled remedial sessions for one year, during which time the participant may attempt to pass the assessment and, if successful, will be issued an Initial license.
7.04.4 If the pedagogical assessment is not successfully completed within the remedial year, the participant will be administratively withdrawn from the program.

7.05 Annual enrollment in the NTL program may be limited by:
7.05.1 Licensure requirements.
7.05.2 Licensure area and level of candidates (shortage areas may be given preference).
7.05.3 Program capacity (in which case applications will not be accepted after capacity is reached).

8.0 RULES PERTAINING TO NOVICE TEACHER INDUCTION FOR NON-TRADITIONAL NOVICE TEACHERS

8.01 All Arkansas School Districts shall implement, support, and monitor the quality of mentoring as outlined in ADE Induction Guidelines and the district's approved plan for mentoring.
8.01.1 Implementation of the district mentoring plan shall include:
8.01.1.1 Selecting mentor candidates according to the Arkansas Mentor Qualifications form
8.01.1.2 Providing a trained mentor for each NTL enrollee
8.01.2 Support includes:

8.01.2.1 Providing a minimum of two (2) hours every two weeks of released time (on average) during the contract day for the mentor and novice teacher to work together

8.01.2.2 Assisting the novice and mentor to schedule focused observations and professional development activities

8.01.2.3 Providing activities for mentors and novice teachers, which engage them in collaborative dialogue, problem solving, and professional development

8.01.3 Monitoring of the quality of the district program is achieved by review of the required mentoring documentation by the District Project Director.

8.01.4 All other mentoring documents shall become the sole possession of the novice teacher and shall not be utilized for employment decisions or employment evaluation decisions be collected and maintained by the District's Project Director. At the conclusion of Induction all documentation, exclusive of the timesheets, become the sole possession of the Novice Teacher.

8.02 Mentoring observational information shall not be utilized in any way to make employment decisions unless students are at risk, either physically or emotionally.

9.0 GENERAL POLICIES PERTAINING TO LICENSES

9.01 NTL participants are issued the Provisional License in level(s)/area(s) of licensure based on having passed the assessment(s) in that licensure level(s)/area(s) and securing appropriate teaching_employment in that level(s)/area(s) in accordance with the published NTL Handbook for the year of admission.

9.02 NTL participants will be issued either the Initial or Standard Teaching License in the level(s)/area(s) of licensure based on having passed the assessment(s) in that licensure level(s)/area(s) and successfully completing two years of employment in that level(s)/area(s) in accordance with the published NTL Handbook for the year of admission. (One year of teaching is permitted for those candidates who have been identified in the "one-year" program).

9.03 NTL teachers must teach in a traditional classroom setting. An ESL endorsement is granted to allow the NTL teacher to work with ELL students in the regular classroom environment. (This excludes the NTL teacher from being assigned to a transitional or any other non-regular classroom setting.)

9.04 Teachers who need a duplicate Arkansas teaching license must submit a completed application form (indicating "duplicate") to the Office of Professional Licensure.

9.04.1 A duplicate license will be issued only for a license that is current.

9.05 All information and documentation submitted for an Arkansas Teacher License must be timely, accurate, authentic and unaltered in any way.

9.05.1 Any license issued as a result of information submitted that is not in compliance with section 8.04 will be null and void and shall be rescinded by the Office of Professional Licensure, as authorized by the State Board of Education.

9.06 The Office of Professional Licensure, as authorized by the State Board of Education, reserves the right to amend and/or rescind any Arkansas Teacher License that has been issued in error.

9.07 The Office of Professional Licensure, as authorized by the State Board of Education, reserves the right to non-renew a Non-Traditional Provisional License if the licensee does not successfully complete the required preparation modules, and non-renewal is recommended by the Non-Traditional Licensure Office. The Office of Professional Licensure shall not convert a provisional license to an initial license if the candidate fails to meet all criteria of the NTL program.

Appendix A
Arkansas Department of Education
NTL Teaching Areas and Levels of Licensure/Endorsement

Areas of Licensure	Grade Levels*		
Early Childhood	P-4		
Middle Childhood: Math/Science	4-8		
Middle Childhood: English-Lang Arts/Social Studies	4-8		
Mathematics		7-12	
English		7-12	
Social Studies		7-12	
Physical/Earth Science		7-12	
Life/Earth Science		7-12	
Drama/Speech		7-12	
P.E. Wellness & Leisure	P-8	7-12	
Art	P-8	7-12	
Music, Vocal, & Instrumental	P-8	7-12	
Spanish	P-8	7-12	
French	P-8	7-12	
German	P-8	7-12	
Family & Consumer Science	4-8	7-12	4-12
Agriculture	4-8	7-12	4-12
Industrial Technology	4-8	7-12	4-12
Business Technology	4-8	7-12	4-12
Marketing Technology	4-8	7-12	4-12
Areas of Endorsement			
Coaching		7-12	
ESL	P-8	7-12	
Journalism		7-12	
Mandarin Chinese		7-12	

* Level of licensure issued is determined based on grade level(s) taught in the NTL program.

Share Your Knowledge And Experience

With a Professional Teaching Permit, you will have the opportunity to spark the minds of high school students in your community. The Arkansas Department of Education has developed this new program to enable working professionals to teach — and get paid for — up to two class periods a day in content areas related to their fields of employment. This opportunity is for classes offered in the ninth- through twelfth-grades.

Students will benefit from learning how their studies relate to "real world" jobs, and you will have the opportunity to mentor young people as they discover their lifelong goals.

For more information contact:

Barbara Culpepper
Office of Teacher Quality
Arkansas Department of Education
501 Woodlane Street, Suite 220C
Little Rock, AR 72201
barbara.culpepper@arkansas.gov
501.682.5763

ARKANSAS DEPARTMENT OF
Education

D-1-3 PTP Brochure

Arkansas Professional Teaching Permit

Bringing Your World to the Classroom

Because you could be the sp
for a student's academic success.

You can teach! You can make a difference!

The Arkansas Department of Education's Office of Teacher Quality has developed a program that allows working professionals like you to use your expertise to teach a couple of classes a semester in a subject area related to your field — all the while maintaining your own career.

And everyone benefits! You will be paid to bring your knowledge to the classroom, have the opportunity to inspire young people and experience a new career. School districts benefit from having a professional filling a needed niche, and students will gain from your real-world expertise.

The Arkansas Department of Education recognizes that each local community has a resource of degreed professionals who possess valuable experience. For instance, what a great match for the local pharmacist to teach chemistry or a local artist to teach art.

If you are a degreed professional and would like to share your knowledge and experience with students in grades nine through twelve, this program could provide the perfect opportunity for you to make a difference.

ARKANSAS DEPARTMENT OF Education

Qualifications

To receive a Professional Teaching Permit the following qualifications must be met:

1. Have a bachelor's degree with a minimum three years of working experience in the content area of the class to be taught.
2. Must be currently employed in a content field related to the class to be taught.
3. Be offered employment to teach one or no more than two regularly scheduled, for-credit courses in an Arkansas public school.
4. Complete the Professional Teaching Permit application.
5. Pass the appropriate Praxis II Content Knowledge test.
6. Pass a non-criminal background check.
7. Successfully complete a forty-hour Professional Teaching Permit pedagogy training within the first year of teaching.

Application Process

Go to **www.teacharkansas.org** and click on Non-Traditional Licensure. Then click on Professional Teaching Permit. The application is available to be printed.

Send the completed application with the following documents to:

Office of Teacher Quality
Arkansas Department of Education
501 Woodlane Street, Suite 220C
Little Rock, AR 72201

1. Original transcript from accredited college or university showing degree conferred.
2. Original test score report for the Praxis II content test(s).
3. Non-criminal background check documentation.
4. One letter of justification per application.
5. Two letters of recommendation from professionals in your field.

Critical Shortage Areas

Changes in licensure areas of Special Education Instructional Specialist (P-4)(4-12)

Not a shortage area for this year

Licensure Area/Endorsement	99-00	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
Algebra 1 for Middle School (8)										X	X
Art								X	X		
Drama (7-12)										X	
Drama/Speech										X	
Foreign Language - ESL	X			X	X	X	X				
Foreign Language - French	X			X	X	X	X	X	X	X	X
Foreign Language - German	X			X	X	X	X	X	X		
Foreign Language - Italian	X			X	X	X	X				
Foreign Language - Latin	X			X	X	X	X				
Foreign Language - Spanish	X			X	X	X	X	X	X	X	X
Foreign Language - Mandarin Chinese											X
Gifted/Talented Education						X	X	X	X	X	X
Guidance Counseling						X	X	X	X	X	X
Library Media						X	X	X	X	X	X
Mathematics (secondary)	X			X	X	X	X	X	X	X	X
Middle Childhood Language Arts/Social Studies (4-8)						X	X	X	X	X	X
Middle Childhood Math/Science (4-8)						X	X	X	X	X	X
Science (secondary)	X			X	X	X	X	X	X	X	X
Spec Ed - Deaf Education	X			X	X	X	X	X	X	X	X
Spec Ed - Early Childhood	X	no data	no data	X		X	X	X	X	X	X
Spec Ed - Mildly Handicapped K-12	X			X	X	X	X	X	X	X	X
Spec Ed - Moderately/Profoundly Handicapped K-12	X			X	X	X	X	X	X	X	X
Spec Ed - Severely Emotionally Disturbed K-12	X			X	X	X	X	X	X	X	X
Spec Ed - Speech/Language Pathology	X			X	X	X	X			X	X
Spec Ed - Visually Impaired	X			X	X	X	X	X	X	X	X
Speech (7-12)										X	

D-2-1 Teacher Evaluation
Task Force Member List

Teacher Evaluation Task Force

Name	Licensure Level	Yrs of Adm. Exp	School District	Position	Nominated by
xander, Sarah	4-8	6-12	Bergman School District	Middle School Principal	AAEA
ckwell, Anne	4-12	12-22	Pine Bluff School District	7-12 Science	AEA
Blaxton, Daryl			Pocahontas School District	Superintendent	ASSA
Broadway, Lenisha	P-12	6-12	North Little Rock School District	Middle School Principal	AAEA
Crawford, Paulette	P-8	12-22	Mena School District	Second Grade	AEA
Culpepper, Barbara			Arkansas Department of Education	Coordinator of Teacher Quality	ADE
Daniels, Marsha			Cooperative	CO-Op Director	CO-Op
Danielson, Charlotte			Consultant	Author / Consultant	
Davidson, Barbara	P-8	22+	Barton-Lexa School District	Kindergarten Teacher	AEA
Doss, Peggy			University of Arkansas at Monticello	Dean of College of Education	Deans
Faught, Brad	7-12	12-22	Jonesboro School District	Jr. High Principal	AAEA
Fisher, Joe	P-12	12-22	Bryant School District	Middle School Principal	AAEA
High, Roger Darren	P-12	0-5	Dermott School District	K-12 Art	AEA
Howell, Michelle	P-4	0-5	Johnson County School District (Westside)	Third Grade	AEA
Jones, Kyron	P-8	0-5	Pulaski County Special School District	Elementary Principal	AAEA
Ketcherside, Danny	7-12	0-5	Russellville School District	High School Asst. Principal	AAEA
Knight, Mary	7-12	22+	Lee County School District	Social Studies Teacher	AEA
Koehler, Cathy	P-12	22+	Little Rock School District	Library Media Specialist	AEA
Langston, Doug	P-8	22+	Searcy School District	Elementary Principal	AAEA
Loper, Roger	P-12	12-22	Magnolia School District	High School Principal	AAEA
Macri, Donna	P-12	12-22	Omaha School District	Sec. Math/Science & 9-12 Principal	AEA
Marshall, Todd	7-12	12-22	Fort Smith School District	Jr. High Principal	AAEA
Nix, Marty	4-12	12-22	Pulaski County Special School District	Middle School Math	AEA
Rainey, David			Arkansas Legislator	AR House of Representatives	Legislator
Robinson, Brenda	P-4	12-22	Pulaski County Special School District	Primary Teacher	AEA
Rutherford, Robbie	7-12	6-12	Benton School District	Jr. High Principal	AAEA
Shopfner, Becky			AASCD	Board member (ATU)	AASCD
owski, George	7-12	0-5	Mountain Home School District	High School Asst. Principal	AAEA
ith, Horace			School Boards Assoc	Director of Board Development	ARSBA
Smith, Kathy			The Walton Family Foundation	Senior Program Officer	Business
Starzy, Virginia	7-12	12-22	Southside Independence Co. School District	ALE Teacher	AEA
Thrower, Frederick	7-12	0-5	Ft. Smith School District	Secondary Math	AEA
Tolson, Ron			Arkansas Department of Education	Coordinator of Professional Licensure	ADE
Unknown PTA person			PTA		PTA
Waymack, Pam	P-8	0-5	Cabot School District	Elementary Principal	AAEA
Webb, Jane			Rogers School District	Assistant Superintendent for HR	ArkASPA
Williams, Beverly			Arkansas Department of Education	Assistant Commissioner for HR/Licensure	ADE

Teacher Evaluation

1.00 Regulatory Authority

1.01 These regulations shall be known as the Arkansas Department of Education Rules and Regulations For Teacher Evaluation.

1.02 These regulations are enacted pursuant to the State Board of Education's authority under Ark. Code Ann. § 6-11-105.

2.00 Purpose

2.01 The purpose of these regulations is to provide guidance to local districts to design teacher evaluation systems that promote the professional growth of all teachers and enhance learning for all students.

3.00 Philosophy

Evaluation is viewed by the Arkansas Department of Education as a collaborative process, not an event. Evaluation should facilitate or support system wide change. To this end, the school district shall develop teacher evaluation systems that:

3.01 supports the induction of the probationary teacher into the teaching profession and the school district,

3.02 promotes the professional growth of career teachers.

3.03 prompts an improvement in unsatisfactory performance, and

3.04 provides criteria for making responsible personnel decisions.

4.00 Criteria

Local district's shall develop a teacher evaluation system that reflects:

4.01 The philosophy of Arkansas Department of Education and the philosophy of the local district regarding teacher evaluation.

4.02 A sound professional development program that promotes continuous growth of teachers.

4.03 A collegial relationship among the supervisors and teachers.

4.04 A staff development training program for supervisors and teachers.

4.05 A set of teacher competencies descriptive of the local district's expectations and aligned with teacher licensure principles.

5.00 Written Evidence of Personnel Evaluation Plan

5.01 The teacher evaluation plan shall be reviewed and/or revised annually.

5.02 The local district's teacher evaluation system shall be reflected in every school district's improvement plan.

The Domains and Components Adopted by the Arkansas Teachers' Evaluation Task Force July 2009

Domain 1: Planning and Preparation

- Demonstrating Knowledge of Content and Pedagogy – This is based on the premise that a person can not teach what he or she does not know. Next that the nuances of the discipline must be properly represented as well as how the concepts are interrelated. What are the pre-requisite relationships for this content? Knowledge of the pedagogy includes but is not limited to a keen awareness of the common student misconceptions or likely sources of error and how to correct those errors.

- Demonstrating Knowledge of Students – Teachers do not teach in a vacuum and therefore, must know the developmental characteristics of their students- intellectual, social and emotional. Understanding the students' prior knowledge is the basis for what they can learn and understand. Knowledge of the students' interests, cultural heritage and the students' special needs. Bottom line, teachers can not have blind adherence to a curriculum guide but must reflect the constructive nature of human learning.

- Setting Instructional Outcomes - Establish the instructional outcomes by awareness of the factors which must be taken into account; i.e. curriculum. The outcome must "fit" within the sequence of learning, be worthwhile and represent learning central to a discipline. The outcomes must be clear and stated in terms of student learning not student activities. These outcomes are also suitable for the diverse learner.

- Demonstrating Knowledge of Resources – Skilled teachers are knowledgeable of the resources for classroom use, resources to extend the content knowledge and resources for the students. These resources may be from a myriad of sources and the teacher is able to demonstrate their knowledge of resources through their articulated plan or lesson.

- Designing Coherent Instruction - Teachers are about to translate the outcomes into learning experiences for students through their instructional design. The coherence of an instructional design is the instructional outcomes, activities, materials, resources and grouping of students are aligned for one external requirement. An advanced skill for a teacher is to design one instructional activity to create opportunities for learning by students of varying skills. This instruction activities which promote learning: 1) emphasizes thinking and problem solving, 2) permits student choice and initiative and 3) encourages depth rather than breadth

- Designing Student Assessments – Assessment is a central role in learning due to its two distinct roles: assessment "of" learning and "for" learning. "For" learning is prescriptive to assist with future learning. Teachers must be able to design student assessment methodologies which are appropriate for the different types of outcomes, congruent with the instructional outcomes, based on criteria and standards, design formative assessments and appropriate use of the assessment results in future instruction.

Domain 2: The Classroom Environment

- Creating an Environment of Respect and Rapport – Students must feel comfortable in the classroom for learning to occur. Students must feel safe to take risks. Teachers interact with students and students interact with other students.

- Establishing a Culture for Learning - This refers to the atmosphere in the classroom where both the teacher and students are engaged in pursuit of value. Students know the ability of the student is highly regarded by the teacher. The content of the learning is important, there is an expectation for learning and achievement and students demonstrate pride in their work. This culture is not only in the classrooms but in the school as a whole.

- Managing Classroom Procedures - A smoothly functioning classroom is a prerequisite to good instruction. Great instruction is worthless in a chaotic environment. Chaos in a classroom is easy to spot through classroom observations. Teachers are expected to manage: instructional groups, transitions, materials and supplies, performance of non-instructional duties and supervision of volunteers and paraprofessionals.

- Managing Student Behavior - Learning can not occur in an environment where student behavior is out of control. There is evidence that students engaged in the learning are less likely to demonstrate inappropriate behavior. A key to managing student behavior is agreed-upon standards of conduct and clear consequences for overstepping the bounds. A teacher skilled at managing student behavior can only be observed in the classroom. Key elements are establishing expectations, monitoring student behavior and responding to student misbehavior.

- Organizing Physical Space - The physical environment must be safe and accessible to learning, furniture must be appropriately arranged and teaching aides skillfully organized and used.

Domain 3: Instruction (This domain is the Heart of the framework)

- Communicating With Students – To adequately engage students in the learning, they must receive clear, accurate directions and instructions. The language of the teacher must be audible and legible. The key elements to this component are to provide a clear expectation of the learning with precise directions and procedures. The teachers' ability to appropriately explain the content in clear and correct vocabulary appropriate to the student while using standard English. Through observation, the observer is not seeking

- Using Questioning and Discussion Techniques – A teacher's skill in questioning and in leading discussions makes a powerful contribution to student learning and is valuable for many instructional purposes: exploring new concepts, eliciting evidence or student understanding and promoting deeper student engagement. This skill is almost exclusively viewed in classroom observations where the elements reviewed will be the quality of the questions, the discussion techniques used and the engagement of al students in the learning.

- Engaging Students in Learning- Many view this component of the framework as the most important. Complex learning only occurs if the student is engaged. This engagement is not mere accident but a carefully planned event. Several distinct methods/elements to accomplish this engagement are: activities and assignments, grouping of students, instructional materials and resources, structure and pace of the lesson. These concepts are not "busy work" or "time on task" but true involvement by the students in the instructional activities or assignment.

- Using Assessment in Instruction – For years, assessment has been used to determine the extent of the student's learning. More recently assessment has an even bigger role as teachers utilize assessment as a valuable tool in the instructional repertoire. Teachers are continually monitoring the level of understanding by each student as they prepare the various instructional strategies in the classroom. Interim assessments also allow teachers to provide students with timely and constructive feedback to enhance their learning. The students must fully be aware of the criteria for these assessments, thus affording them an opportunity to assess and monitor their own learning based on the criteria.

- Demonstrating Flexibility and Responsiveness – The ability to adjust a lesson in midstream when it is apparent that this adjustment is necessary to improve student learning. There are three situations when this may occur: when the lesson or activity is not working, 2) when spontaneous events occur that provide learning opportunities, and 3) the teacher's self efficacy which allows him/her to seek outside resources to ensure student learning.

Domain 4: Further Professional Responsibilities

- Reflecting on Teaching – Through critical reflection, educators are able to assess the effectiveness of their work and seek to improve. Questions often asked are: "Where the goals met?" and "Did the lesson work?" Effective reflection is a *learned* skill. This is the reason that mentors and coaches are so important to assist novice teachers in developing this skill. The conversations which occur after observing a lesson set the ground work for professional learning by the educator. The goal is to ensure accurate reflection and utilize the learning of the educator in the future.

- Maintaining Accurate Records – The "dreaded paperwork" is an integral role of the profession and expert teachers create a method to ensure that their record keeping is a routine procedure with very little effort. These records include grade book, skills inventories, student assessments and records of classroom non-instructional activities.

- Communicating with Families – Enlisting family members into the educational environment of their students, the students' learning is enhanced. Families are enlisted to discuss: how the class is run, what behavior is expected, the importance of homework, social interactions, and what is the students progress in learning. Communication can be through many venues including phone, home visits, school visits, parent conferences, letters, emails, etc.

- Participating in a Professional Community – The duties of the professional educator often extends beyond the doors of the classroom or school building and often beyond the school day. Elements to be considered in this area are: relationships with colleagues, involvement in a culture of professional inquiry, service to the school, and participation in school/district projects.

- Growing and Developing Professionally – True professionals are continually growing /developing. Educators committed to being at the top of their profession should always grow in their content, pedagogy and technology. One of the richest sources for professional growth is from the educators' own colleagues. Discussion among colleagues is a rich and fertile ground for professional growth. Expert teachers should be ready to share their professional knowledge with novice teachers.

- Showing Professionalism – Demonstrating "professionalism" what is meant? The obvious answers are integrity and ethical conduct; however, as an educator there is much more. Educators are about the students; therefore, there additional elements should be considered such as servicing the needs of the students and being an advocate for the students. Additional elements would be a team player in the role of decision making and the obvious compliance with school/district/state regulations.

ARKANSAS
DEPARTMENT
OF EDUCATION

December 27, 2009

Mike Mertens
Interim Executive Director of AAEA
219 South Victory Street
Little Rock, AR 72201

RE: Nominations for the Principal Evaluation Task Force

Dear Mr. Mertens,

The Arkansas Department of Education (ADE) will be contracting with a National Consultant to facilitate a Task Force of Arkansas Educators in the development of a Principal's Evaluation Instrument for Arkansas School Districts. The ADE is providing this technical assistance as we realize that all school districts do not have the resources (time, personnel, or finances) to revamp the current evaluation instrument used by district in the assessment of building level administrators, both principals and assistant principals, based on current research.

You are being contacted to assist the ADE in the nomination of twenty-four administrators to serve on this task force. I know that you will most likely utilize the members of the Arkansas Association of Education Administrators (AAEA) Board, who represent the Early Childhood/Elementary, Middle Level and Secondary Principal Organizations, to assist you in this endeavor. The ADE is recommending twelve (12) superintendents and twelve (12) building level administrators as the configuration for membership on the task force. Serving on the task force will be a two-year commitment for the individuals nominated. The group of building level administrators should be equally divided by those with experience at Early Childhood/Elementary, Middle Level, and High School (thus four administrators from each grade level group.) Additionally, there is an expectation that there be some delineation with regard to the experience at these levels. The chart below outlines the make-up of the twenty-four (24) individuals you are asked to recommend to be on the task force from your organizations. As always, please ensure that those nominated are diverse in regions of the state, the size of schools/districts they represent as well as, race and gender.

12 Building Level Administrators:

Years of Administrative Experience	Early Childhood /Elementary Administrator	Middle Level Administrator	High School Administrator
0 - 5 years			
6 - 15 years			
16 - 22 years			

23 + years			

12 Superintendents:

Years of Administrative Experience	Rural Administrator (<500 students)	Mid-Size District Administrator (500 – 2000 students)	Urban/Suburban Administrator (> 2000 students)
0 - 5 years			
6 - 15 years			
16 - 22 years			
23 + years			

It is anticipated that the first meeting of the task force will be held on in early July 2010 at Lake Point Conference Center in Russellville, AR. Additional information and reading material will be mailed to individuals who are nominated. Please confirm that those you nominate are available beginning this July and willing to serve for the duration of this project. A nomination form is also attached for you to provide contact information on each person nominated for the task force. Please return these forms to my attention by March 1, 2010.

Please do not hesitate to contact me if you have any questions. Thanks so much; your assistance in this project is greatly appreciated.

Sincerely,

Beverly Williams
Assistant Commissioner

Enclosed: Nomination Forms

Principal Evaluation Task Force

Building Level Administrator Nomination Form

Name of Administrator ____________________

School District ____________________

Work Address ____________________

City ____________________ Work Phone ____________________

Home Address ____________________ Home Phone ____________________

City ____________________ Cell Phone ____________________

Current Position ____________________

Arkansas Building Level Administrator License

Licensure Levels

Administrator P - 4 ____________________

Administrator 4 - 8 ____________________

Administrator 7 - 12 ____________________

Experience as an Arkansas Building Level Administrator

Mark the Box indicating the number of Years of Experience as an Arkansas Administrator

0 - 5 years	
6 - 12 years	
12 - 22 years	
22 + years	

____

Name and Title of Organizational Representative

____________________ ____________________

Signature of Organizational Representative Date

Please return by March 1, 2010 to:

Beverly Williams, Assistant Commissioner

Four Capitol Mall, Room 204B

Little Rock, AR 72201

Deadline to ADE
March 1, 2010

Principal Evaluation Task Force

Superintendent Nomination Form

Name of Superintendent ______________________________

School District ______________________________

Work Address ______________________________

City ______________________________ Work Phone ______________

Home Address ______________________________ Home Phone ______________

City ______________________________ Cell Phone ______________

Current Position ______________________________

Size of District:

< 500 Students ______________

500 - 2000 Students ______________

> 2000 Students ______________

Experience as an Arkansas Administrator

Mark the Box indicating the number of Years of Experience as an Arkansas Administrator

0 - 5 years	
6 - 12 years	
12 - 22 years	
22 + years	

____

Name and Title of Organizational Representative

______________________________ ______________

Signature of Organizational Representative Date

Please return by March 1, 2010 to:

Beverly Williams, Assistant Commissioner

Four Capitol Mall, Room 204B

Little Rock, AR 72201

Deadline to ADE
March 1, 2010

(8) Recommend priorities for the funding of education;

(9) Review all current scholarship programs of the state and institutions of higher education and make recommendations for improving future scholarship programs;

(10) Make recommendations related to the future need for remediation of beginning college students;

(11) Make recommendations to improve science, technology, engineering, and mathematics education from kindergarten through the bachelor's degree level in higher education;

(12) Make recommendations to improve the use of educational technology; and

(13) Recommend any other improvements in education at any level to benefit students and the state.

History. Acts 2003 (2nd Ex. Sess.), No. 109, § 1; 2005, No. 1936, § 2.

6-1-304. Reporting requirements.

(a) **(1)** The Arkansas Commission for Coordination of Educational Efforts shall submit an annual report to the Governor, the Senate Committee on Education, the House Committee on Education, the State Board of Education, the Arkansas Higher Education Coordinating Board, and to all boards of trustees of public institutions of higher education.

(2) Additional reports shall be given to committees of the General Assembly upon request of a committee.

(b) All state agencies, institutions of higher education, and public schools shall cooperate with the commission and supply data and information needed by the commission in a timely manner.

History. Acts 2003 (2nd Ex. Sess.), No. 109, § 1.

Subchapter 4
— School Leadership Coordinating Council

6-1-401. Title.

There is established the "School Leadership Coordinating Council".

History. Acts 2009, No. 222, § 1.

6-1-402. Findings.

The General Assembly finds that:

(1) A statewide performance and results-based system of leadership development to ensure high levels of collaborative leadership and continuous improvement must have all educators work collaboratively with community stakeholders to apply effective, evidence-based strategies and practices that increase student and adult learning and close the achievement gap;

(2) High quality classroom teaching and administrative leadership are strong predictors of student success, and all educators in the state must possess the skills and knowledge to increase student and adult learning and close the achievement gap;

(3) High quality leadership capacity building and training is required to align the public education system from kindergarten through postsecondary and workforce readiness with an objective of universal proficiency for all students;

(4) High quality learning experiences focus on both individual and organizational improvement and provide educational leaders with a variety of support systems as they progress on the career continuum from aspiring to retiring; and

(5) An effective statewide leadership development system will result in increased graduation rates, reduced remediation rates, the closing of achievement gaps, increased student and adult performance, increased recruitment of effective leaders, and increased capacity for instructional leaders, and thus will increase the number of Arkansas citizens with bachelor's degrees.

History. Acts 2009, No. 222, § 1.

6-1-403. Purpose.

The purpose of the School Leadership Coordinating Council is to:

(1) Serve as a central body to coordinate the leadership development system efforts across the state including:

(A) Encouraging school districts to work with the Department of Education, the Department of Higher Education, the Department of Career Education, the Arkansas Leadership Academy, and other leadership groups;

(B) Recommending a state leadership development system to coordinate all aspects of leadership development based on educational leadership standards adopted by the Department of Education; and

(C) Devising a system of gathering data that includes input from practitioners, educational and community leaders, university leadership and faculty, and other interested parties;

(2) Assist the Department of Education, the Department of Higher Education, the Department of Career Education, the Arkansas Leadership Academy, school districts, and other leadership groups in enhancing school leadership and school support efforts; and

(3) Aid in the development of model evaluation tools for use in the evaluation of school administrators.

History. Acts 2009, No. 222, § 1.

6-1-404. Creation.

(a) The School Leadership Coordinating Council consists of thirteen (13) members as follows:

(1) The Chair of the Arkansas Association of Colleges for Teacher Education Council of Deans;

(2) The Commissioner of Education;

(3) The Director of the Arkansas Leadership Academy;

(4) The Director of the Department of Higher Education;

(5) The Director of the Department of Career Education;

(6) The Executive Director of the Arkansas Association of Educational Administrators;

(7) The Executive Director of the Arkansas Education Association;

(8) The Executive Director of the Arkansas School Boards Association;

(9) The Executive Director of the Arkansas Association for Supervision and Curriculum Development;

(10) The President of the Arkansas Rural Education Association;

(11) A representative from the Arkansas Professors of Educational Administration;

(12) A representative from the Arkansas Center for Executive Leadership; and

(13) A representative from an education service cooperative.

(b) Any member may appoint a designee to serve in his or her place if necessary.

(c) **(1)** The chair of the School Leadership Coordinating Council is elected by majority vote at the first meeting of the council.

(2) All changes in council chair are decided by majority vote of the council.

(d) **(1)** The council shall meet at the times and places that the chair deems necessary but no less than four (4) times per year.

(2) Seven (7) members of the council shall constitute a quorum for the purpose of transacting business.

(3) All actions of the council are by quorum.

(e) The Department of Education, with the assistance of the Department of Higher Education and the Department of Career Education, shall staff the council.

(f) All members of the council may receive expense reimbursement in accordance with § 25-16-902 paid by the Department of Education if funds are available.

History. Acts 2009, No. 222, § 1.

6-1-405. Report.

(a) The chair of the School Leadership Coordinating Council shall provide a report to the House Interim Committee on Education and the Senate Interim Committee on Education no later than September 1, 2010, and each year thereafter.

(b) The report shall identify:

(1) Deficient areas of school leadership;

(2) Innovative programs to address deficient areas of school leadership;

(3) Progress made to improve school leadership;

(4) Plans to improve the quality of school leadership throughout the state;

(5) Development and activities of school leadership cohorts; and

(6) Efforts made to address school leadership recommendations expressed in the 2008 Educational Adequacy report or subsequent reports submitted by the House Interim Committee on Education and the Senate Interim Committee on Education.

History. Acts 2009, No. 222, § 1.

Subchapter 5
— The Arkansas Project Graduation Commission

6-1-501. Findings.

Teacher Leader Standards

Developed by the Teacher Leadership Exploratory Consortium
December 16, 2009 Draft

Domain I: Understanding adults as learners to create communities of learning

The teacher leader understands how adults acquire and apply knowledge, and uses this information to promote an interdependent culture of shared accountability for school outcomes that maximizes teacher effectiveness and drives continuous improvement in student learning.

Performance indicators

The teacher leader:

- uses knowledge of how adults process and apply information to engage colleagues in meaningful interactions;
- utilizes group processes to help colleagues and team members work collaboratively to solve problems, make decisions, manage inevitable conflict and promote meaningful change;
- models effective skills in listening, presenting ideas, leading discussions, clarifying, mediating, and identifying the needs of self or others in order to advance shared goals and professional learning;
- employs facilitation skills to create trust among group members, develop collective wisdom, build ownership and action that supports student learning;
- works to create an inclusive cohort of colleagues who turn to one another for learning and resources; and
- understands and utilizes technology to create an intergenerational learning community that extends beyond the boundaries of the school or district.

Domain II: Accessing and Using Research to Improve Practice and Student Outcomes

The teacher leader understands that research-based strategies are able to create new knowledge, improve instructional practice and make inquiry a critical component in teacher learning and school redesign and uses this knowledge to model and facilitate the use of action research and data-driven action plans.

Performance indicators

The teacher leader:

- Works with others to articulate issues/challenges related to student learning, taking into account others' interests, knowledge and resources.

Domain IV: Facilitating Improvements in Instruction and Student Learning

The teacher leader has a deep understanding of the teaching and learning process and uses this knowledge to advance the professional skills of colleagues by being a continuous learner, modeling reflective practice based on student results, and communicating a shared vision of teaching excellence.

Performance indicators

The teacher leader:

- Engages colleagues in working collaboratively to ensure that instructional practices are aligned to a shared vision, mission, and goals;
- Facilitates the collection and analysis of data to identify opportunities to improve curriculum, instruction, and assessment;
- Engages in reflective dialog with colleagues based on observation of instruction, student work and assessment data;
- Serves as a mentor, coach, content facilitator, or peer evaluator to support colleagues' individual and collective professional growth;
- Serves as a team leader to harness the skills, expertise and knowledge of colleagues to address the demands of the curriculum and needs of students;
- Uses knowledge of emerging technologies to guide colleagues in helping students skillfully and appropriately navigate the universe of knowledge available on the Internet, use social media to promote collaborative learning, and connect with people and resources around the globe.
- Promotes instructional strategies that address issues of diversity and equity in the classroom and ensures that the individual needs of students remain the central focus of instruction.

Domain V: Using Assessments and Data for Systemic Improvement

The teacher leader has a deep knowledge of current research on assessment methods, designing and/or selecting effective formative and summative assessment practices and use of assessment data to make informed decisions that improve student learning, and uses this knowledge to promote appropriate strategies that support continuous and sustainable organizational improvement.

Performance Indicators

The teacher leader:

- Increases the capacity of colleagues to use appropriate technology, research and expertise both inside and outside the district to identify, select or design appropriate, research-based assessment instruments;
- Facilitates teams of teachers in designing classroom-based assessments, analyzing and interpreting student work and other performance data, and applying findings to guide instructional decisions and improve educational practice;
- Facilitates effective individual and group interactions that engage colleagues in collaborative conversations about student learning data and instructional practice; challenges them to develop solutions, and develops a climate of trust and critical reflection; and
- Works with colleagues to use assessment and data findings to recommend potential changes in organizational structure or practices that will enhance student achievement.

Domain VI. Improving Outreach and Collaboration with Families and Community

The teacher leader understands that families, cultures and communities have a significant impact on educational processes and student achievement, and uses this knowledge to promote greater and more effective outreach with families, the community, and other stakeholders.

Performance Indicators

The teacher leader:

- Uses knowledge and understanding of the different backgrounds, ethnicities, cultures, and languages in the school community to promote effective interactions among colleagues, families and the larger community;
- Models effective communication and collaboration skills with families and other stakeholders focused in improving educational outcomes;
- Facilitates colleagues' examination of their own understandings of community culture and diversity and how they can be used to enrich the educational experiences of students and achieve high levels of learning for all students;
- Collaborates with colleagues to develop comprehensive strategies for engaging families and community members as partners in the educational process;
- Develops a shared understanding among colleagues of child/adolescent development and conditions in the home and community that impact student learning; and
- Works with colleagues to identify and access internal and external resources, including technology, that support family and community interaction and involvement to support student learning.

Domain VII: Advocating for Student Learning and the Profession

The teacher leader understands how educational policy is made at the local, state and national level as well as the roles of school leaders, boards of education, legislators and other stakeholders in formulating those policies, and uses this knowledge to advocate for student needs and for practices that optimize the teaching and learning process.

Performance indicators:

The teacher leader:

- Shares information with colleagues regarding how state and national trends and policies can impact classroom practices and expectations for student learning;
- Works with colleagues to identify and use research to advocate for better teaching and learning processes;
- Collaborates with colleagues to select appropriate policy contexts to advocate for the rights and/or needs of students, additional resources within the building or district that support student learning, and communicate effectively to relevant audiences;
- Advocates for professional resources, including financial support and other material resources that allow teachers to spend significant time learning about practice and developing a professional learning community focused on school improvement goals; and
- Represents and advocates for the profession by participating in local, state or national educational professional associations or committees or tasks forces addressing educational issues; and serving as assessors/scorers for state or national-level student or teacher assessments.

Agency # 005.16

Arkansas Department of Education
Rules Governing the Rewarding Excellence in Achievement Program
Approved October 8, 2007

1.0 Regulatory Authority

1.01 These rules shall be known as the Department of Education (Department) Rules Governing the Rewarding Excellence in Achievement Program (REAP).

1.02 These rules are enacted under the State Board of Education's (State Board) authority pursuant to Ark. Code Ann. §§ 6-11-105, 25-15-201 et seq. and Act 1029 of 2007.

2.0 Purpose

2.01 The purpose of these rules is to create a pilot program to afford public school districts and public charter schools the opportunity to develop teacher compensation plans tailored to the needs of public school districts and/or public charter schools.

3.0 Definitions

For the purposes of these rules, the following terms shall mean:

3.01 "Compensation" which will be funded under the REAP plan will be the teacher's/employee's salary, excluding benefits.

3.02 "Knowledge and Skills" is the base portion of the teacher's compensation under a REAP compensation plan which considers but is not limited to factors such as years of experience and degree levels as set forth in the Rewarding Excellence in Achievement Plan.

3.03 "Local Board" is the local school board of directors exercising the control and management of a public charter school or public school district.

3.04 "Performance" is the portion of the teacher's compensation under a REAP plan which considers, without limitation, factors such as: professional development, teacher attendance, student achievement both by class and school-wide, and the teacher's performance evaluations.

3.05 "Rewarding Excellence in Achievement Program (REAP)" is an alternative plan for teacher compensation which may be developed by a public school, public school district, or public charter school.

3.06 "Participants" are the public school or school districts or public charter schools selected for participation in the Rewarding Excellence in Achievement Program.

3.07 "Peer Evaluations" means objective evaluations of teachers conducted by other teachers using multiple criteria including provisions for integrated on-going site-based professional development activities to improve instructional skills and learning that are aligned with student needs under §6-15-2009. These peer evaluators shall understand teaching and learning and be locally selected and periodically trained evaluators.

3.08 "Staff" are the teachers, administrators and/or classified employees who have voted to be participants in the REAP program.

4.0 Selection Criteria and Requirements in Considering the Application for Rewarding Excellence in Achievement Program

4.01 Public school districts or public charter schools desiring to participate in the Rewarding Excellence in Achievement Program must submit an application to the State Board of Education, on forms developed by the Department. A district may apply on behalf of a single school within the public school district that desires to participate in the REAP plan.

4.02 Participants shall be selected through a competitive process.

4.02.1 Consideration will be given to qualified applicants from various locations and from districts of various sizes and demographics.

4.03 The application procedure shall provide for a phase-in process, beginning with a planning phase for a minimum period of twelve-months, to allow applicants access to resources that would allow sufficient research of best practices and time to garner community and staff support in submitting a REAP plan.

4.04 To participate in REAP, a participant must submit a proper application providing all necessary information and documents as requested by these rules and the form herein attached and incorporated as the REAP Application Form.

4.05 The REAP Application shall be submitted or postmarked to Human Resource Office of the ADE on or before 4:30 p.m. on Monday, March 3, 2008.

4.06 To the extent practicable, the ADE shall select three REAP participants from each congressional district with at least one participant having a student population of less than 1,000 students; between 1,000 and 8,000 students; and greater than 8,000 students. In addition, the ADE shall, to the extent possible, strive to have REAP participants from each congressional district with at least one participant from each who has a percentage of eligible Free and Reduced Lunch (FRL) student population greater than 90% students; less than 90% but greater than 70% eligible FRL students; and less than 70% FRL eligible students. To the extent possible, the ADE shall try to mix the student population requirements with differing demographics of percentage of eligible FRL students between Congressional districts so as to have a varied representation of size and demographic of students in the pilot study.

4.06.1 Each participant that meets the criteria mentioned in Section 4.06 shall receive point(s) pursuant to the rubric, which will be developed by the committee (Section 5.02), for each criteria met. In addition, each participant application shall receive point(s) on a competitive scale based on the quality of compliance with the requirements of Sections 4.00, 5.01 and 6.00 of these rules.

4.06.2 The ADE has the discretion to select certain REAP participants as necessary to comply with the selection criteria of Section 4.06 regardless of the competitive score of any single participant.

4.07 To participate in REAP, a participant must have an approved comprehensive school improvement plan, as defined in Ark. Code Ann. §§ 6-15-419(9).

4.07.1 Prior to full implementation of a REAP plan, the comprehensive school improvement plan of the participant shall include:

4.07.1.1 Assessment and evaluation tools to measure student performance and progress based on an achievement gains model;
4.07.1.2 Performance goals and benchmark improvement;
4.07.1.3 Measures of student attendance and completion rates;
4.07.1.4 A rigorous professional development system consistent with the comprehensive school improvement plan defined in Ark. Code Ann. §§ 6-15-419(9) and student academic improvement plans as defined in Ark. Code Ann. §§ 6-15-419(2);
4.07.1.5 Measures of student, family, and community involvement and satisfaction;
4.07.1.6 A data reporting system about students and their academic progress that provides parents and the public with understandable information.
4.07.1.7 A teacher induction and mentoring program for probationary teachers that provides continuous learning and sustained teacher support; and
4.07.1.8 Substantial participation by teachers in developing the REAP plan.

4.08 As part of the application process, schools wishing to participate shall conduct a vote of the teachers to show or express interest in the development of a REAP plan with the level for acceptance being seventy percent (70%) or another percent established by a majority vote of the teachers and approved by the local board.

4.08.1 After the local committee completes the development of the REAP plan, it will be distributed to the teachers before submission to the State Board of Education.
4.08.2 If fifty-one percent (51%) or more of a participating school's teachers elect not to participate, the REAP plan shall not be approved by the State Board of Education or implemented.
4.08.3 A teacher in a school selected by the State Board of Education to participate may elect not to participate in the REAP plan.

4.09 All recipients of funds provided by the REAP plan shall cooperate and share all school demographic and student achievement data with any state-sponsored evaluation of this program.

4.09.1 Applicant public school districts or public charter schools shall form a committee to consist of its administrators and teachers, the majority of who shall be classroom teachers.

4.09.1.1 The classroom teacher members of the committee shall be elected by a majority of the classroom teachers voting by secret ballot.

4.09.1.2 The election shall be solely and exclusively conducted by classroom teachers, including the distribution of ballots to all classroom teachers.

4.09.2 The committee shall be responsible for creating, assisting in the implementation and evaluating the school's REAP plan.

4.09.3 The committee shall annually report to its local board on the evaluation of the school's REAP plan.

4.10 The contents of a REAP plan approved for participation in the REAP shall:

4.10.1 Describe how teachers can achieve career advancement and additional compensation;

4.10.2 Describe how participants will provide teachers with career advancement options that allow teachers to retain primary roles in student instruction and facilitate site-focused professional development that will help other teachers improve their skills;

4.10.3 Describe all assurances as to how the plan will prevent the initial compensation of participating staff members from being reduced by implementing the pay system developed as a result of the REAP plan;

4.10.4 Describe how the forty percent to sixty percent (40% - 60%) performance portion of compensation will be determined;

4.10.5 Describe how the forty percent to sixty percent (40% - 60%) knowledge and skill base portion of compensation will be determined;

4.10.6 Describe how the plan will reform the "steps and lanes" salary schedule;

4.10.7 Describe how the participants will encourage a collaborative relationship among teachers; and

4.10.8 Describe how, after full plan implementation, the alternative compensation system will be sustained if it is deemed successful or phased out if the REAP plan evaluation reveals that the plan does not work for the participant.

4.11 Rewarding Excellence in Achievement plans approved for participation in the program may include provisions regarding the compensation for administrators and other staff members.

4.12 Under the REAP plan, increases in compensation for the performance portion, forty percent to sixty percent (40% - 60%) of the teacher's total compensation, shall include:

4.12.1 Achievement gains of students in each teacher's class on student scores under the statewide assessment program described in Ark. Code Ann. §§ 6-15-433. Locally selected and Department of Education approved standardized assessment outcomes for students in each teacher's class may also be included.

4.12.2 Achievement gains of students on a school-wide basis under the statewide assessment program described in Ark. Code Ann. §§ 6-15-433. Locally selected and Department of Education – approved standardized assessment outcomes may also be included; and

4.12.3 The remaining percentage of the performance portion of compensation of the teacher's total compensation shall be based on an objective teacher evaluation program that includes:

4.12.3.1 An individual objective teacher evaluation conducted by the school principal that is aligned with the comprehensive school improvement plan and professional development plan described in Ark. Code Ann. §§ 6-15-2607; and

4.12.3.2 Peer objective evaluations using multiple criteria conducted by locally selected and periodically trained evaluators who understand teaching and learning and that include provisions for integrated ongoing site-based professional development activities to improve instructional skills and learning that are aligned with student needs under Ark. Code Ann. §§ 6-15-2009.

5.00 REAP Timeline and Schedule

5.01 All applications due or postmarked on or before 4:30 p.m., Monday, March 3, 2008.

5.02 ADE shall convene the appropriate committees to develop a rubric for the application process as well as to read and evaluate REAP applications.

5.03 ADE shall announce the twelve (12) approved REAP applications or that number up to twelve (12).

5.04 May 1, 2008 through May 1, 2009: Participants are required to implement the "phase-in" process for all approved applicants. Quarterly written updates are to be provided to ADE on the implementation phasing-in processing with updates due:

a. August 1, 2008
b. November 1, 2008
c. February 1, 2008
d. May 1, 2008

5.04.1 Districts may count any time already used to phase-in an already existing REAP program or similar program approved as a REAP application for the phase-in process time period required in Section 5.00 of these rules.

5.05 July 1, 2009 is the latest required date for implementation for an approved REAP program.

5.06 These dates shall be subject to modification or alteration as determined in the best interest of the REAP program by the ADE.

6.00 Staff Development

6.01 Staff development activities for a participant in the Rewarding Excellence in Achievement Program shall:

6.01.1 Focus on the school classroom and research-based strategies that improve student learning;
6.01.2 Provide opportunities for teachers to practice and improve their instructional skills over time;
6.01.3 Provide opportunities for teachers to use student data as part of their daily work to increase student achievement;
6.01.4 Enhance teacher content knowledge and instructional skills;
6.01.5 Align with state academic standards;
6.01.6 Provide opportunities to build professional relationships, foster collaboration among principals and staff who provide instruction and provide opportunities for teacher-to-teacher mentoring; and
6.01.7 Align with the REAP plan of the participant.

6.02 Staff development activities for participants in the Rewarding Excellence in Achievement Program may include:
6.02.1 Curriculum development and curriculum training programs; and
6.01.2 Activities that provide teachers and other staff members training to enhance teacher, team, and school performance.

6.03 The participants may implement other staff development activities associated with professional teacher compensation models.

7.00 Evaluation of Participants

7.01 The Department of Education shall commission an annual evaluation of the REAP plan of each school participating in the program.

7.02 The annual evaluation shall include, without limitation, consideration of:

7.02.1 Student scores under the statewide assessment program described in § 6-15-433;
7.02.2 Student attendance;
7.02.3 Student grades;
7.02.4 Incidents involving student discipline;
7.02.5 Socioeconomic data on students' families;
7.02.6 Parental satisfaction with the schools;

7.02.7 Student satisfaction with the schools; and

7.02.8 Correlations between student assessment gains and teacher degree levels, years of experience, staff development, and a school's status for having a qualified teacher in every classroom under Ark. Code Ann. §§ 6-15-1004.

8.0 Reporting and Continued Funding for the Rewarding Excellence in Achievement Program

8.01 In addition to the program evaluation required by Section 7.00 of these rules each participating school district or public charter school shall report on the implementation and effectiveness of its REAP plan and make recommendation by August 15th each year to its local board.

8.01.1 The local board shall transmit a copy of the report with a summary of the findings and recommendations of the public school or school district or public charter school to the Commissioner of Education.

8.02 If the Commissioner determines that a public school or school district or public charter school that receives funding under the REAP program is not complying with the requirements of the program, the Commissioner shall withhold further funding from that participant.

8.02.1 Such withheld funds may be reallocated to other existing REAP participants or REAP applicants in an alternate status of award.

8.02.2 Before making the determination to withhold funds, the Commissioner shall notify the participant of any deficiencies and provide the participant an opportunity to comply with the requirements of the REAP program.

8.03 At the end of the REAP period, the Commissioner shall present evaluation findings and recommendations to the State Board of Education, the House Education Committee and the Senate Education Committee.

Procedures for the REAP Application

1. Sections I, II, III and VI are to be completed on the application form. Sections IV and V may be completed by a Word document and attached to the application. (Applications may be submitted on-line.)

2. All responses to sections IV and V should be titled/ labeled for easy reference by the reviewers. Each section should define the goal and include specific measurable objectives for each goal.

3. The budget should differentiate the costs for planning and incentives to staff. The budget should also outline how any projected new revenue would be added to these incentives as well as how to address compensation of staff which may fluctuate due to varying results on the criteria for compensation.

4. The narrative for Section IV "Criteria for Selection" of the application should not exceed ten (10) typed pages, double spaced with a font minimum of twelve (12).

5. The deadline for the application is the end of business (4:30 p.m.) March 3, 2008. Applications postmarked on or prior to March 3, 2008 will be accepted.

Rewarding Excellence in Achievement Program (REAP)

Application for the 2007-08 School Year

I. Name of School, Charter School, or District ______________________

School / District Address ______________________

City ______________________

Phone Number ______________ Fax ______________

II. Authorized Administrator ______________________

Title ______________________ Mobile Number ______________

III. School / District Demographic: (Please report data as reported in APSCN)

a) Name of Educational Service Cooperative ______________________

b) Congressional District ______________

c) Student Population ______________

d) Grade Levels ______________

e) Percent of the Student Population eligible for Free and Reduced Lunch (FRL) priced meals: 2005-06 ______________ and 2006-07 __________

f) Percent of Student Attendance: 2005-06 __________ and 2006-07 __________

g) Percent of Students Graduating: 2005-06 __________ and 2006-07 __________

h) Average ACT score for: 2005-06 __________ and 2006-07 __________

i) Percent of Licensed Teachers who voted in support of REAP ______________

j) Percent of Licensed Teachers who stated they would participate in REAP ________

k) Percent of Licensed Teachers with a Masters Degree ______________

l) Percent of Licensed Teachers with a Doctorate Degree ______________

m) Percent of Teacher Attendance:
2005-06 ________________and 2006-07________________

n) Average number of Professional Development hours per teacher:
2005-06 ________________and 2006-07________________

o) Average Years of Experience of Licensed Staff:
2005-06 ________________and 2006-07 ________________

p) Percent of Highly Qualified Teachers in the Core Academic Content Areas:
2005-06 ________________and 2006-07 ________________

IV. Criteria for Selection: (Please address these topics in an accompanying narrative.)

a) Performance Goals of Students with the Implementation of this plan

b) Describe the Selection and Responsibility of individuals' service on the REAP Committee for the School / District

c) Describe the Rigor of the Professional Development Plan by the School / District to enhance student performance

d) Describe how students, families and the community will be involved in the REAP program.

e) Describe the Recruitment and Retention efforts of the school / district to hire and retain highly qualified teachers to enhance student learning.

f) Describe the new Professional Pay Plan and methods for teacher compensation. (This plan must include but is not limited to the following criteria.):

i. Career Advancement Options
ii. How the 40% - 60% will be determined for Performance (Gains in student achievement on appropriate assessment instruments);
iii. How the 40% -60% will be determined for Knowledge and Skills;
iv. How the steps/lanes salary schedule has been reformed; and
v. How the plan will be eliminated or phased out if not successful.

g) Describe the Evaluation of the Plan and how the evaluation will be reported to local School Board Members and the Community.

h) Attach a copy of the district's approved comprehensive school improvement plan (ACSIP), as defined in Ark. Code Ann. §§ 6-15-419(9).

V. Implementation:

A. Planning Period: ______________________________

B. Describe the Phase In Process:

a. ____

b. ____

C. Budget: Outline the requested budget for planning and implementation. (This may be an attachment.)

VI. **Assurances:**
By signing below, I indicate that I understand and agree to abide by the requirements of the Program as set forth in the Arkansas Department of Education's Rules Governing the Rewarding Excellence in Achievement Program (REAP), a copy of which I have received, and I further understand that my failure to fully comply with the Program Rules could cause the Department to terminate both my individual and my school district's participation in the Program.

Signature Required:

____
Printed Name and Position of School / District Administrator

____
Signature of School / District Administrator Date

*The REAP Application must be postmarked or received by the Arkansas Department of Education on or prior to March 3, 2008, for consideration for the 2007-08 school year.

Send completed Application to: Ms. Beverly A. Williams, Assistant Commissioner, Arkansas Department of Education, 4 Capitol Mall, Room 204-B, Little Rock, Arkansas 72201.

For Use by the Arkansas Department of Education only:	
Approved by:	Date Approved:

REAP Timeline

1. March 3, 2008: Application Deadline to the ADE

2. April 1, 2008: Committee formed to read and evaluate the REAP applications

3. April 30, 2008: Announce the twelve (12) approved REAP Applications

4. May 1, 2008 through May 1, 2009: Required planning and phasing-in process of all approved applications. Quarterly updates due to the ADE on:
    a. August 1, 2008
    b. November 1, 2008
    c. February 1, 2009
    d. May 1, 2009

5. July 1, 2009 Planned Implementation for all approved REAP programs.

Arkansas Department of Education
Rules Governing Arkansas Alternative Pay Programs
October 8, 2007

1.0 Regulatory Authority

1.01 These rules shall be known as the Department of Education (Department) Rules Governing Arkansas Alternative Pay Program.

1.02 These rules are enacted under the State Board of Education's (State Board) authority pursuant to Act 847 of 2007.

2.0 Purpose

2.01 The purpose of these rules is allow an Alternative Pay Programs to be created for both Licensed and Classified employees in Arkansas's public schools.

3.0 Definitions

For the purposes of these rules, the following terms shall mean:

3.01 "Alternative Pay" means a salary amount that is part of the licensed or classified employee's total compensation for additional responsibilities, mastery of new knowledge and skills, advanced career opportunities, increased student achievement, attracting highly qualified teachers or professional development exceeding state minimums.

3.02 "Classified Employee" means a persons employed by a public school district under a written annual contract who is not required to hold a teaching license issued by the Arkansas Department of Education as a condition of employment.

3.03 "Compensation" which will be funded under the REAP plan will be the teacher's/employee's salary, excluding benefits.

3.04 "Licensed Employee" means a persons employed by a public school district who is required to hold a teaching license issued by the Arkansas Department of Education.

3.05 "Teacher" means any person who: 1) is required to hold a teaching license from the Arkansas Department of Education unless the State Board has waived this requirement as part of a public charter school contract and 2) is engaged directly in instruction with students in a classroom setting for more than seventy percent (70%) of the individual's contracted time, including a guidance counselor or school librarian.

4.0 Selection Process and Requirements for the Arkansas Alternative Pay Program

4.01 Public School Districts desiring to participate in the Arkansas Alternative Pay Program must submit an application to the State Board of Education.

4.02 The program maybe for licensed employees, classified employees or both employee groups and all eligible employees may participate in the program.

4.03 A program may be implemented on a district-wide or on a school-by-school basis.

4.04 Alternative Plan Committee and Collaborative efforts are required for consideration

4.04.1 Evidence of Collaborative efforts among the participating school board, administrators, teachers, classified employees, association representatives and parents of children attending the school district.
4.04.2 A committee shall be established from the groups in 4.04.1 with fifty percent (50%) of the committee being composed of teachers.
4.04.3 The committee members shall be selected by the respective groups which they represent.
4.04.4 The program is a personnel policy and shall be promulgated in accordance with § 6-17-201 et. seq. and § 6-17-2301 et. seq. except to the extent that those personnel policies are negotiated in any school district that recognizes an organization representing a majority of teachers.
4.04.5 Show of interest resolution which states at least seventy percent (70%) of the employees are interested. (Another percentage may be established with approval by a majority vote of the teachers and the local school board.)
4.04.6 The role of the committee shall be charged with the design, implementation and evaluation of the program.

4.05 Objective Criteria which shall be considered in all plans are:

4.05.1 Measurable Indicators of student achievement.
4.05.2 Percent of alternative pay which is related to the annual increases in student test scores. (No more than fifty percent (50%) of the program's eligibility requirements or alternative pay is allowed to be based on an individual teacher's students' test scores.)
4.05.3 There is a clear system of payment which is not arbitrary.
4.05.4 The alternative pay shall be at least ten percent (10%) of the salary and payable in one year based upon one-contract year.
4.05.5 There is an established and ongoing support system for the participants with both financial and administrative resources to implement the program.
4.05.6 The program is aligned to the school's/district's Arkansas Comprehensive School Improvement Plan. (ASCIP).
4.05.7 The plan is a part of a larger set of reforms.

4.05.8 At least fifty –one percent (51%) of each employee group listed in 4.04.1 must elect to participate to implement any plan for that employee group. This is with the understanding that individual employees have the right to choose not to participate in the plan for that group.

5.0 Arkansas Alternative Pay Programs Timeline and Schedules

5.01 Quarterly written updates are to be provided to ADE on the implementation of an alternative pay plan yearly. Those reports are due on the following dates:

a. October 1st
b. January 1st
c. April 1st
d. July 1st

5.02 Arkansas Alternative Pay Programs should be ready for implementation by July 1st of the initial school year

5.03 These dates shall be subject to modification or alteration as determined in the best interest of the Arkansas Alternative Pay Programs program by the ADE.

6.0 Funding for the Arkansas Alternative Pay Programs

6.01 Funding will be from existing school and/or district revenue. No additional state funds have been appropriated at this time.

ARKANSAS'S EQUITY PLAN
Updated May 20, 2010

Goals
Three major strands in the Arkansas systemic plan are interwoven to ensure that we meet our goals for equity: (1) facilities; (2) beginning salaries and school funding: and (3) teacher recruitment and retention. All of these areas and their supporting objectives are examined below after we explain our approach to carrying out, monitoring, and evaluating our plan.

Monitoring and Evaluating the Equity Plan
As will be shown below, data indicate that programs currently in place are promoting equity, but we always strive to do better. Status quo and stagnant won't serve our needs, so plans and actions are constantly fluid. The Arkansas Equity Plan is a living guide to our future.

The effectiveness of our plan will be evaluated through data, collected annually, that includes but isn't limited to the percentage of highly qualified teachers in each school and district, the years of educators' experience, and measurement of student growth. Program advisors within the Office of Teacher Quality will continue to review progress and also survey teachers and administrators about their experiences, ask for their feedback, and court their suggestions. Deliberative dialogue with targeted school districts will continue, as will statewide-inclusive discussions with superintendents and other district administrators. Arkansas's rich data collection system will speed online reporting and aid monitoring and evaluation. These measures will enable us to focus on the big picture as well as capture close-range snapshots.

As we gauge progress and the rate at which our plan is moving us forward, we'll make modifications, add new approaches, drop ideas that fail to meet the mark, and search for those that do. Our goal is to keep children at the center, ensuring their harvest is a superior education under the leadership and support of top-quality educators.

Background
Arkansas has many legislative and research projects that are working to ensure that poor and minority children are not taught by inexperienced teachers or out-of-field teachers at higher rates than other children. The data table below, which shows minority and poor students in relation to the years of experience and the HQT (highly qualified teacher) status of their teachers, indicates that Arkansas's Equity Plan is working. While these populations differ, that difference is small, and most would agree, insignificant.

	2005-2006		2006-2007		2007-2008		2008-2009		2009-2010	
	% HQT	yrs experience	% HQT	yrs experience	% HQT	yrs experience	% HQT	yrs experience	% HQT	yrs experience
Hi minority districts	86.22%	13.65 yrs	96.12%	14.58 yrs	98.00%	14.30 yrs	96.88%	14.53 yrs	98.73%	14.44 yrs
Lo minority districts	85.16%	12.55 yrs	98.21%	14.31 yrs	98.36%	13.90 yrs	98.21%	14.03 yrs	98.97%	14.28 yrs

Hi poverty districts	86.40%	12.61 yrs	96.30%	13.57 yrs	96.94%	13.60 yrs	95.02%	13.76 yrs	98.02%	13.52 yrs
Lo poverty districts	84.53%	12.42 yrs	99.20%	13.86 yrs	98.97%	13.90 yrs	98.34%	14.21 yrs	98.95%	14.15 yrs

All of the initiatives and programs described below are planned and interconnected to build equity in our public education system. The plan components are ongoing and constantly monitored to determine how well they are working and how we can improve them. The three major strands the state has identified to ensure a plan of equity in our public schools are addressed below in turn.

1. **Facilities** Even before The American Recovery and Reinvestment Act of 2009 (ARRA), school facilities were a priority in the state. Students, teachers, and community leaders take pride in their schools when they are attractive learning environments with classrooms that are safe, dry, and healthful. Under the Continuing Adequacy Evaluation Act of 2004 *(Arkansas Code Annotated [(A.C.A] §§ 10-3-2101),* the General Assembly committed to make biennial assessments of "adequacy" as it pertains to the particulars of public school education *and* the facilities in which that education is delivered. Since that time, approximately $750 million has been appropriated to improve school facilities in the state's 244 school districts (including conversion charter schools). Facility projects are approved by the state-level Division of Public School Academic Facilities and Transportation, which guides and supports development of each school district's master facility plans according to mandated construction standards. School districts with the least wealth, greatest enrollment growth, and poorest condition of facilities are the state's funding priority for improving the local school facilities. The intense school upgrading began in 2004 as a ten-year project and is on schedule. At this time, all approved projects have been funded, and additional funding requests will be made by LEAs again during summer 2010.

2. **Beginning Salaries and School Funding** In 2004, the Arkansas Supreme Court ruled that the state didn't have a suitable and efficient system of funding public education. The court declared that it is the state's duty to provide a general, suitable, and efficient system of free public schools to the children of the state under the Arkansas Constitution, Article 14. The General Assembly is obligated to ensure the provisions of an adequate and equitable system of education, the court ruled. Ever since, lawmakers have been passing multiple laws to fulfill their charge and reform the state's education ethic and school system. Included in the new statutes and embodied within other initiatives are our plans for equity in beginning teacher salaries and school funding:

    a. During the 2003 Second Extraordinary Session, Acts 59 and 74 were passed and became *A.C.A. §§ 6-17-2403*, known as the Minimum Teacher Compensation Schedule. The legislation established a minimum base salary for beginning teachers; a minimum annual increment; a minimum salary for teachers with a Master's Degree; a requirement that teachers receive credit for their total years of experience, when they maintain a valid Arkansas license; and the mandate that teachers be compensated for any additional days of work at their daily rate of pay (DRP). The minimum salary schedule has been modified periodically to establish a more competitive base salary. Beginning with the 2008-09 school year, the minimum salary for teachers with a Bachelor's Degree is $29,244 and $33,630 for beginning teachers with a Master's Degree. At this time, the state average for a beginning teacher with a bachelor's degree is $31,899; with a Master's Degree, it's $35,693. This legislation has promoted parity across the state and particularly in the economically depress Delta region of the state.

b. Act 57 of 2003 determined what is needed to fund an adequate education opportunity for children in Arkansas. Beginning with the 2004-05 school year, a report from consultants Picus and Odden determined that districts should be funded at the rate of $5400 per pupil. For the next biennium, legislators conducted a self-study and determined that the funding rate should be increased as indicated in the table below. A recalibration study was presented by Picus and Odden in an adequacy study approved by legislators in 2007. In that study, findings regarding both salary and staffing needs were presented as equity issues and subsequently addressed by law. The per-pupil funding base is adjusted for each fiscal year and, to maintain equity, certain "categorical" funds and other monies are added. These categories include allotments for staff professional development and for students eligible for free- and reduced-price lunch, those who are learning English, and others in alternative learning environments. Equitable adjustments are also made for districts that are gaining enrollment and for those that are losing it. As a result of amending and continually monitoring the state's funding formula, Arkansas school districts are funded equitably.

School Year	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Per-Pupil Base	$5400	$5528	$5662	$5719	$5789	$5905	$6023

Table 1 State equalization funding per pupil

c. The Arkansas Teacher Housing Development *(A.C.A, §§ 6-26-301 et. seq.)* and The Teacher Housing Fund *(A.C.A. §§ 6-26-305)* were passed in 2003. The mission of the office is to identify reasonably priced housing for highly qualified and experienced teachers to relocate to hard-to-staff areas of the state, particularly the Arkansas Delta region.

Since 2007, twenty Arkansas counties and their respective school districts have been designated as eligible under this legislation. In October 2007, that list of counties and school districts was reviewed and the number of eligible counties was reduced to 14. Since then, approximately 130 applications for the housing program have been submitted. Thirty-five teachers have received funds to assist with home ownership via the incentive program, and another 62 teachers have received rental incentive funds.

d. The Traveling Teacher *(A.C.A. §§ 6-13-808)* became law in 2007 to help school districts staff their schools with appropriately licensed teachers for required courses in grades 9-12. The Rules Governing the Traveling Teacher Program explain the application process (including the Highly Qualified Status of the teacher), the incentive bonus, and selection procedures, along with general policies and procedures relating to the program. Over the three-year span of the plan, very few teachers have taken advantage of the program, so we're studying how to improve the initiative.

School Year	Number of Districts	Number of Teachers
2007-08	1	1
2008-09	2	2
2009-10	2	2

Table 2 Data on Traveling Teachers

e. The Alternative Pay Plan *(A.C.A. §§ 6-17-119)* and the Rewarding Excellence in Achievement Program–R.E.A.P. *(A.C.A. §§ 6-15-2601 et. seq.)* are two alternative pay plans that afford school districts and charter schools the opportunity to develop teacher compensation plans tailored to local needs. Those needs may be as simple as recruiting the best teachers to work in the districts, because those teachers can be compensated for advancing student growth. The rules governing both the Alternative Pay and REAP plans describe the purpose and permissions of the two laws. The application process for the REAP plan, which is a competitive program, awards additional money to funded schools and districts according to its rules. The program is only two years old, but its limited success warrants examination to determine where programmatic changes are needed.

School Year	Number of Districts awarded a REAP grant
2008-09	2
2009-10	2

Table 3 Number of Districts Awarded a REAP grant

3. **Teacher Recruitment and Retention** We needed a plan to encourage teachers to move into hard-to-staff areas. In August 2006, the *Bureau of Legislative Research* submitted a report to the Joint Education Committee noting that Arkansas didn't have a teacher shortage problem, but a "sorting problem." In other words, the demographics of where teachers seek employment differ from where jobs are open. ADE has been working via the initiatives described in this section to assist school districts in locating highly qualified teachers. Economic development and housing are issues that need to be addressed to entice teachers to relocate to the economically hard-pressed Delta and southeastern quadrant of the state. The plan includes continued dialogue with business and school leaders in this region, as well as the Arkansas Economic Development Commission and the Arkansas Department of Higher Education, to expand strategies for staffing such areas.

   a. Pathwise Mentoring to Enhance Arkansas's Retention Data In spring 2008, the Office of Teacher Quality compiled longitudinal data on the retention rate of new teachers in our public schools. The data indicated that Arkansas's retention rate is much higher than the national average. The research revealed that 25% to 35% of teachers quit their jobs after their first year, and 50% of them quit by the end of five years. The data show that the efforts of our legislators to improve teacher salaries and the Pathwise mentoring program in the state has a major effect on teacher retention for the state. Pathwise ensures that new teachers have a mentoring support system to help orient and guide them throughout the transition into their new positions and responsibilities. Note that for both retention categories, first year and after five years, Arkansas's data are considerably better than the national average cited above.

School Year	# of 1st year teachers	% of first year teachers not returning	% of teachers not returning after five years
2001-02	2262	19.72%	31.17%
2002-03	1886	18.40%	30.49%
2003-04	1863	9.07%	26.25%
2004-05	1789	6.26%	32.92%
2005-06	2304	6.42%	29.86%
2006-07	2504	6.91%	NA
2007-08	2507	13.64%	NA
2008-09	2284	14.71%	NA
2009-10	2413	NA	NA

Table 4 Retention Data on teachers after years one and five

b. Equity Assistance Center (EAC), *A.C.A. §§ 6-17-1902,* established an Equity Assistance Center at ADE. The center provides technical assistance to school districts in developing an inclusive staff recruitment plan. Some of the specific goals of this statute are that each LEA:
   i. designate an employee to coordinate implementation of its recruitment plan;
   ii. establish a goal to recruit minority teachers and administrators for the next ten years, including steps and monitoring progress made; and
   iii. encourage minority students to seek a career in education.

c. District Minority Recruitment Plans Beginning in the 1992-93 school year, each school district in the state with more than a 5% minority student population was required to prepare a minority teacher and administrator recruitment plan and file it annually with the Equity Assistance Center (EAC) pursuant to *A.C.A. §§ 6-17-1901.* The table below outlines the number of districts in the state with 95% or more white students who were not required to submit a Minority Teacher and Administrator Recruitment Plan. (For the past three years Arkansas has had approximately 244 school districts.)

School Year	2004-2005	2005-06	2006-07	2007-2008	2008-09	2009-10
Number of districts with 95% or more white students	100	91	80	76	79	76

Table 5 Number of Arkansas public school district with 95 percent or more white students

d. Since the 2006-07 school year, ADE has entered into a yearly Memorandum of Understanding (MOU) with the Teach for America Corporation (TFA) to assist the state in placing teachers in the Delta region. However, Arkansas has been a partner with TFA for the past 20 years. During the first nine years, the number of TFA teachers in the state ranged from 3 to 22 teachers per year. As outlined in the table below, that number has grown. For the past 10 years, the number of Highly Qualified Teachers employed in Arkansas through annual contracts with TFA is substantially higher, as illustrated below. The growth in HQT in the Delta is a significant asset and evidence of efforts to ensure equity to students in the region.

Year	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
1^{st} Yr	11	18	38	24	38	39	39	35	35	98
2^{nd} Yr	10	11	18	29	24	37	33	36	41	35
Total in AR	21	29	56	54	62	76	72	71	76	133

Table 6 Data on the number of Teach for America (TFA) teachers in public schools in the Arkansas Delta

e. In 2003, Act 101 established High Priority Districts Bonus Incentives *(A.C. A. §§ 6-17-811)* as a three-year pilot program. The program met with success, so the statute was changed for full implementation beyond the pilot stage. Presently, the program defines a high priority district as one with fewer than 1,000 students and in which over 80% of the students qualify for the free- or reduced-price lunch program. Teachers in any of the qualifying districts receive $5,000 as an incentive bonus for the first year of service, then $4,000 for the second year, and $3,000 for all teachers in their third year and beyond. The bonus is paid upon completion of the contract for that school year. The state has appropriated over $4 million each biennium through this incentive program to recruit teachers in high-priority districts. Table 7 illustrates the number of teachers who have benefited from the program for the past five years. Note the jump in the number of current teachers, meaning teachers retained, for the 2007-08 and 2008-09 school years. The data for the incentives paid at the conclusion of the 2009-10 school year will be collected later in June 2010.

Years	# of New Teachers	# of Current Teachers	Total # of Teachers Receiving Incentive funds	Total dollars distributed
2004-05	127	423	550	$1,282,000
2005-06	90	414	530	$1,257,558
2006-07	39	335	374	$ 910,516
2007-08	92	461	553	$1,415,952
2008-09	88	552	640	$1,609,388

Table 7 Distribution of the high-priority district bonus incentives

f. The Troops to Teachers (TTT) program in Arkansas is working hand-in-hand with the Office of Teacher Recruitment and Retention. In the spring of 2006, ADE employed a new program advisor to ensure that this program reaches its full potential. Arkansas entered into a MOU with the Dantes Troops to Teachers program, which works to recruit military personnel, who are leaving the service, into teaching. The teachers hired through TTT will all be highly qualified: they must pass the content-knowledge Praxis examination for the licensure area before they are admitted into the program.

School Year	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Number of military personnel recruited to AR schools through the TTT program each year	6	5	7	17	4

Table 8 Number of Recruits through the TTT program

g. During the 2005-06 school year, the Arkansas Department of Higher Education (ADHE) implemented the Teacher Opportunity Program (TOP) pursuant to *A.C. A.§§ 6-81-610*. Legislation appropriated $2 million a year to fund this project. The maximum a teacher can receive is $3,000 a year ($2,000 from the ADHE and $1,000 from the local school districts). This dual-licensure incentive program provides loans to teachers who return to college to obtain an additional licensure in a subject matter declared a shortage area by the state. The teacher must be currently employed as a classroom teacher in an Arkansas public school and have been employed by the same district for at least three years immediately preceding the application. ADHE will forgive the loan if the recipient attains the additional license within the first three of receiving the funds *and* teaches in an Arkansas public school for three consecutive years immediately after obtaining the additional license. As evident from Table 9 below, the program that began in 2006-07 needed more publicity the first year; and the publicity worked as evidenced that the number of teachers participating in TOP doubled the second year. This program not only helps teachers achieve full licensure, in many instances it also promotes highly qualified status as teachers increase their content knowledge for the licensure area.

Year	**Number of teachers participating in TOP**		**Funds Expended**	
	(Dual Licensure)	**(Reimbursement)**	**(Dual Licensure)**	**(Reimbursement)**
2006-07	33	423	$64,559	$522,965
2007-08	41	750	$53,456	$980,294
2008-09	44	709	$62,500	$1,024,462
2009-2010*	35	NA	$62,064	NA

* preliminary data

Table 9 Data on TOP

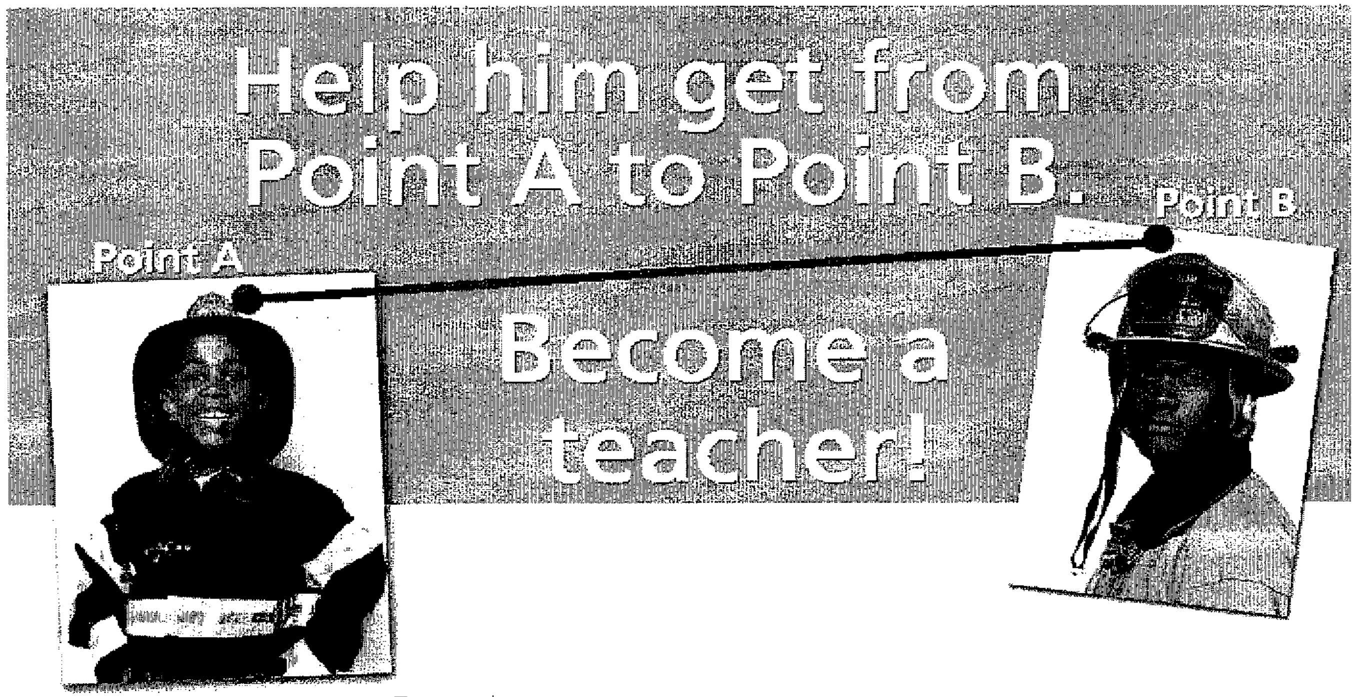
h. Since 2004, we have maintained a partnership with Teachers-Teachers.com to recruit teachers and administrators for any school district in Arkansas. The table below illustrates the number of unique "hits" on the Arkansas site. The online application system makes applications and job announcements a viable part of the state's equity plan. The following statistics illustrate the effect of this program:
   - 32,129 users indicated they were licensed educators interested in Arkansas education positions
   - 82 registered as Arkansas users (school districts, education co-ops, ADE, Arkansas Correctional Schools)
   - 2,114 new candidate's names were added to the prospect lists in all subject areas
   - 3,096 candidate names were added for special education
   - 335 jobs were posted in all subject areas
   - 25 jobs were posted in special education
   - 424,841e-mails were sent to candidates on behalf of the state's school districts
   - 4,193 individual candidates viewed at least one Arkansas job posting
   - 387 candidates viewed at least one special education job posting
   - At the end of the year, school districts reported that 32% of their hires used Teachers-Teachers.Com
   - 92% of these candidates were *not* Arkansas teachers during the previous (2008) school year

   This last statistic is impressive, reflecting genuine new recruitment rather than mere shuffling of existing Arkansas teachers. The state is optimistic that, through this continued partnership, it will gain mobility data to enter into the warehouse of our Comprehensive Data Plan to help all school districts with recruitment. (The number of participating districts decreased during the last two years due to the loss of grant funding by the special education unit, which resulted in interested districts being asked to pay a prorated fee for using the site.)

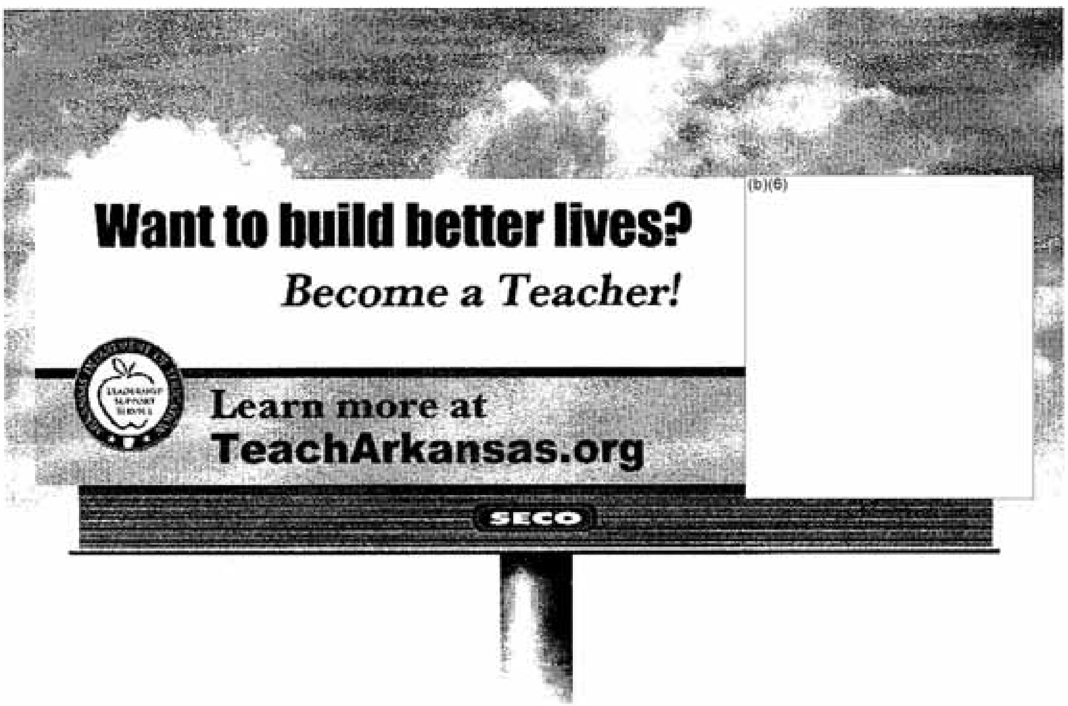
i. The Office of Teacher Recruitment and Retention is a program within ADE designed to address the teacher shortage and increase the pipeline of potential teachers. For persons interested in education careers, the office informs them of available incentives for those who will work in high-demand areas as well as assist school districts in the Delta with recruitment and retention. Note several of the innovative initiatives emanating from the office:
   i. Since 2002, the SEA has held an annual job fair to assist current Arkansas teachers in adding areas of licensure, especially in hard-to-fill and other shortage areas. On May 1, 2010, the job fair was held at a large metroplex in Little Rock, where almost 400 teachers attended, as did 5 universities, and 54 school districts. Turnout was quite high, especially considering the number of tornadoes in the state throughout the previous night.
   ii. Realistic rules and procedures for reciprocity have allowed 22% of all newly licensed Arkansas teachers, coming from other states, to teach in Arkansas each year.
   iii. In 2007, the state began providing $1,000 as an annual recruitment incentive for each College of Education to recruit teacher candidates into its program. Additional grant funds will help us expand the recruitment initiative.

iv. The Office of Recruitment and Retention conducted a unique recruitment campaign in 2009 that included special job fairs centering on 12 selected Delta school districts that had recruitment challenges. Some teacher candidates were hired on the spot. These 12 districts will be able to interview teacher candidates at the Non-Traditional Licensure Program Orientation in June 2010, and all fees for one NTLP candidate from each of the school districts will be waived. Booth fees will be paid by the Office of Recruitment and Retention for every in-state job fair these districts attend at Arkansas colleges and universities. Further, each school district will receive financial incentives: $1,000 for recruitment advertisements and $2,500 for recruitment materials to use at job fairs.

v. Colorful recruitment billboards, placed prominently on highways and interstates in the Delta, are inviting individuals into the teaching profession. Three of those billboards are shown below:

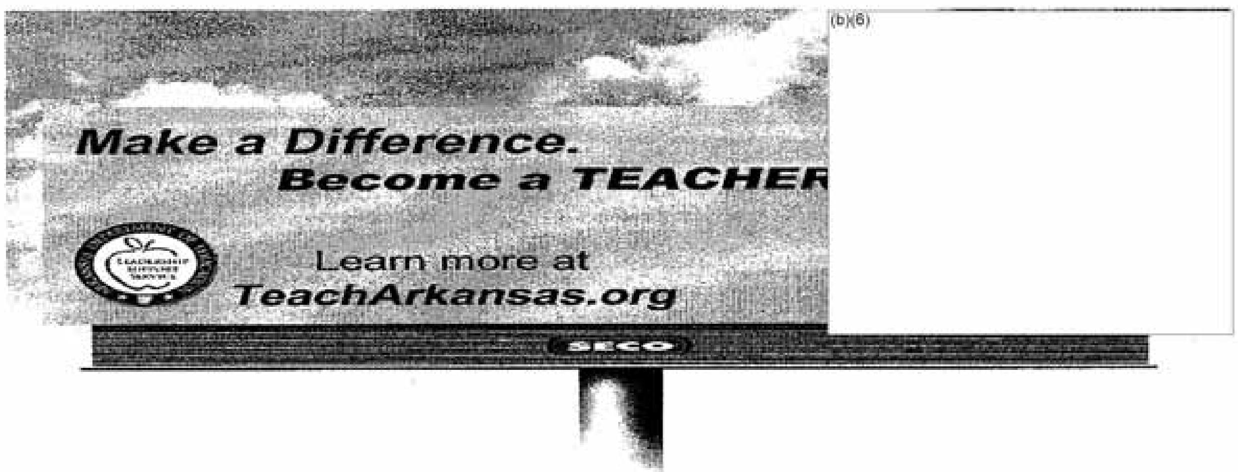


Learn more at
*Teach*Arkansas.org



APPROVAL: ____________________
DATE: ____________________

SECO OUTDOOR ADVERTISMENT
DESIGN: PAIGE BRADFORD



APPROVAL: ______________________
DATE: ______________________

SECO OUTDOOR ADVERTISMENT
DESIGN: PAIGE BRADFORD

Project STEM Starters: Where the Race Begins

Systemic opportunities for learners in science, technology, and engineering are limited in Arkansas elementary schools. *No Child Left Behind* (NCLB) has greatly diminished the time spent on teaching science in many elementary schools (Keeley, 2009). Time and time again, we hear that elementary teachers are not teaching science because they do not know the content nor feel secure with it as a subject area (Rutherford & Ahlgren, 1989). Where science is taught, basal texts are often emphasized, reading and canned experiments are preferred and are used over active learning (Lockwood, 1992). To address the Arkansas' statewide lack of opportunity, a STEM initiative, Project STEM Starters, was developed and subsequently funded through the U. S. Department of Education Jacob K. Javits Program. The project components, goals, objectives and activities focus on increased science learning for all students in grades 2 through 5 and increased knowledge and skills in the STEM disciplines for their educators.

Project STEM Starters is a scale-up project of two previous U. S. Department of Education projects which demonstrated through scientifically-based research and evaluation studies that they increased achievement in the core subject area of science for elementary students from **under-represented groups and provided effective professional development to teachers.** . Project STEM Starters blends these two projects in new geographic locations, Beebe Public Schools, and the South Conway County School District. The two previously validated interventions are: 1) the elementary grade content-specific science curriculum from *Project Clarion* developed at the College of William and Mary, and 2) the intensive professional development through peer coaching validated through the *Arkansas Evaluation Initiative* (AEI). The project components which resulted in increased teacher knowledge and skills and student achievement are configured in a unique model, Project STEM Starters. STEM Starters brings the excitement of science, technology, mathematics, and engineering to both students and teachers. In multiple studies, the inquiry-based science units implemented in Project STEM Starters have demonstrated increases in student science achievement, critical thinking, and understanding of scientific investigation (Feng et al., 2005; VanTassel-Baska et al., 1998; VanTassel-Baska et al., 2007). Additionally, the *Arkansas Evaluation Initiative* (AEI) Institute and Peer Coaching components demonstrated statistically significant results in increasing teacher knowledge in skills in areas of focus (Robinson, Cotabish, Wood, & Pearson, 2006, Cotabish & Robinson, 2007). Project STEM Starters involves the larger STEM community in Arkansas, provides intensive professional development, develops additional rich instructional materials to supplement the field-tested and validated science curriculum units, and focuses on well-designed research and evaluation studies to document the project.

As STEM Starters enters its second year in Arkansas, sixty (60) collaborating classrooms in the South Conway County and Beebe School Districts are participating. In four schools, The project serves approximately 1,320 students in grades 2 through 5. More than 60 % of the students involved in the project participate in their district free or reduced-lunch program, indicating that these students are from low-income households. As part of the current STEM Starters, 25 additional schools statewide (1 teacher per school) are scheduled to receive <u>modified</u> professional development to ensure a multiplier effect for an additional 1,750 students. RTTT funds would fill a gap and permit full participation in STEM Starters professional development project. The inclusion of science experts, business leaders, and policy makers from the Arkansas

STEM Coalition at the outset of Project STEM Starters enhances its opportunities for statewide institutionalization.

Project STEM Starters addresses a content gap at the elementary grades. Science is not assessed until grade 5 in Arkansas; therefore, it is not an area of emphasis in the curriculum for the early grades. Key opportunities to engage young children in STEM are lost. To increase statewide program effectiveness and provide services and deliverables to 25 additional districts, additional funds are needed. Currently, these 25 districts are scheduled to receive a modest 12 hours of professional development. With RTTT funding, all teachers in grades 2 through 5 in the 25 schools <u>would receive 60 hours of professional development annually and curriculum materials to increase the multiplier effect</u> to approximately 20,000 students. At the present time, there are no available funds to provide these teachers with the high-quality STEM curriculum. In order to support and sustain elementary educator growth in STEM education, *RTTT* funds are needed.

Project STEM Starters Addresses the RTTT Competitive Priority

Project STEM Starters addresses the **<u>Competitive Preference Priority</u>** that States have a high-quality plan to:

(i) Offer a rigorous course of study in STEM;

(ii) Cooperate with industry experts, museums, universities, research centers, or other STEM-capable community partners to prepare and assist teacher in integrating STEM content across grades and disciplines, in promoting effective and relevant instruction, and in offering applied learning opportunities for students; and

(iii) Prepare more students for advanced study and careers in STEM, including by addressing the needs of under-represented groups of women and girls in the STEM fields.

Competitive Preference Priority (i): Offer a rigorous course of study in STEM. The theoretical framework of Project STEM Starters is guided by the principle that teacher professional development is a means to increase STEM talents among elementary-grade students. Professional development consists of a **<u>high-quality plan</u>** to offer a rigorous course of study in STEM and includes 60 hours of professional development annually. Thirty hours of summer professional development takes place through an intense, one-week institute focused on STEM content knowledge skills. Teachers receive an additional 30 hours of **innovative** professional development embedded within their teaching environment in the form of one-on-one peer coaching. Peer coaching technical assistance is provided by a licensed teacher who is <u>also an expert in the sciences</u>. In addition, a district-employed lead teacher will complete two graduate content and content-specific pedagogy courses focused on STEM though the University of Arkansas at Little Rock.

Competitive Preference Priority (ii): Cooperate with industry experts. A unique high-profile activity, *STEM Starters Summit*, brings together scientists, engineers, teachers, school administrators, representatives from higher education, community leaders, elected officials and corporate executives. Consultants and presenters address major issues impacting America's scientific and technical workforce and focus on a coherent vision of what constitutes critical

STEM education involving elementary grade students. Speakers discuss ways to integrate critical STEM content and process skills into K-12 education. One such consultant for Project STEM Starters is Dr. Alex Biris. Dr. Biris leads the research program at the Nanotechnology Center at UALR. Through collaborations with private corporations, universities in the state and nation, and research institutes in the United States and abroad, Dr. Biris serves as Chief Scientist to accelerate the development of commercial applications of nanotechnology. Key to Dr. Biris' vision for the Nanotechnology Center is its aggressive outreach program to train and educate young people. Another expert consultant for Project STEM Starters is Dr. Michael Gealt. Dr. Gealt, Dean of the College of Science and Mathematics, is the Vice Chair of the Arkansas STEM Coalition and an active researcher whose program includes bioinformatics. Dr. Gealt is committed to collaborations with educators on science and mathematics preparation. In his role as Vice Chair of the STEM Coalition, he advises on numerous STEM education projects. Dr. Gealt serves as a STEM Summit presenter and liaison between the project and the Coalition. Leaders from the Arkansas STEM Coalition address the STEM skill needs of local industry, especially smaller high-growth companies.

Project STEM Starters is housed at the Center for Gifted Education. The Center is located at the University of Arkansas at Little Rock, the metropolitan campus of the University of Arkansas System. The setting provides Project STEM Starters with access to academic and industry experts in the STEM disciplines. The multi-service Center provides extensive professional development, graduate programs, and direct service programs to children and youth, with an emphasis on the needs of multicultural and low-income urban youth. Through its institutes and conferences, the Center serves over 800 teachers annually in a variety of professional development activities. The Center has an extensive track record with externally funded projects.

Competitive Preference Priority (iii): Prepare more students for advanced study and careers in STEM. Project STEM Starters is grounded in research-based best practices which have been scientifically demonstrated to increase teacher knowledge and skills, and to increase student achievement in science including students from under-represented groups. In more than one study, the inquiry-based science units implemented in Project STEM Starters have demonstrated increases in student science achievement, critical thinking, and understanding of scientific investigation (Feng et al, 2005; VanTassel-Baska, et al, 1998; VanTassel-Baska et al, 2007). The Project STEM Starters performance-based assessments emphasize higher order-concepts, scientific investigation, and content mastery which have shown significant growth for **Title 1** students exposed to the science units (VanTassel-Baska, Bracken, et al., 2007). Primary-age students exposed to the units utilized by Project STEM Starters perform better on standardized achievement test in science (MAT-8) than control students (VanTassel-Baska, Bracken, Stambaugh, & Feng, 2007). Significant and important treatment effects were found for students' ability to plan an experiment after exposure to the curriculum units (Feng, VanTassel-Baska, Quek, O'Neil, & Bai, 2005; VanTassel-Baska, Bass, Ries, Poland, & Avery, 1998; VanTassel-Baska, Bracken, et al., 2007). Additionally, the peer coaching model utilized by Project STEM Starters shows statistically significant differences in favor of educators who participate in peer coaching (Cotabish & Robinson, 2007). Both AEI professional development institutes and peer coaching increased teacher knowledge and skills in content areas of focus (Cotabish & Robinson, 2007). Project STEM Starters early research-based successes and the rich, research-based components prepare more students for advanced study in STEM.

Project STEM Starters is Designed to Meet Four Assurance Areas

Project STEM Starters design meets the four assurance areas outlined in the grant application. Specifically, Project STEM Starters addresses the following State Success Factors:

Commitment for the Participating LEAs (A) A1) (ii).

Project STEM Starters has existing relationships with school districts and education service cooperatives. The inclusion of 25 additional schools strengthens these relationships. As a result, Project STEM Starters can serve as a liaison between the state and the partnering schools.

Generating Broad Statewide Impact (A) (1) (iii).

Project STEM Starters currently serves approximately 1,320 students in grades 2 through 5, including students from underrepresented groups and females. With *Race to the Top* funding, 25 schools statewide receive professional development and curriculum materials to ensure a multiplier effect for an additional 20,000 students. With Project STEM Starters as part of the State RTTT plan, the State can continue to (a) increase student achievement in science, (2) decrease the achievement gaps in STEM among underrepresented groups including females, and (3) increase student enrollment in rigorous Pre-Advanced Placement, Advanced Placement and International Baccalaureate courses.

Building a Statewide Capacity to Implement, Scale-up, and Sustain Proposed Plan (A)(2)

Project STEM Starters personnel have extensive experience with federally-funded projects and state-wide capacity building. Moreover, project components were designed for scale-up which allows the administration, dissemination, and delivery of professional development to be administered seamlessly. A peer coach will provide 30 hours of embedded professional development to teachers annually as well as work one-on-one with a district-employed lead teacher to monitor and sustain the project in each school. This train-the trainer's model is utilized to increase capacity and utilization. When teacher attrition occurs, the Center that houses Project STEM Starters at the University of Arkansas at Little Rock can provide professional development to incoming teachers to sustain the project beyond the duration of RTTT funding. Through the repurposing of state professional development funds, the high quality professional development provides a pool of teachers prepared to deliver science instruction. Additionally, the inclusion of science experts, business leaders, and policy makers from the Arkansas STEM Coalition at the outset of Project STEM Starters enhances its opportunities for statewide institutionalization.

Demonstrating Significant Progress in Raising Achievement and Closing Gaps (A) (3)

The previous successes of STEM Starters components, specifically the science curriculum and the peer coaching assistance, demonstrates significant progress and promise in raising student achievement and closing gaps in science at the elementary grades. Previous studies document the importance of early exposure to the content and processes of science, specifically a correlation between the early development of science proneness among young students and ecologies of science achievement later in life. According to Brandwein (1995), the development and culmination of science proneness among students at the early grades could increase student interest in rigorous science classes (e.g., Pre-AP Science, AP Biology, Chemistry, Environmental Science, and Physics). The Arkansas Department of Education reported 58% of 5th grade students, and 30% of 7th grade students scored proficient or advanced on the State's 2009 Augmented Science Benchmark Exam. Because Project STEM Starters targets STEM at grades 2 through 5, science scores on the State's 5th grade Augmented Benchmark Criterion-referenced assessment will be bolstered. These important considerations demonstrate Arkansas' ability to raise achievement including gaps among groups underrepresented in the sciences.

Data Systems to Support Instruction (C) A3)

Project STEM Starters already has a data management system in place. Data from participating schools is gathered and aggregated for statistical analysis. A common aggregation purpose is to analyze science knowledge and skills based on specific variables such as student, teacher, grade, school, etc. This data could be readily available to researchers, evaluators, and the State as part of a longitudinal data system.

Great Teachers and Leaders – Improving Teacher and Principal Effectiveness Based on Performance (D)(2)

Project STEM Starters can contract to assist in collecting data on program implementation fidelity. Currently, Project STEM Starters collects a wide variety of student and teacher assessments which can be used by principals and other district or state persons interested in formative evaluation to improve teacher effectiveness. In addition to the 5th grade Augmented Science Benchmark Exam regularly collected by the state, the results from interim, curriculum-based assessments integral to STEM Starters would allow the State to be informed by clear and objective data on the impact of Project STEM Starters.

The following student data collected by project personnel could be used to assess student and teacher knowledge and skills in STEM:

Interim Student Assessments

The *Test of Critical Thinking* (TCT) (Project Athena, 2003) is used to assess the critical thinking skills of students.

The *Scoring Rubric for Scientific Processes – Adapted Fowler Test* (Fowler, 1990), is used to assess students' scientific habits of mind. The Adapted Fowler test is embedded within the William and Mary science curriculum units and is part of regular classroom instruction and assessment. Students are assessed on the following criteria: (a) prediction, (b) materials, (c) experimental design steps, (d) sequential order and data collection, and (e) interpreting data for making predictions.

Annual Student Assessments

Arkansas Augmented Science Benchmark Exam. District collected data from the 5th Grade Augmented Science Benchmark Exam will be analyzed annually by Project STEM Starters personnel to assess student growth and achievement in science.

Interim Teacher Assessments

A measure of teacher science content knowledge such as:

1) *Assessing Teacher Learning about Science About Science Teaching* (ATLAST) by Horizon Research, Inc. can be used to gauge teacher growth in knowledge about science content as a result of participating in Project STEM Starters professional development, curriculum use, and peer coaching. It is also used to investigate the contribution of teacher knowledge to student performance.

Or

2) The *Diagnostic Teacher Assessment in Mathematics and Science* (DTAMS) (Bush, 2005) could be used to assess teachers' content knowledge in Earth, Physical, and the Life sciences. The DTAMS includes 11-12 multiple choice items and 1 open response item per grade level.

3) The *Perceptual Assessment of Science Teaching and Learning* (PASTeL) assesses teachers' perceptions about and confidence in teaching science. The PASTeL has: (a) a teaching scale (25 items), and (b) a student learning scale (25 items). The Likert-type instrument asks teachers to rate how well statements apply to them (teaching scale) and to their students (student learning scale).

Great Teacher Leaders – Ensuring Equitable Distribution of Effective Teachers and Principals (D) (3)

Currently, Project STEM Starters provides professional development and peer coaching in science to teachers in high-poverty schools (free and reduced lunch participation of 40% or more) only. RTTT funds have the potential to increase teacher effectiveness by ensuring that each of the 25 schools also have a trained district-employed lead teacher to monitor and sustain the STEM project in each school.

Great Teachers and Leaders – Providing Effective Support to Teachers and Principals (D) (5)

The Project STEM Starters professional development design includes a train-the-trainers model involving 30 hours of embedded professional development consisting of peer coaching annually as well as training for a district-employed lead teacher for each of the 25 STEM Starters schools. In addition to peer coaching and lead teacher training, 30 hours of intense summer training is provided annually. Experts in the field of STEM, including faculty and staff from the Center at the University of Arkansas at Little Rock and from the College of William and Mary provide consultation, training, and expertise to undergird support to teachers and principals.

Because the training model is flexible and embedded within the context of the participating school, the project infrastructure is easily supported and integrated within a school's existing curriculum.

Arkansas Advanced Initiative for Math and Science's Advanced Placement Incentive Program

INTRODUCTION

For the first time in the history of American education, the U.S. Department of Education is awarding $4 billion in a one-time Race to the Top (RTT) competition among states to improve public education. RTT will provide millions of dollars to select states that have demonstrated educational improvement and have the determination and ability to establish a statewide public school system that would be a model for the nation. This is truly a once in a lifetime opportunity for a state to catapult itself into the lead of educational excellence. Arkansas fits this description perfectly with the implementation and expansion of the Advanced Placement Training and Incentive Program (APTIP) which includes the Laying the Foundation (LTF) teacher training which prepares students in the K-12 pipeline to be prepared for success in rigorous high school math and science courses. The APTIP program is being successfully implemented through Arkansas Advanced Initiative for Math and Science (AAIMS) in partnership with the National Math and Science Initiative (NMSI). A successful RTT application will serve as a catalyst for full statewide implementation of innovative teacher preparation and student achievement in math, science, computer science and engineering.

The RTT application includes a Competitive Preference Priority that will allow states to improve their competitive standing by enhancing science, technology, engineering, and mathematics (STEM) education. Arkansas is one of the six states selected by the National Math and Science Initiative to receive a $13.2 million grant to replicate the APIP. Because this program has now been implemented in 67 high schools in 6 states with great success, it can provide a comprehensive and highly competitive STEM education strategy for the Arkansas's high schools. Arkansas will also have the financial support from the National Math and Science Initiative grant and their expertise and resources to supplement the addition of 60 schools to the APTIP program.

ADVANCED PLACEMENT TRAINING AND INCENTIVE PROGRAM

The APTIP increases participation and performance of public high school students in rigorous college-level work in math, science, and English Advanced Placement (AP) exams, and expands access to college-level courses for traditionally under-represented students. This program is a comprehensive approach that increases teacher effectiveness and student achievement through content training, teacher and student support, vertical alignment of teachers, expanded open enrollment, and incentives.

The overall goals of these training and incentive programs are to:

- Increase the number of students taking AP tests;
- Increase the number of students passing AP tests; and
- Increase the number of students attending and graduating from college.

The APTIP is a faithful replication of the highly successful and nationally acclaimed AP Strategies Program originally implemented in the Dallas Independent School District. This program produced dramatic annual increases in the number of students passing rigorous AP math, science and English exams, and the program has sustained those increases for over a decade. Further, results for African American and Hispanic students outstripped those of majority students, thereby closing the achievement gap at the most rigorous level.

Key Elements of Success for Scaling and Implementing the APTIP

1. **Open Enrollment for math, science and English AP courses –** It is critical to change the culture of the school from one of exclusivity with regard to who may take AP courses to an inclusive

culture that encourages reluctant students to enroll in rigorous courses. Too often, students must prove their way into challenging courses, thereby limiting enrollment to just a few top students. This policy reinforces stereotypes about what AP students "look like." In most schools, there are many more students who could succeed in math, science and English AP courses if encouraged to enroll and if given exceptional quality instruction and support. A strong culture of high expectations is critical to success as it demonstrates to students that adults believe they can achieve at the most demanding levels and are willing to help them do so. In Arkansas, many teachers and administrators do not believe that their students can "do AP". This is why changing the culture is so important.

2. **Incentives for teacher and student performance –** Offering incentives for performance and extra pay for extra work sends a message to students and teachers that expansion of and success in rigorous AP courses are important. It realigns a cultural misconception that has long viewed AP as an exclusive program. Incentives also send the message that the goal is passing a nationally recognized benchmark of performance rather than just obtaining a grade in a course. They set the stage for a continuous focus toward meeting a very high standard and getting recognition for that achievement. It also encourages teachers to consider taking the training necessary to teach more rigorous courses, because not only students, but teachers also take a risk when it comes to teaching more rigorous courses. Financial awards to teachers for adding extra work to their schedules effectively encourages them to take that risk.

3. **High quality, content-focused teacher training –** Most of today's high school teachers do not have the level of content knowledge required to successfully teach a rigorous AP math or AP science course. It is critical that intensive training be provided to build this capacity. The College Board provides national quality control for this teacher preparation by approving professional development instructors who have demonstrated and met high standards of performance in teaching rigorous AP courses. Summer training plus additional classes during the year provide teachers with deepened content knowledge and the pedagogy required to provide the highest quality instruction. AP teachers involved in the APTIP program participate in 11 days of professional development each year.

4. **Teacher mentoring and vertical teaming –** Research in professional develop shows that, to be effective, professional development must also include continuous support at the school level. Accordingly, each APTIP teacher is assigned a lead teacher who provides guidance, feedback, training, and other support to help the APTIP teacher reach his or her full potential and the full potential of the students. The lead teacher also guides a team of same-subject content teachers across vertical grade levels so they elementary level instructors can learn how to prepare students for rigorous AP courses at the junior and senior grades. This creates a crucial and continuous pipeline of students who have received the requisite background that will allow them to succeed in AP math and science.

Building the Pipeline – The Laying the Foundation Component

Laying the Foundation (LTF) is a component of APTIP that provides quality teacher training, rigorous classroom materials, and web-based resources to improve the quality of mathematics, science and English instruction at the middle school levels. LTF thus enhances APTIP by building a pipeline of students who have the preparation and skills necessary to succeed at the AP levels of those subjects.

LTF accomplishes its purpose primarily through sponsoring 3 years of intense, sequential professional development and support services to the existing teacher corps, thereby strengthening the instructional content knowledge and pedagogical skills. LTF provides math, science, and English teachers in grades 6-10 with the content knowledge, teaching strategies, vertically aligned materials, and assessments required to emulate AP-level coursework in lower grades. Critical strands from AP calculus, statistics, chemistry, biology, physics, and English have been carefully analyzed to develop lessons, labs, tests, and teaching strategies that prepare students for what they will encounter in 11th and 12th grades. In alignment with a main tenant of the APTIP program that all students can succeed in rigorous academic environments, LTF exposes all students to more rigorous and engaging coursework in lower grades, which is critical to preparing them for and giving them confidence that they can master the higher-level work they will be expected to assume in later grades and in college, especially in the STEM fields.

LTF programs are designed to work in any school system that is actively preparing students for college or higher education, is seeking to infuse rigor back into classrooms, and needs to grow AP teacher capacity by training new teachers to prepare students in earlier grades.

Key LTF program elements include:

1. *Teacher Training* - Experienced classroom "master" teachers provide training for Pre-AP math, science, and English teachers in grades 6-10 through the LTF Pre-AP Teacher Training Program. The Advanced Programs Division (APD) at LTF provides supplemental lessons, prep session kits, and workshops for AP teachers in grades 11 and 12. The LTF Pre-AP training requires a three-year teacher commitment to complete four training days each year, for a total of 12 training days. Each LTF training class holds up to 30 teachers per discipline or course.

2. *Administrator Orientation* - This training is specifically designed for district and campus level administrators who need to understand the LTF program and how it fits into the existing curriculum and professional development program. This training models the proper environment necessary for linking middle school Pre-AP to high school AP classes.

3. *Materials* - The teachers' guides and bound materials provided at training sessions (which are also available both online and on CDs provided at training), are provided at no cost to the teachers or school districts. A variety of ancillary materials and resources for Pre-AP and AP teachers are also available from LTF.

4. *Measurement and Testing* - Online diagnostic test questions and actual student free-response samples and scoring guides are available to teachers enrolled in training. The LTF Post Test is a low-cost, low-stakes assessment offered to students in grades 6-10 that emulates the timed structure and rigor of an AP test. The unique Post Test measures student retention of complex concepts critical for taking and passing AP courses in higher grades. The Post-Test can be administered by any teacher, regardless of previous LTF training.

5. *"Train the Trainer"* - LTF trainers are either LTF employees or contractors who have been approved and trained by LTF. After consulting with other training companies that have scaled similar operations, LTF adopted a "Train the Trainer" approach that includes a total of 17 days of intense training for teachers hoping to become certified LTF trainers. Teachers apply to attend a summer training institute where they receive instruction in LTF principles and teaching strategies and are then required to demonstrate lesson instruction. Teachers meeting LTF standards for knowledge, teaching and training skills, and professionalism are certified as LTF

contractors and scheduled, as available, into teacher preparation sessions throughout the year. The "Train the Trainer" approach not only builds capacity but also creates pockets of excellence across any state or district. Once LTF certifies teachers as LTF trainers or "lead" instructors, those teachers are responsible for promoting standards for quality teacher training wherever they go. LTF monitors and audits these trainers by collecting surveys and regularly visiting training classes hosted by these teachers to observe. LTF bears the cost of training these teachers and hand-selects candidates.

6. _Mentoring_ - LTF is developing a program effectiveness measurement system that will utilize mentoring, lesson modeling and classroom observation over the course of teachers' training commitments. Participating teachers will receive peer mentoring to ensure they feel comfortable implementing the knowledge and resources gained during training. They will also have opportunities to design original lessons and develop their own teaching portfolios in order to reinforce strategies and techniques communicated during training. LTF training allows teachers to truly put what they learn to use, and LTF is committed to supporting educators after they leave the training sessions.

The LTF component of APTIP addresses each of the four reform areas highlighted by the RTT Notice of Proposed Priorities. First, LTF increases student achievement standards by preparing teachers to instruct at a more rigorous level that will allow students to succeed at the internationally-benchmarked AP level. Second, the main purpose and mission of LTF is to fulfill the second reform area, that of recruiting, developing, retaining, and rewarding effective teachers and principals. LTF-trained teachers work across grades to align lessons and share knowledge, and they share their best practices with colleagues, whose students' scores consequently improve. Thus, LTF creates a positive impact both vertically across grades, and horizontally through peer-level colleagues. Through training sessions and support services, LTF is increasing the number of highly-qualified teachers who can nurture students to reach their highest potentials. Further, by tracking and gathering data on these trained teachers, LTF also supports the reform area that requires states to build statewide longitudinal data systems. Access to these data through NMSI will assist any state in strengthening their information collection and analysis. Finally, the LTF/APTIP structure can play an integral role in turning around struggling schools by not only providing teachers with enhanced professional development, but also by strengthening the instruction that students receive from middle through high school. These components of APTIP create highly qualified teachers who can then help students realize that they can succeed at higher standards. With increased teacher effectiveness and student confidence, a school can truly begin to reform

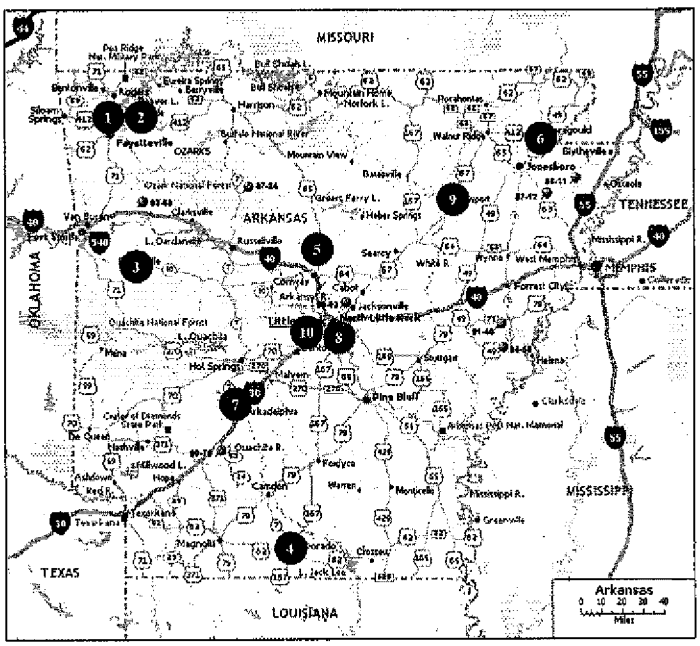
First year Results in Arkansas

Arkansas Advanced Initiative for Math and Science has been implementing the Advanced Placement Training and Incentive Program since the fall of 2007. The first cohort of schools consisted of 10 high schools scattered throughout the state. The schools mirrored Arkansas schools in both size and demographics. The schools were urban, suburban, and small town/rural. All had at least 30% of their students qualifying for free/reduced lunch. Four schools had large populations of African-Americans, and one had large numbers of Hispanic students. The schools were:

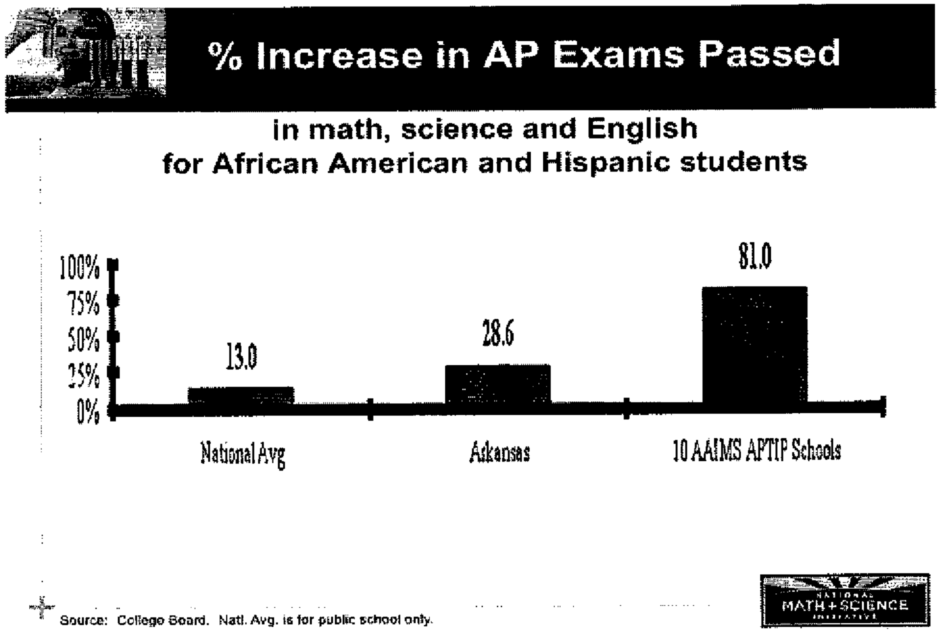
1. Springdale High
2. Springdale Har-Ber High
3. Booneville High
4. El Dorado High
5. Greenbrier High
6. Greene County Tech High

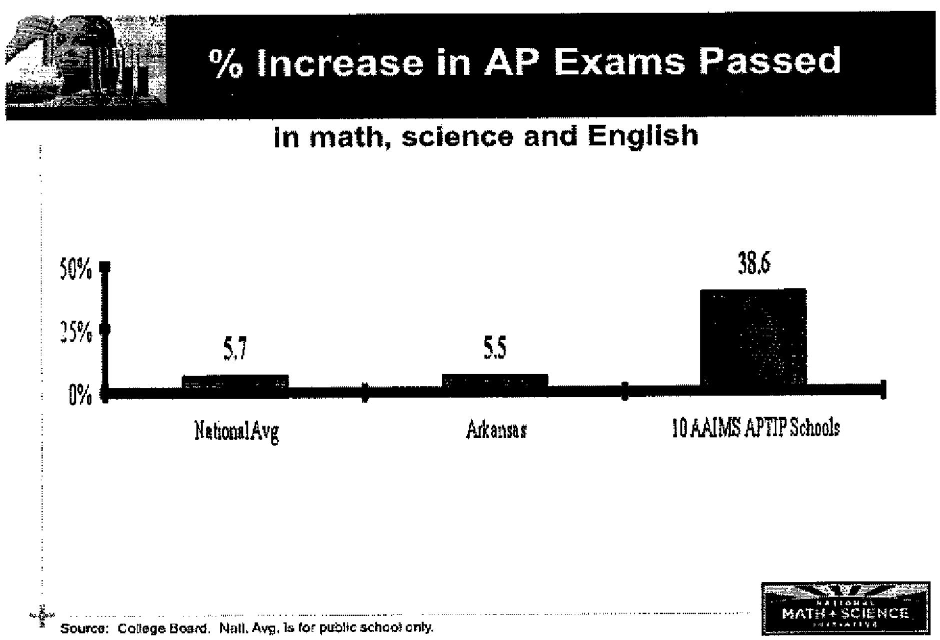
7. Lake Hamilton High
8. Pulaski County Mills High
9. Newport High
10. Little Rock Parkview High

See the attached map



The ten schools in Cohort 1 had a profound impact on Arkansas's AP test results in math, science, and English. They out-performed both the nation and state in increased percentages of scores of 3 or better. The ten schools produced a 38.6% increase in math, science, and English qualifying scores and an 81% increase in math, science and English qualifying scores by minorities. See the attached graphs.





While Arkansas has model Advanced Placement legislation, most high schools in Arkansas do not produce large numbers of qualifying scores. The ten AAIMS schools have significantly out-performed the state and represent the beginning of an effort to dramatically increase the number of qualifying scores and bring increased opportunity to all Arkansas schools.

The first ten schools gave 2639 exams in 2009 which represented an increase of 42.6% over the number given in 2008. In the 2009-2010 school year there are 24 schools participating in the APTIP. These 24 schools have 6,217 students enrolled in 179 courses taught by 167 teachers. All students will take the 2010 AP exam for the courses in which they are enrolled.

D-3-4 EAST Research

EAST®

EAST® initiative

The Proof in the Pudding

Research on the EAST Model

Executive Briefing
Number 901

October 2009

Background

EAST® began over thirteen years ago in a single rural Arkansas classroom with a belief that students can play a vital role in their communities, and in directing their own educational processes and, ultimately, their own futures. Since that time, EAST has grown to include more than 215 schools in eight states, with over 180 of those in Arkansas. EAST's accomplishments are many, as attested by the more than 60,000 students who have experienced the model and the numerous service projects these students have developed for their communities.

EAST promotes the development and intellectual growth of all students, regardless of current educational skill level, technical proficiency or socioeconomic background. Students perform self-directed community service projects using sophisticated and emerging technologies in a real-world environment, thereby honing skills including teamwork, communication, collaboration and problem solving.

Since its beginning in 1995, EAST students have achieved at levels defying traditional expectations of students' capabilities, particularly in their rapid growth and accomplishment. These achievements have been primarily anecdotal, however, and lacked any solid validating research. As the program and the participant pool grew, the EAST Initiative—the 501(c)(3) non-profit educational corporation that assists in implementing, developing and maintaining EAST classrooms—began actively encouraging and seeking research opportunities on the EAST model. Over the past seven years several significant research efforts have helped quantify EAST impacts on student growth, development, and achievement as well as on economic and other community enhancements.

This paper briefly summarizes the more significant research efforts focused on EAST. Full documentation of the reports mentioned and other research resources for the EAST model can be found at ***http://www.EASTInitiative.org/***.

The Research

2001 ***Andrews, C. Wilkins, L. Environmental and Spatial Technology (EAST) Project an Industry/Education Collaboration that Works for Females and Minorities*** Paper presented at the National Association of Minority Engineering Program Administers/Women in Engineering Program & Advocates Network, April 21-24, 2001, Alexandria, VA.

Description This paper looks at how the EAST educational model provides rich learning opportunities that are particularly powerful for student sub-groups traditionally underrepresented in STEM (Science, Technology, Engineering, and Mathematics) educational offerings particularly the upper level or more advanced STEM courses. As indicated in the title, the specific sub-groups studied were women and minorities. The multi-modal approach to EAST is identified as a strong and inviting entry point for students who have traditionally been tracked out of advanced science and technology courses.

Findings EAST attracts students who might not otherwise gain critical STEM skills into STEM learning environments. Student information transfer has been greatly enhanced by tapping into kinetic and visual learning styles. By allowing students to become personally engaged in their learning process and by requiring the students to take personal initiative, the students have developed into active learners capable of taking on the personal responsibilities necessary to insure success in a team effort. It also clearly defines how EAST pedagogical strategies correlate with accepted best practices of the Congressional Commission on the Advancement of Women and Minorities in Science, the AAUW Education Foundation, and the National Science Education Standards.

2004 ***Bynum, Judith. Student Perceptions of Concomitant Learnings of EAST Lab in a Small, Rural Arkansas School District*** Dissertation Submitted to University of Arkansas at Little Rock Department of Educational Leadership of the College of Education.

Description This dissertation examines how the EAST model develops skills necessary for concomitant learning, the learning of multiple skills concurrently, and the transference of those skills to other curricular and life goals.

Findings Quoting the Executive Summary of the study, It was found that interpersonal skills, intrapersonal skills, lifelong learning skills, and college transition skills are learned concomitantly in the EAST [ ] classroom. These learnings are transferred to other classes and situations in the lives of the students, motivating more responsibility by the students in their academic lives. Because of the students empowerment by these learnings, they are better prepared for their college study.

The findings in this study show evidence that EAST [ ] is valuable as a model learning environment, through its incorporation of a variety of learning modalities, technology-based learning, and project-based learning. Utilizing this study as a guide, other classroom situations may be modified and transformed so that more students are motivated to learn by providing different ways of learning. Perhaps the most useful finding of the study is that the students perceptions of their preferred learning environment were overwhelmingly patterned on that of EAST [classroom]. There were no outliers in this area.

2006 ***Metis Associates, Final Report. 2003-2006 Evaluation of Arkansas Environmental and Spatial Technology Initiative (EAST)***

Description This federally funded study examined variations of EAST implementation in Arkansas schools and the learning outcomes generated by the EAST model. The learning outcomes study was designed as an experimental and quasi-experimental study focusing on new EAST programs, and compared student outcomes with equivalent students in schools without EAST programs.

Findings Quoting the Executive Summary, Among the 16 student outcomes that were studied, analyses indicated that participation in EAST appears to have a positive, statistically reliable impact in five domains. These included three problem solving domains (defining the characteristics of a problem, assessing the outcomes of a solution, and revising strategies in response to the assessment of outcomes), one motivation domain (motivation for school derived from accomplishment), and self-directed learning style. The preponderance of evidence for program effects in the area of problem solving skills seems consistent with one of the most central goals of EAST, and may point to a particular strength of the program. [T]he domains on which EAST has been shown to have an impact are widely recognized as being important for both academic and career success.

2008 ***Strategic Growth Institute (now Center for Community and Economic Development), University of Central Arkansas. Estimating the Value of EAST Projects in Arkansas: Beta Test Results***

Description The Strategic Growth Institute developed a methodology for evaluating the community and economic development impacts of EAST projects. This was an important development, as the strategies developed are transferable to other community development projects and had not been fully explored before.

Findings Though this was only a beta test and focused on just seven EAST programs, the study found that the methodologies were particularly effective in determining the economic impacts of EAST projects (and by extension community service projects in general). Among the findings were: (1) that the average number of projects facilitated by the participating schools was 18.86; (2) that the average value of these projects was $13,571; and (3) that the total value of all projects facilitated by the participating schools was $1,791,429.

2009 ***Metis Associates. EAST Initiative in Arkansas***

Description This follow-up quasi-experimental study to the 2003-2006 Evaluation of Arkansas Environmental and Spatial Technology Initiative (EAST) examined two major questions: 1) Did EAST students who participated in the program during 2007-2008 perform significantly better than the comparison students who had never joined the program? and 2) Among the high school EAST students in 2007-2008, did those who started the program in middle school significantly outperform their counterparts who started the program in high school? Statewide standardized testing instruments were used for the comparisons.

Findings On the first question, whether the 2007-2008 EAST students performed better than non-EAST students in non-EAST schools, the study found a significant positive impact on EAST students who took the 8th grade Benchmark English Language Arts test, the SAT 10 Math, Language, and Reading tests, the 9th grade End of Course Algebra test, the 10th grade End of Course Geometry test, and the 11th grade End of Course Literacy test. In further examining EAST student achievement versus non-EAST student achievement in the same school, the study found a significant positive impact on EAST students who took 5th grade Benchmark Math and English Language Arts test; the 6th, 7th and 8th grade Benchmark Math tests, the 8th grade English Language Arts test; the 9th grade End of Course Algebra and Geometry tests; the 10th grade End of Course Geometry test; and the 11th grade End of Course Geometry test. On the second question, the study found that high school EAST students who had started their EAST experience in the middle grades outperformed students who had not started EAST until High School on all tests examined. ■

The Proof in the Pudding

The EAST model as it was designed has a powerful impact on students. The positive outcomes of EAST have been notoriously difficult for the educational community to achieve in a general population of learners, and transcend the arbitrary nature of standardized assessment and grading. EAST has a great impact not only on individual students' education, but also on community development and economic health. The EAST model actually engages students in their educational careers, their vocational and college planning and in their communities. It raises the aspirations of students as well as their test scores. It works for a diverse population, both male and female, across ethnic, socioeconomic and academic groups and other demographic distinctions mirroring the real world. It does this by helping students gain proficiency with the tools of emerging technology and vocational fields. In short, EAST prepares its students to lead and contribute, where other programs barely prepare them to subsist.

The proof in the pudding is really in the tens of thousands of EAST students prepared to succeed. Each year more EAST alumni enter into the adult work world. EAST's terminal research outcome will not be fully understood until, in time, these students are seen for what they have become: the best of the American educational system. That report should be a lot of fun to read.

EASTinitiative

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Appendix E

(b)(6)

Smart Course to Success: Arkansas's Race to the Top

Stricken language would be deleted from and underlined language would be added to the law as it existed prior to this session of the General Assembly.

State of Arkansas *As Engrossed: H4/7/03 H4/11/03*
84th General Assembly **A Bill** **Act 1467 of 2003**
Regular Session, 2003 HOUSE BILL 2697

By: Representatives Green, *C. Johnson, White, Penix, King, Judy, Borhauer, J. Johnson, Haak, Mahony*
By: Senators Gullett, Womack, Trusty, Whitaker

For An Act To Be Entitled

AN ACT TO CREATE THE OMNIBUS QUALITY EDUCATION ACT OF 2003; TO ESTABLISH A COMPREHENSIVE SYSTEM OF EDUCATIONAL ACCOUNTABILITY TO ENFORCE THE ARKANSAS STANDARDS OF ACCREDITATION; THE ARKANSAS COMPREHENSIVE TESTING, ASSESSMENT AND ACCOUNTABILITY PROGRAM, THE NO CHILD LEFT BEHIND ACT OF 2001; THE ARKANSAS ACADEMIC DISTRESS PROGRAM; THE ARKANSAS FISCAL DISTRESS ASSESSMENT AND ACCOUNTABILITY PROGRAM; AND FOR OTHER PURPOSES.

Subtitle

THE OMNIBUS QUALITY EDUCATION ACT OF 2003.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. Arkansas Code § 5-15-201 is amended to read as follows:

6-15-201. Title.

This subchapter shall be known as <u>and may be cited as</u> "The Quality Education Act of ~~1983~~ <u>2003</u>".

SECTION 2. Arkansas Code § 6-15-202 is amended to read as follows:

6-15-202. Accreditation - Development of regulations and standards.

(a) The State Board of Education is authorized and directed to develop comprehensive regulations, criteria, and ~~minimum~~ standards to be used by the

board and the Department of Education in the accreditation of school programs in elementary and secondary public schools in this state.

(b)(1) All public schools and school districts shall meet the Standards of Accreditation for Arkansas Public Schools which shall be adopted by the State Board of Education.

(2) The State Board of Education, upon showing of just cause, may grant a waiver of any standard of accreditation for a time period of no longer than one (1) school year, except that no curricula, student performance, school performance, or any standard required by law may be waived for any time period.

(3) A school district is deemed to have failed to meet the Standards of Accreditation for Arkansas Public Schools, if on any standard applicable to the general operation of a school district as defined by the State Board of Education, the district receives a probationary status.

(4) A school is deemed to have failed to meet the Standards of Accreditation for Arkansas Public Schools, if on any standard applicable to the specific operation of that school as defined by the State Board of Education, the school receives a probationary status.

(c) The State Board of Education shall promulgate rules and regulations setting forth:

(1) The process for identifying schools and school districts that fail to meet the Standards of Accreditation for Arkansas Public Schools;

(2) Enforcement measures the State Board of Education may apply to bring a school or school district into compliance with the Standards of Accreditation for Arkansas Public Schools, including but not limited to, annexation, consolidation, or reconstitution of the school district in accordance with § 6-13-1401 and this subchapter; and

(3) The appeal process available to a school district under this subchapter.

~~(b)~~(d) After the regulations are adopted and implemented by the board, standards and procedures shall regularly be reviewed by the House and Senate Interim Committees on Education at least once every two (2) years, and recommendations and advice in regard thereto may be filed by the committees with the board for its consideration.

SECTION 3. Arkansas Code § 6-15-203 is amended to read as follows:

6-15-203. Notification of failure to meet standards of accreditation - Appeal.

(a) The Department of Education shall annually notify all school or school districts failing to meet ~~minimum~~ standards for accreditation for elementary and secondary schools not later than ~~June 15~~ May 15 of each year of such determination.

(b)(1) In the event a school district affected by this subchapter believes the department has improperly determined that ~~the~~ a school or school district fails to meet ~~minimum~~ the standards for accreditation ~~of any school in the district~~, the school district shall have a right of appeal thereafter to the State Board of Education.

(2) Any such appeal shall be held in an open hearing, and the decision of the board shall be in open session.

(3) ~~Appeal~~ Appeals must be filed not later than ~~June 30~~ May 30 following the ~~June 15 certification~~ May 15 determination of accreditation status, and the board hearing must be held prior to ~~July 15~~ August 15 of the same calendar year.

(4) The board may confirm the classification of a local school or school district as determined by the department, or it may sustain the appeal of the district.

(5) ~~An appeal from the ruling of the board may be made by any district to a court of competent jurisdiction provided such appeal is made within ninety (90) days after the effective date of any annexation~~ An aggrieved school district may appeal the ruling of the state board to circuit court in Pulaski County pursuant to the Arkansas Administrative Procedures Act.

SECTION 4. Arkansas Code § 6-15-206 is amended to read as follows:

6-15-206. Subsequent failure to meet standards of accreditation.

(a) Any school or school district which ~~is determined to meet the minimum standards for accreditation of Arkansas public elementary and secondary schools as provided in this subchapter which subsequently falls below~~ fail to meet current ~~minimum~~ standards for accreditation as determined by the Department of Education shall be classified as probationary.

(b) Notice thereof shall be filed with the school district in which the school is located that the school or school district must meet ~~minimum~~

all standards for accreditation within no more than two (2) consecutive school years including the year the probationary status is declared or be subject to the mandates of this subchapter ~~with reference to dissolution and annexation~~ including, but not limited to, possible consolidation, annexation, or reconstitution of a school district as provided under §§ 6-13-1401 and this subchapter. The department shall prepare and promulgate regulations and guidelines for the maximum times allowable for correction of ~~particular~~ any violations of standards, provided no ~~individual~~ probationary status violation may exist for more than two (2) consecutive school years.

(c)(1) School districts shall submit annually evidence of compliance with standards for accreditation for the district and each school in the district.

(2) The department shall ~~periodically~~ review annually the educational standards of school districts for the purpose of determining whether ~~minimum~~ standards for accreditation of the schools therein are in compliance with current state standards for accreditation.

(d) ~~Review~~ An onsite review of each school's compliance shall be made at least every ~~five (5)~~ two (2) years ~~and~~ or more frequently if the department has reason to believe that the school district or any school therein has fallen below ~~minimum~~ standards for accreditation.

(e) The department shall cooperate with local schools and school authorities in order to assist affected school districts and schools therein to achieve compliance with the ~~minimum~~ standards for accreditation as provided in this subchapter.

SECTION 5. Arkansas Code Title 6, Chapter 15, Subchapter 2 is amended to add additional sections to read as follows:

6-15-207. Enforcement of standards.

(a) The State Board of Education may take any number of the following actions, listed in subsection (c), to address a school or school district failing to meet standards of accreditation any time after a school or school district has received notice of being placed on probationary status pursuant to § 6-15-202 and 203.

(b) The State Board of Education shall take at least one of the following actions, listed in subsection (c), to address any school or school district which has failed to meet all standards of accreditation for two (2) consecutive school years including the year the probationary status is declared pursuant to § 6-15-202 and 203, unless the State Board of Education, at its discretion, issues written findings supported by a majority of the board, that the school district could not meet current standards for the relevant time period due to impossibility caused by external forces beyond the school district's control.

(c) The State Board of Education shall be allowed to take the following actions to address any school or school district on probationary status for failing to meet the standards of accreditation:

(1) Require a school district to reorganize or reassign the administrative, instructional or support staff of a public school;

(2) Require a school or school district to institute and fully implement a curriculum that is based on State academic content and achievement standards, including providing appropriate professional development at the cost of the school district;

(3) Remove a particular school from the jurisdiction of a school district and establish alternative public governance and supervision of such school or schools;

(4) Require a school district to close down or dissolve a particular school or schools within a school district;

(5) Annex a school district or districts or parts thereof with another receiving school district or districts pursuant to the authority of § 6-13-1401 through 6-13-1409 and this subchapter;

(6) Consolidate a school district or districts or parts thereof with another school district or districts or parts thereof to form a resulting district pursuant to the authority of § 6-13-1401 et seq. and this subchapter;

(7) Reconstitute the leadership of a school district by removing permanently or suspending on a temporary basis the superintendent of the school district or any particular board members of a school district. The State Board shall have the authority to appoint an administrator or to call for the election of new school board members to administer the affairs and provide governance of the school district, or both.

(8) Take any other appropriate action allowed by law which is determined by the State Board of Education to assist and address a school or school district failing to meet the standards of accreditation.

6-15-208. Publication and dissemination.

When any school of a school district or the school district is determined by the State Board of Education to be on probationary status for failure to meet the standards of accreditation that school district after exhausting its rights to appeal shall:

(1) Publish the probationary status determination and findings of the State Board to the public and the parents or care giver of each student enrolled in the school or school district determined to fail to meet the standards of accreditation;

(2) The public notice shall be in an understandable and uniform format; and

(3) The public notice shall be published or disseminated, immediately after the State Board's determination, on the web-site of the school district and published at least one (1) time a week for two (2) consecutive weeks in a local newspaper of general circulation in the affected school district.

6-15-209. Rules and regulations.

The State Board of Education shall promulgate rules and regulations as necessary to set forth the:

(1) Process for identifying and addressing a school or school district that is failing to meet the Standards of Accreditation for Arkansas Public Schools;

(2) Process and measures to be applied to require a school or school district to comply with the Standards of Accreditation for Arkansas Public Schools, including but not limited to, possible annexation, consolidation or reconstitution of a school district under § 6-13-1401 through 6-13-1409 and this subchapter;

(3) Appeals process and procedures available to a school district pursuant to this subchapter and current law; and

(4) Definitions and meaning of relevant terms governing the establishment and governance of the Standards of Accreditation for Arkansas Public Schools.

SECTION 6. Arkansas Code § 6-15-211 is repealed.

~~6-15-211. Amount of state aid to consolidated or annexed districts.~~

~~In any consolidation or annexation as the result of this subchapter, the combined districts shall not receive less state aid for each of the next two (2) school years than was received the year previous to the annexation.~~

SECTION 7. Arkansas Code § 6-15-401 is amended to read as follows:

6-15-401. Title.

~~The title of this~~ This subchapter shall be known as and may be cited as the "Arkansas Comprehensive Testing, Assessment, and Accountability Program Act".

SECTION 8. Arkansas Code § 6-15-402 is amended to read as follows:

6-15-402. Purpose.

(a)(1) The purpose of this subchapter is to provide the statutory framework necessary to ensure that all students in the public schools of this state have an equal opportunity to demonstrate grade-level academic proficiency through the application of knowledge and skills in the core academic subjects consistent with state curriculum frameworks, performance standards, and assessments. The State of Arkansas recognizes and declares that students who are not performing at grade-level standards of academic proficiency are especially harmed by social promotion because they are not equipped with the necessary academic skills to be successful and productive members of society. ~~The Department of Education is committed to having all students perform at grade level and beyond.~~ For this reason, the Arkansas Comprehensive Testing, Assessment, and Accountability Program will emphasize point-in-time intervention and remediation upon the discovery that any student is not performing at grade level.

(2) This subchapter is constructed around a system that includes statewide indicators, individual school improvement indicators, and a locally generated school accountability narrative. The total program shall be applied to each school in the state public school system.

(3) This subchapter is designed to be a multiyear commitment to assess the academic progress and performance of Arkansas' public school students.

(b) The purposes of the assessment and accountability program developed ~~pursuant to the provisions of this~~ under this subchapter shall be to:

(1) Improve student learning and classroom instruction;

(2) Provide public accountability by exemplifying expected achievement levels, ~~and~~ by reporting on school and school district performance, and applying a framework for state action for a school or school district that fails expected achievement levels as defined in the Arkansas Comprehensive Testing, Assessment, and Accountability Program rules and regulations; and

(3) Provide evaluation data of school and school district performance in order to assist policymakers at all levels in decision making.

SECTION 9. Arkansas Code § 6-15-403 is amended to read as follows:

6-15-403. Authority of State Board of Education.

The State Board of Education through the Department of Education is ~~hereby authorized to~~ shall:

(1) Develop a single comprehensive testing, assessment, and accountability program which utilizes the most current and effective testing, evaluation, and assessment research information designed to achieve the following purposes set forth in this subchapter:

(A) Set clear academic standards that are periodically reviewed and revised;

(B) Establish professional development;

(C) Establish expected achievement levels;

(D) Report on student achievement and other indicators;

(E) Provide evaluation data;

(F) Recognize academic excellence and failure; ~~and~~

(G) Apply awards and sanctions; and

(H) Comply with current federal and state law and State Board of Education rules and regulations;

(2) Promulgate such rules and regulations as may be necessary to develop and implement the comprehensive testing, assessment and accountability program; ~~and~~

(3) Employ staff and enter into contracts as may be necessary to carry out the provisions of this subchapter~~.~~;

(4) Classify school services, designate the licensure subject areas, establish competencies, including the use of technology to enhance student learning, and licensure requirements for all school-based personnel, and

prescribe rules in accordance with initial, standard and provisional licenses;

(5) Identify critical teacher shortage areas; and

(6) Collect and maintain the management information databases for all components of the public kindergarten through grade twelve (K-12) education system.

SECTION 10. Arkansas Code § 6-15-404 is amended to read as follows:

6-15-404. Program implementation.

(a) The State Board of Education will establish clear, specific, challenging academic content standards which define what students shall know and be able to do in each content area. Instruction in all public schools shall be based on these academic content standards.

(b) The State Board of Education shall establish a schedule for periodic review and revision of academic content standards to ensure Arkansas academic content standards are rigorous and equip students to compete in the global workforce.

(c) The State Board of Education shall include the following elements in the periodic review and revision of Arkansas Academic content Standards:

(1) External review by outside content standards experts.

(2) Review and input by higher education, workforce education, and community members.

(3) Study and consideration of academic content standards from across the nation and international level as appropriate.

(4) Study and consideration of evaluation from national groups or organizations as appropriate.

(5) Revisions by committees of Arkansas teachers and instructional supervisor personnel from public schools, assisted by teachers from institutions of higher education.

(6) Public dissemination of revised academic content standards at State Board of Education meeting and Department of Education web site.

(d) The State Board of Education shall establish a clear concise system of reporting the academic performance of each school on the state mandated criterion reference exam which conforms with the requirements of the No Child Left Behind Act of 2001.

(e) The State Board of Education shall develop and the Department of

Education shall implement a developmentally appropriate uniform school readiness screening to validate a child's school readiness as part of a comprehensive evaluation design. Beginning with the 2004-2005 school year, the Department of Education shall require that all school districts administer the uniform school readiness screening to each kindergarten student in the district school system upon the student's entry into kindergarten. Children who enter public school for the first time in first grade must be administered the uniform school readiness screening developed for use in first grade.

(f)(1) The Department of Education shall select a developmentally appropriate assessment to be administered to all students in grades one (1) and two (2) in reading and mathematics.

(2) Professional development activities shall be tied to the comprehensive school improvement plan and designed to increase student learning and achievement.

(3) Longitudinal and trend data collection shall be maintained for the purposes of improving student and school performance.

(4) A public school or public school district classified as in "school improvement" shall develop and file with the Department of Education a comprehensive school improvement plan designed to ensure that all students demonstrate proficiency on all portions of state-mandated criterion-referenced assessment. The comprehensive school improvement plan shall include strategies to address the achievement gap existing for any identifiable group or subgroup as identified in the Arkansas Comprehensive, Testing, Assessment and Accountability Program and the gap of that subgroup to the academic standard.

~~(a)(1)~~(g)(1) The Department of Education shall develop and implement testing for public school students at the primary and middle-level grades, as well as end-of-course testing, which is criterion-referenced and which measures application of knowledge and skills in reading and writing literacy, mathematics and, as funds are available, in science and social studies.

(2) The department shall test public school students in a manner and with a nationally norm-referenced test to be selected by the State Board of Education ~~at the middle level and high school grades~~.

(3) The board shall establish expected levels of achievement on the criterion-referenced examinations for all areas of assessment and

accountability.

(4) The State of Arkansas shall participate in the administration of the National Assessment of Educational Progress examinations.

~~(b)~~(h) Any student failing to achieve the established standard on the criterion-referenced examinations shall be evaluated by school personnel, who shall jointly develop an academic improvement plan to assist the student in achieving the expected standard in subject areas where performance is deficient.

~~(c)(1)~~(i)(1) Each school shall develop one (1) comprehensive, long-range school improvement plan focused on student achievement.

(2)(A) Any school that fails to achieve ~~expected~~ established levels of student performance on criterion-referenced tests~~, norm-referenced tests,~~ and related indicators, as defined ~~in this subchapter~~ by rule and regulation, shall ~~participate in~~ implement a comprehensive school improvement plan accepted by the department. This improvement plan shall assist those students performing below grade level in achieving the ~~expected~~ established standard.

(B) This plan shall be part of each school's long-range comprehensive school improvement plan and shall be reported to the public.

(C) Progress on improved achievement shall be included as part of the school's and school district's annual report to the public.

~~(d)~~(j) The department and the local school districts shall annually compile and disseminate to the public results of ~~administering~~ all required examinations. The results of the end-of-course testing shall become a part of each student's transcript or permanent record and shall be recorded on these documents in a manner prescribed by the state board.

SECTION 11. Arkansas Code § 6-15-406 is amended to read as follows:

6-15-406. Assessment of basic skills.

The comprehensive testing, assessment, and accountability program to be developed by the Department of Education and approved by the State Board of Education shall include, but is not limited to, the following components or characteristics:

(1) Assessment of academic achievement at grade levels selected to be tested by the department;

(2) Longitudinal <u>and trend</u> data collection <u>for the purposes of improving student and school performance</u>;

(3) A variety of assessment methods;

(4) Construction of a database composed of academic performance indicators that shall apply to every school and school district in the state that will allow the department, over time, to identify those schools and school districts that are performing at or below proficient levels established under this subchapter; ~~and~~

(5) Meaningful comparisons of Arkansas students with those of other states, regions, and the nation <u>through the National Assessment of Educational Progress examination and norm-referenced examinations; and</u>

<u>(6) Review and assistance to the department in developing the comprehensive testing, assessment and accountability program by a panel of external psychometric experts</u>.

SECTION 12. Arkansas Code § 6-15-419 is amended to read as follows:

6-15-419. Definitions.

The following definitions shall apply in this subchapter, unless the context otherwise requires:

(1)(A) "Academic improvement plan" means a plan detailing supplemental or intervention and remedial instruction, or both, in deficient academic areas for any student who is not proficient on a portion or portions of the state-mandated criterion-referenced assessments.

(B)(i) Such a plan shall be created and implemented by appropriate teachers, counselors, and any other pertinent school personnel.

(ii) All academic improvement plans shall be annually reviewed and revised to ensure ~~effectiveness and to ensure~~ <u>an opportunity for</u> student demonstration of proficiency in the targeted academic areas on the next state-mandated criterion-referenced assessments.

(iii) A cumulative review of all academic improvement plans shall be part of the data used by the school in creating and revising its comprehensive school <u>improvement</u> plan.

(iv) All academic improvement plans shall be subject to review by the Department of Education.

(C) In any instance where a student with disabilities identified under the Individuals with Disabilities Education Act has an individualized

education program that already addresses any academic area or areas in which the student is not proficient on state-mandated criterion-referenced assessments, the individualized education program shall serve to meet the requirement of an academic improvement plan;

(2) "Annexation" means the joining of an affected school district or part of the school district with a receiving district under §§ 6-13-1401 through 6-13-1409;

~~(11)~~(3) "~~School improvement plan~~ Comprehensive school improvement plan " means the individual school's comprehensive plan based on priorities indicated by assessment and other pertinent data and designed to ~~ensure that~~ provide an opportunity for all students demonstrate proficiency on all portions of state-mandated criterion-referenced assessments; ~~and~~

(4) "Consolidation" means the joining of two (2) or more school districts or parts of the school districts to create a new single school district under §§ 6-13-1401 through 6-13-1409;

(5) "Department" means the Department of Education;

~~(2)~~(6) "District improvement plan" means a districtwide plan coordinating the actions of the various comprehensive school improvement plans within a district. The main focus of the district improvement plan shall be to ensure that all students demonstrate proficiency on all portions of state-mandated criterion-referenced assessments;

~~(3)~~(7) "Early intervention" means short-term, intensive, focused, individualized instruction developed from ongoing, daily, systematic diagnosis that occurs while a child is in the initial, kindergarten through grade one (K-1), stages of learning early reading, writing, and mathematical strategies to ensure acquisition of the basic skills and to prevent the child from developing poor problem-solving habits which become difficult to change. The goal is to maintain a student's ability to function proficiently at grade level;

~~(4)~~(8) "End of course" means an examination taken at the completion of a course of study to determine whether a student demonstrates attainment of the knowledge and skills necessary to mastery of that subject;

~~(5)~~(9) "Grade level" means performing at the proficient or advanced level on state-mandated criterion-referenced tests;

~~(6)~~(10) "High school" means grades nine through twelve (9-12);

~~(7)~~(11) "Middle level" means grades five through eight (5-8);

~~(8)~~ (12) "Point-in-time intervention and remediation" means intervention and remediation applied during the academic year upon the discovery that a student is not performing at grade level;

~~(9)~~ (13) "Primary" means kindergarten through grade four (K-4);

(14) "Public school" means those schools or school districts created pursuant to Title 6 of the Arkansas Code and subject to the Arkansas Comprehensive Testing, Assessment, and Accountability Program except specifically excluding those schools or educational programs created by or receiving authority to exist pursuant to § 6-15-501, § 9-28-205, §§ 12-29-301 through 12-29-310, or other provisions of Arkansas law;

(15) "Reconstitution" means a reorganization intervention in the administrative unit or governing body of a public school district, including but not limited to the suspension, reassignment, replacement, or removal of a current superintendent, or the suspension, removal, or replacement of some or all of the current school board members, or both;

~~(10)(A)(i)~~ (16)(A)(i) "Remediation" means a process of using diagnostic instruments to provide corrective, specialized, supplemental instruction to help a student in grades two through four (2-4) overcome academic deficiencies.

(ii) For students in grades five through twelve (5-12), remediation shall be a detailed, sequential set of instructional strategies implemented to remedy any academic deficiencies indicated by below-basic or basic performance on the state-mandated criterion-referenced assessments.

(B) Remediation shall not interfere with or inhibit student mastery of current grade level academic learning expectations;

(17) "School district in academic distress" means any public school district failing to meet the minimum level of academic achievement on the state mandated criterion-referenced examinations as required by the State Board of Education in the "Arkansas Comprehensive Testing, Assessment, and Accountability Program";

~~(12)~~ (18) "Social promotion" means the passage or promotion from one grade to the next of a student who has not demonstrated knowledge or skills required for grade-level academic proficiency~~.~~; and

(19) "State Board" and means the State Board of Education;

(20) "Public school in school improvement" or "school district in school improvement" means any public school or public school district

<u>identified as failing to meet certain established levels of academic achievement on the state mandated criterion-referenced tests as required by the State Board of Education in the Arkansas Comprehensive Testing, Assessment, and Accountability Program;</u>

<u>(21) "Uniform school readiness screening" means uniform, objective evaluation procedures specifically formulated for children entering public school for the first time which are geared to either kindergarten or first grade, as appropriate, and developed by the State Board of Education; and</u>

<u>(22) "Adequate yearly progress" means that level of academic improvement required of public schools or school districts on the state-mandated criterion-referenced examinations and other indicators as required in the Arkansas Comprehensive Testing, Assessment, and Accountability Program, which shall comply with The Elementary and Secondary Education Act as reauthorized in The No Child Left Behind Act of 2001, 20 U.S.C. § 6301, et seq. (2002).</u>

SECTION 13. Arkansas Code § 6-15-420 is amended to read as follows:

6-15-420. ~~Informal standards of learning~~ <u>Remediation and intervention</u>.

(a)(1) In order for students to be academically prepared to achieve proficiency in reading and writing literacy and mathematics, the Department of Education shall require each public school serving students in kindergarten through grade four (K-4) to develop, select, and implement ongoing, informal assessments linked to the Arkansas frameworks.

(2) Literacy assessment training and mathematics assessment training utilizing research-based diagnostic instruments or tools will be provided for teachers by the department. Where grant funds are available in the areas of highest need, a literacy coordinator may be trained.

(b)(1) Any student in kindergarten through grade one (K-1) failing to perform at the proficient level in reading and writing literacy or mathematics shall be evaluated as early as possible within each of the kindergarten through grade one (K-1) academic years. Those students shall be evaluated by personnel with expertise in reading and writing literacy or mathematics who shall develop and implement an academic improvement plan, using early intervention strategies sanctioned by the department, to assist the student in achieving the expected standard.

(2) Any student in grades two through four (2-4) failing to

perform at the proficient level in reading and writing literacy or mathematics shall be evaluated by personnel with expertise in reading and writing literacy or mathematics who shall develop and implement an academic improvement plan, using remediation strategies sanctioned by the department, to assist the student in achieving the expected standard.

(c)(1) Upon completion of the intervention and remediation plans in subdivisions (b)(1) and (b)(2) of this section, those schools that fail to achieve expected levels of student performance at the primary level on criterion-referenced tests, as defined in this subchapter, shall participate in a comprehensive school improvement plan accepted by the department.

(2)(A) This plan shall be part of each school's long-range comprehensive school improvement plan and shall be reported to the public.

(B) Progress on improved achievement shall be included as part of the school and school district's annual report to the public.

(d)(1) As part of the comprehensive testing, assessment, and accountability program, the department shall ensure that each school and school district establishes a plan to assess whether children in the middle-level and high school grades are performing at proficient levels in reading and writing literacy, mathematics and, as funds are available, other core academic subjects.

(2) Each school and school district shall use ~~a combination of~~ multiple assessment measures, which shall include, but not be limited to, state-mandated criterion-referenced tests ~~or norm-referenced testing, or both~~.

(e) Any student failing to demonstrate a proficient level of achievement in reading and writing literacy or mathematics or, as funds are available, other core academic subjects, shall participate in an individual academic improvement plan specifically designed to achieve proficient-level performance standards in these areas.

SECTION 14. Arkansas Code § 6-15-421 is amended to read as follows:

6-15-421. Awards and sanctions.

(a) ~~(1)~~ The Department of Education is authorized to develop and implement, contingent upon appropriation and funding being provided by the General Assembly, a program of rewards to recognize individual schools that demonstrate exceptional performance in levels of student achievement and to *recognize schools that demonstrate significant improvement in student achievement.*

(b)(1) Each school that does not attain the expected levels of student performance on state-mandated indicators and individual school improvement indicators shall be designated by one (1) of several levels of sanction.

(2) Each level of sanction shall determine specific interventions to be provided to the ~~school~~ students of public schools or public school districts by the department. The levels of sanction developed under this subchapter shall be incorporated into the existing comprehensive school improvement plan ~~academic distress policy~~.

(c) The State Board of Education shall develop a clear, concise system of reporting the academic performance of each public school on the state-mandated, criterion-referenced tests, which conform with current state and federal law.

~~(c)~~(d) The State Board of Education through the department is hereby authorized to promulgate such rules and regulations as may be necessary to carry out the provisions of this subchapter.

SECTION 15. Arkansas Code Title 6, Chapter 15, Subchapter 4 is amended to add an additional section to read as follows:

6-15-423. Rules and regulations.

The state board shall promulgate rules and regulations as may be necessary to require the Department of Education to implement a program for identifying, evaluating, assisting, and addressing public schools or public school districts failing to meet established levels of academic achievement on the state mandated criterion-referenced tests as required in the Arkansas Comprehensive Testing, Assessment, and Accountability Program.

SECTION 16. Arkansas Code Title 6, Chapter 15, Subchapter 4 is amended to add an additional sections to read as follows:

6-15-424. School improvement or academic distress.

(a) Those public individual schools identified by the Department of Education as failing to meet established levels of academic achievement shall be classified as being in school improvement as required by the Arkansas Comprehensive Testing, Assessment, and Accountability Program rules and regulations.

(b) Those public school districts identified by the Department of Education as failing to meet established levels of academic achievement shall be classified as being either in school improvement or academic distress, or both, as required by the Arkansas Comprehensive Testing, Assessment, and Accountability Program rules and regulations.

6-15-425. School improvement.

(a) The State Board of Education shall develop a single comprehensive testing, assessment, and accountability program which shall identify and address all public schools or public school districts in school improvement, or academic distress and shall be incorporated in the Arkansas Comprehensive Testing, Assessment and Accountability Program rules and regulations which shall comply with the Elementary and Secondary Education Act as reauthorized by The No Child Left Behind Act of 2001, 20 U.S.C . §6301, et seq. (2002).

(b) The school board president and the superintendent of a public school or school district identified by the Department of Education as being classified as in school improvement, shall be notified of such classification in writing by the Department, via certified mail return receipt requested, and the school district shall have a right of appeal pursuant to the Arkansas Comprehensive Testing, Assessment and Accountability Program rules and regulations which shall comply with The No Child Left Behind Act of 2001, 20 U.S.C. § 6301 et seq. (2002).

(c) The Arkansas Comprehensive Testing, Assessment and Accountability Program shall require that any public school or school district in school improvement that fails to make adequate yearly progress as required in the Arkansas Comprehensive Testing, Assessment and Accountability Program may, after being afforded all due process rights and in a timely manner required under The No Child Left Behind Act of 2001, be advanced by the State Board of Education to the corrective action or restructuring phase of the Arkansas Comprehensive Testing, Assessment and Accountability Program adopted in the Arkansas Comprehensive Testing, Assessment and Accountability Program rules and regulations.

(d) Any public school or school district classified in school improvement shall comply with all requirements placed on a public school or school district under the Arkansas Comprehensive Testing, Assessment and Accountability Program rules and regulations as required by The No Child Left

Behind Act of 2001, 20 U.S.C. § 6301, et seq. (2002).

(e) Any public school or school district classified as in school improvement shall develop and file with the Department of Education a revised comprehensive school improvement plan which shall be reviewed by the department and shall be designed to ensure that all students have an opportunity to demonstrate proficiency on all portions of the state mandated criterion-referenced tests. The comprehensive school improvement plan shall include strategies to address the achievement gap existing for any identifiable group or subgroup as identified in the Arkansas Comprehensive Testing, Assessment and Accountability Program and the gap of that subgroup to the academic standard.

(f) Professional development activities of a public school or public school district in school improvement shall be related to the comprehensive school improvement plan and designed to increase student learning and achievement.

6-15-426. District testing programs.

Each district school board shall annually provide a written evaluation of student performance and achievement within each school of the district. This evaluation and suggested measures to improve performance shall be presented in a public hearing in the same locality as the school district and then submitted with comments made at the public hearing to the Arkansas Department of Education.

6-15-427. Academic distress identification, notification, classification, and appeal.

(a) The school board president and superintendent of a school district identified by the department as being in academic distress shall be notified in writing by the department, via certified mail return receipt requested, and shall have a right of appeal to the State Board of Education.

(b) Any school district identified in academic distress may appeal to the State Board of Education by filing a written appeal, with the office of the Director of the Department of Education, via certified mail return receipt requested, within thirty (30) calendar days receipt of the written notice of academic distress status from the department.

(c) The State Board of Education shall hear the appeal of the school district within sixty (60) days of receipt of the written appeal in the director's office. The State Board of Education's determination shall be final except that a school district may appeal to the circuit court of Pulaski County under the Arkansas Administrative Procedures Act.

(d) Those school districts identified by the Department of Education as being in academic distress shall be classified as a school district in academic distress upon final determination by the State Board of Education.

6-15-428. Academic distress – Required action.

(a) A public school district identified as in "academic distress" shall have no more than two (2) consecutive school years from the date of receipt of notice of identification from the Department of Education to be removed from academic distress status.

(b) The State Board of Education may, at any time, take enforcement action on any school district in academic distress status including, but not limited to, annexation, consolidation, or reconstitution of a school district pursuant to § 6-13-1401 et seq. and the authority of this subchapter, except no public school district shall be allowed to remain in academic distress status for a time period greater than two (2) consecutive school years from the date of receipt of notice of identification of academic distress from the Department of Education.

(c) If a public school district fails to be removed from academic distress status within the allowed two (2) year time period, the State Board of Education shall annex, consolidate, or reconstitute the academic distress school district prior to July 1 of the next school year unless the State Board of Education, at its discretion, issues a written finding supported by a majority of the board, explaining in detail that the school district could not remove itself from academic distress during the relevant time period due to impossibility caused by external forces beyond the school district's control.

6-15-429. State Board of Education authority of school in academic distress.

(a) The State Board of Education shall have the following authority regarding any public school district in academic distress:

(1) Require the superintendent of the school district to

relinquish all authority with respect to the district, to appoint an individual to administratively operate the district under the supervision of the Director of the Department of Education, and the cost to be paid from school district funding;

(2) Suspend or remove some or all of the current board of directors and call for the election of a new school board for the school district in which case the school district shall reimburse the county board of election commissioners for election costs as otherwise required by law;

(3) Allow the school district to operate without the local school board under the supervision of the local school district administration or an administration chosen by the Director of the Department of Education;

(4) Waive the application of Arkansas law, with the exception of the Teacher Fair Dismissal Act of 1983, § 6-17-1501 et seq. and the Public School Employee Fair Hearing Act, § 6-17-1701 et seq. or department rules and regulations;

(5) Require the annexation, consolidation, or reconstitution of the public school district; and

(6) Take any other necessary and proper action, as determined by the State Board of Education, that is allowed by law.

(b)(1) Any student attending a public school district classified as being in academic distress shall automatically be eligible and entitled pursuant to § 6-18-206, the "Arkansas Public School Choice Act", to transfer to another geographically contiguous school district not in academic distress during the time period a district is classified as being in academic distress, and therefore, not be required to file a petition by July 1 but shall meet all other requirements and conditions of the Arkansas Public School Choice Act.

(2) The cost of transporting the student from the resident district to the nonresident district shall be the cost of the resident district.

(3) The nonresident district shall count the student for average daily membership purposes.

6-15-430. Academic distress rules and regulations.

(a) The State Board of Education shall promulgate rules and regulations as necessary to identify, evaluate, assist and address public school districts determined to be in academic distress.

(b) The academic distress rules and regulations shall be incorporated as part of the Arkansas Comprehensive Testing, Assessment and Accountability Program rules and regulations.

SECTION 17. Arkansas Code Title 6, Chapter 15, Subchapter 4 is amended to add an additional section to read as follows:

6-15-431. Unsafe school choice program.

(a) Any student that becomes the victim of a violent criminal offense while in or on the grounds of an Arkansas public elementary, secondary, or public charter school, or who is attending a persistently dangerous public school shall be allowed to attend a safe public school within the local educational agency pursuant to rules and regulations established by the State Board of Education and the requirements The No Child Left Behind Act of 2001, 20 U.S.C. § 7912 (2002).

(b) The State Board of Education shall promulgate rules and regulations, as necessary, to administer the Unsafe School Choice Program.

SECTION 18. Arkansas Code Title 6, Chapter 20, is amended to add a new subchapter read as follows:

6-20-1901. Title

This subchapter shall be known as and may be cited as the "Arkansas Fiscal Assessment and Accountability Program".

6-20-1902. Purpose

The purpose of this subchapter shall be to establish and implement a program by which the Department of Education shall identify, assess and address school districts in fiscal distress.

6-20-1903. Definitions

For purposes of this subchapter:

(1) "Annexation" means the joining of an affected school district or part of the school district with a receiving district pursuant to § 6-13-1401;

(2) "Consolidation" means the joining of two (2) or more school

districts or parts of the districts to create a new single school district pursuant to § 6-13-1401;

(3) "Department" means the Arkansas Department of Education;

(4) "Fiscal distress status" means a public school district determined by the department and classified by the state board as being placed in fiscal distress status pursuant to this subchapter;

(5) "School district" means a public school district created or established pursuant to Title 6 of the Arkansas Code;

(6) "State Board" means the Arkansas State Board of Education;

(7) "Reconstitution" means the reorganization of the administrative unit or the governing school board of a school district, including, but not limited to, the replacement or removal of a current superintendent or the removal or replacement of a current school board or both; and

(8) "Fiscal integrity" means to comply with financial management, accounting, auditing, and reporting procedures and facilities management procedures as required by state and federal laws and regulations in a forthright and timely manner.

6-20-1904. Indicators of fiscal distress.

Any school district meeting any of the following criteria may be identified by the Department of Education to be a school district in fiscal distress upon final approval by the state board:

(1) A declining balance determined to jeopardize the fiscal integrity of a school district; or

(2) Any act or violation determined to jeopardize the fiscal integrity of a school district, including, but not limited to:

(A) Material failure to properly maintain school facilities;

(B) Material violation of local, state, or federal fire, health, or safety code provisions or law;

(C) Material violation of local, state, or federal construction code provisions or law;

(D) Material state or federal audit exceptions or violations;

(E) Material failure to provide timely and accurate legally-required financial reports to the Department of Education, the Division of Legislative Audit, the General Assembly, or the Internal Revenue Service;

(F) Insufficient funds to cover payroll, salary, employment

benefits, or legal tax obligations;

(G) Material failure to meet legally binding minimum teacher salary schedule obligations;

(H) Material failure to comply with state law governing purchasing or bid requirements;

(I) Material default on any school district debt obligation;

(J) Material discrepancies between budgeted and actual school district expenditures;

(K) Material failure to comply with audit requirements of § 6-20-301; or

(L) Material failure to comply with any provision of the Arkansas Code that specifically places a school district in fiscal distress based on noncompliance;

(3) Any other fiscal condition of a school district deemed to have a detrimental negative impact on the continuation of educational services by that school district.

6-20-1905. Notification and appeal.

(a) The Department of Education shall provide written notice, via certified mail return receipt requested, to the president of the school board and the superintendent of each school district identified as being in fiscal distress.

(b) Any school district identified in fiscal distress status may appeal to the State Board of Education by filing a written appeal, with the office of the Director of the Department of Education, by certified mail return receipt requested, within thirty (30) days of receipt of notice of identified fiscal distress status from the department.

(c) The state board shall hear the appeal within sixty (60) days of receipt of the written notice of appeal from the school district.

(d) The written appeal shall state, in clear terms, the reason why the school district should not be classified as in fiscal distress.

(e) Notwithstanding any appeal rights in this subchapter, no appeal shall stay the department's authority to take action to protect the fiscal integrity of any school district identified as in fiscal distress.

(f) The decision of the State Board of Education shall be a final order and there is no further right of appeal except the school district may *appeal to circuit court in Pulaski County pursuant to the Arkansas Administrative Procedures Act, § 25-15-201, et seq.*

6-20-1906. Classification of fiscal distress status.

(a) Those school districts identified by the Department of Education as being in fiscal distress shall be classified as a school district in fiscal distress upon final determination by the State Board of Education.

(b) Any district classified as in fiscal distress shall be required to publish at least one (1) time for two (2) consecutive weeks in a newspaper of general circulation in the school district, the school district's classification as a school district in fiscal distress and the reasons why the school district was classified as being in fiscal distress.

(c) The provisions of subdivisions (a) and (b) of this section are effective after the school district's appeal rights have been exhausted.

6-20-1907. Debt issuance.

No school district identified in fiscal distress may incur any debt without the prior written approval of the Department of Education.

6-20-1908. Fiscal distress plan.

(a) Those school districts identified by the Department of Education as being in fiscal distress shall file, with the department within ten (10) days after the final classification by the State Board, a written fiscal distress improvement plan to address any area in which the school district is experiencing fiscal distress as identified by the department.

(b) Each school district shall seek and obtain approval of their plan from the department and shall describe how the school district will remedy those areas in which the school district is experiencing fiscal distress and shall establish the time period by which the school district will remedy all criteria which placed the school district in fiscal distress status.

(c) A school district in fiscal distress may only petition the State Board of Education for removal from fiscal distress status after the department has, certified in writing, that the school district has corrected all criteria for being classified as in fiscal distress and has complied with all department recommendations and requirements for removal from fiscal distress.

(d) No school district shall be allowed to remain in fiscal distress status for more than two (2) consecutive school years from the date the school district was classified as being in fiscal distress status.

(e) Any school district classified as being in fiscal distress status shall be required to receive on-site technical evaluation and assistance from the department.

(f)(1) The department shall evaluate and make recommendations to the district superintendent regarding staffing of the district and fiscal practices of the district.

(2) The recommendations of the department shall be binding on the district, the superintendent, and the school board.

(g) Every six (6) months, the department shall submit a written evaluation on the status of each school district in fiscal distress to the State Board of Education.

(h)(1) The department may petition the State Board of Education, at any time, for the consolidation, annexation, or reconstitution of a school district in fiscal distress or take other appropriate action as allowed by this subchapter in order to secure and protect the best interest of the educational resources of the state or provide for the best interests of students in the school district.

(2) The State Board of Education may approve the petition or take other appropriate action as allowed by this subchapter.

(i) The State Board of Education shall consolidate, annex, or reconstitute any school district that fails to remove itself from the classification of a school district in fiscal distress within two (2) consecutive school years of receipt of notice of identification of fiscal distress status by the department unless the State Board of Education, at its discretion, issues a written finding supported by a majority of the board, explaining in detail that the school district could not remove itself from fiscal distress due to impossibility caused by external forces beyond the school district's control.

6-20-1909. Department fiscal distress actions.

(a) In addressing school districts in fiscal distress, the department may:

(1) Require the superintendent to relinquish all administrative

authority with respect to the school district;

(2) Appoint an individual in place of the superintendent to administratively operate the school district under the supervision and approval of the Director of the Department of Education, and to compensate non-department agents operating the school district from school district funding;

(3) Call for the temporary suspension of the local school board;

(4) Require the school district to operate without a local school board under the supervision of the local superintendent or an individual or panel appointed by the Director of the Department of Education;

(5) Place the administration of the school district over to the former board or to a newly elected school board; or

(6) Take any other action allowed by law that is deemed necessary to assist a district in removing criteria of fiscal distress.

(b) The department may impose various reporting requirements on the school district.

(c) The department shall monitor the fiscal operations and accounts of the school district.

(d) The department shall require school district staff and employees to obtain fiscal instruction or training in areas of fiscal concern for the school district.

6-20-1910. State board actions.

(a) After a public hearing, the State Board of Education shall consolidate, annex, or reconstitute the school district in fiscal distress to another school district or school districts upon a majority vote of a quorum of the members of the state board as permitted or required by this subchapter.

(b) The state board has exclusive jurisdiction to determine the boundary lines of the receiving or resulting school district and to allocate assets and liabilities of the district.

(c) The decision of the State Board of Education shall be final with no further right of appeal except a school district may appeal to circuit court in Pulaski County pursuant to the Arkansas Administrative Procedures Act, § 25-12-101, et seq.

6-20-1911. Rules and Regulations.

(a) The department shall promulgate rules and regulations as necessary to identify, evaluate, assist, and address school districts in fiscal distress.

(b) The department may promulgate rules and regulations as necessary to administer the Arkansas Fiscal Assessment and Accountability Program.

SECTION 19. Arkansas Code § 6-13-1403 through 6-13-1405 are amended to read as follows:

6-13-1403. Conditions under which the State Board of Education may annex school districts.

(a) The State Board of Education shall consider the annexation of an affected school district or districts to a receiving district or districts under the following conditions:

(1) The State Board of Education, after providing thirty (30) days written notice to the affected school districts, determines annexation is in the best interest of the affected district or districts and the receiving district based upon failure to meet standards of accreditation or failure to meet academic or fiscal distress requirements pursuant to The Quality Education Act of 2003, § 6-15-201, et seq., the Arkansas Comprehensive Testing, Assessment, and Accountability Program Act, § 6-15-401, et seq., and the Arkansas Fiscal Assessment and Accountability Program, § 6-20-1901, et seq.;

~~(1)(A)~~(2)(A) The affected district or districts file a petition with the state board requesting annexation to a particular receiving district or districts, and a copy of the petition is filed with the county clerk's office of each county where the affected district or districts are located~~;~~.

(B) The county clerk's office of each county where the affected district or districts are located certifies in writing that the petition has been signed by a majority of the qualified electors of the district or districts; and

(C) The receiving district or districts provide to the state board written proof of consent to receive the affected district or districts by annexation as evidenced by either a vote to approve annexation by resolution by a majority of the members of the local receiving board of education or by vote to approve annexation by a majority of the qualified *electors of the receiving district as provided for in § 6-14-122;*

~~(2)(A)~~<u>(3)(A)</u> A majority of the qualified electors in the affected district or districts vote to approve the annexation of an affected school district or districts to a receiving district or districts as provided for in § 6-14-122; and

(B) The receiving district or districts provide to the state board written proof of consent to receive the affected district or districts by annexation as evidenced by either a vote to approve annexation by resolution by a majority of the members of the local receiving board of education or by vote to approve annexation by a majority of the qualified electors of the receiving district as provided for in § 6-14-122; or

~~(3)(A)~~(4)(A) The local board of education of the affected district or districts vote to approve by resolution the annexation of the affected district or districts to a receiving district or districts by a majority of the members of the local board of education of the affected district or districts; and

(B) The receiving district or districts provide to the state board written proof of consent to receive the affected district or districts by annexation as evidenced by either a vote to approve annexation by resolution by a majority of the members of the local receiving board of education or by vote to approve annexation by a majority of the qualified electors of the receiving districts as provided for in § 6-14-122.

(b) The state board may vote to approve, by a majority of a quorum present of the members of the state board, the annexation of the affected districts into a receiving district<u>:</u>

<u>(1) The State Board of Education, after providing thirty (30) days written notice to the affected school districts, may on its on own motion based on a school district's failure to meet standards of accreditation or failure to meet academic or fiscal distress requirements pursuant to The Quality Education Act of 1983, § 6-15-201, et seq., the Arkansas Comprehensive Testing, Assessment, and Accountability Program Act, § 6-15-401, et seq., and the Arkansas Fiscal Assessment and Accountability Program, § 6-20-1901, et seq.; or</u>

(2) ~~upon~~ <u>Upon</u> receipt of a valid petition for annexation and after receiving proof from the petitioning party of at least one (1) of the required conditions set forth in subsection (a) of this section and upon

receipt of proof of the issuance of public notice of the intent to annex affected districts into a receiving district or districts in the local newspapers of general circulation in the affected districts for a time period of no less than once a week for two (2) consecutive weeks immediately prior to the time the petition is filed with the state board.

(c) In order for the petition for annexation to be valid, it shall be filed with the state board at least thirty (30) days prior to the next regularly scheduled state board meeting, at which time the petition will be presented for hearing before the state board. However, no petition is required for the State Board of Education to annex a school district or districts upon a motion of the board as allowed in subsection (b).

(d)(1) Upon determination by the State Board of Education to annex a school district or approval of a petition requesting annexation, the state board shall issue an order dissolving the affected districts and establishing the receiving school district or districts.

(2)(A) The state board shall issue an order establishing the boundary lines of the receiving district or districts.

(B) It shall be the duty of the Department of Education to make changes in the maps of the school districts to properly show the boundary lines of the receiving district or districts.

(e) The state board shall issue an order establishing the changed boundaries and shall file the order with the county clerk or clerks of the county or counties where the receiving district or districts are located. The county clerk shall make a permanent record of the order and, thereafter, the boundaries so established shall be boundaries of the receiving district until changes are made according to the provisions of law.

(f) The state board shall not annex affected districts that are not geographically contiguous unless the following limited conditions are determined to be valid reasons for annexation:

(1) The annexation will result in the overall improvement in the educational benefit to students in all the school districts involved; or

(2) The annexation will provide a significant advantage in transportation costs or service to all the school districts involved.

6-13-1404. Conditions under which the State Board of Education may consolidate school districts.

(a) The State Board of Education shall consider the consolidation of affected school districts into a new resulting school district or districts under the following conditions:

(1) The State Board of Education, after providing thirty (30) days written notice to the affected school districts, determines consolidation is in the best interest of the affected district or districts and the resulting district based upon failure to meet standards of accreditation, academic or fiscal distress requirements pursuant to The Quality Education Act of 1983, § 6-15-201, et seq., the Arkansas Comprehensive Testing, Assessment, and Accountability Program Act, § 6-15-401, et seq., and the Arkansas Fiscal Assessment and Accountability Program, § 6-20-1901, et seq.; or

~~(1)(A)~~(2) The affected districts file a petition with the state board requesting that the affected districts be consolidated into a resulting district or districts;

~~(B)~~(3) A copy of the petition has been filed with the county clerk's office of each county where the affected districts are located; ~~and~~

~~(C)~~(4) The county clerk's office certifies in writing to the state board that the petition has been signed by a majority of the qualified electors of the affected districts;

~~(2)~~(5) A majority of the qualified electors in the affected districts votes to approve consolidation of the affected districts into a resulting district or districts pursuant to a valid election as provided for in § 6-14-122; ~~and~~

~~(3)~~(6) The local board of directors votes to approve by resolution of a majority of the members of each local board of education the consolidation of the affected districts into a resulting district or districts.

(b) The state board:

(1) After providing thirty (30) days written notice to the affected school districts, may consolidate school districts upon its own motion based upon a school district's failure to meet standards of accreditation, academic or fiscal distress requirements pursuant to The Quality Education Act of 1983, § 6-15-201, et seq., the Arkansas Comprehensive Testing, Assessment, and Accountability Program Act, § 6-15-401, et seq., and the Arkansas Fiscal Assessment and Accountability Program,

§ 6-20-1901, et seq.; or

(2) May ~~may~~ vote to approve by a majority of a quorum present of the members of the state board the consolidation of the affected districts into a resulting district upon receipt of a valid petition for consolidation, after receiving proof from the petitioning party of at least one (1) of the required conditions set forth in subsection (a) of this section, and upon receipt of proof of the issuance of public notice of the intent to consolidate affected districts into a resulting district or districts in the local newspapers of general circulation in the affected districts for a time period of no less than once a week for two (2) consecutive weeks immediately prior to the time the petition is filed with the state board.

(c) In order for the petition for consolidation to be valid, it shall be filed with the state board at least thirty (30) days prior to the next regularly scheduled state board meeting, at which time the petition will be presented for hearing before the state board. However, no petition is required for the State Board of Education to consolidate a school district or districts on a motion of the board as allowed in subsection (b).

(d)(1) Upon consolidation of a district by the board or approval of a petition requesting consolidation, the state board shall issue an order dissolving the affected school districts and establishing the resulting school district or districts.

(2)(A) The state board shall issue an order establishing the boundary lines of the resulting district or districts.

(B) It shall be the duty of the Department of Education to make changes in the maps of the school districts to properly show the boundary lines of the resulting district or districts.

(e)(1) The state board shall issue an order establishing the changed boundaries and shall file the order with the county clerk or clerks where the resulting district or districts are located.

(2) The county clerk shall make a permanent record of the order and, thereafter, the boundaries so established shall be boundaries of the resulting district until changes are made according to the provisions of law.

(f) The state board shall not consolidate affected districts that are not geographically contiguous unless the following limited conditions are determined to be valid reasons for consolidation:

(1) The consolidation will result in the overall improvement in

the educational benefit to students in all the school districts involved; or

(2) The consolidation will provide a significant advantage in transportation costs or service to all the school districts involved.

6-13-1405. Effective date of annexation or consolidation.

(a) Upon consolidation or annexation of a school district by the State Board of Education:

(1) The effective date of the annexation or consolidation shall be the July 1 following the State Board of Education action unless otherwise determined by the state board;

(2) The State Board of Education shall prescribe the number of members of the board of directors of the resulting or receiving district, and prescribe the method of forming the board of directors of the resulting or receiving district;

(3) The consolidation or annexation plan adopted by the State Board of Education shall be filed with the county clerk of each county that contains territory or a portion of the territory of each affected school district; and

(4) All terms and conditions of the consolidation shall be as set forth by the State Board of Education and shall be binding on the school districts and the respective boards of directors.

(5) The State Board of Education shall afford the local school districts in a consolidation thirty (30) days to establish an interim local board to govern the resulting district pursuant to § 6-14-1406 until the next school election. If the local school districts fail to establish an interim board, the State Board of Education shall appoint an interim local board to serve until the next elected board assumes office. The number of interim board positions shall be set as allowed by law.

~~(a)~~(b) Upon a petition to consolidation or annexation:

(1) ~~Unless an agreement is reached in the consolidation or annexation agreement to be different, the effective date of the annexation or consolidation~~ Consolidation shall be the July 1 following the order of the state board directing the annexation or the consolidation~~.~~, unless the State Board of Education determines otherwise;

~~(b)~~(2) Each board of directors of the affected districts by majority approval of the members of the local board may enter into a written *agreement executed by the former president and secretary of each district. The agreement shall prescribe the date of the annexation of the affected district or districts to the receiving district or the formation of the resulting district from consolidation of affected districts~~.~~;*

~~(c)~~(3) The agreement shall also prescribe the number of members of the board of directors of the resulting district ~~as provided for in § 6-13-1205 (repealed).~~ as allowed by law; and

~~(d)~~(4) An executed copy of the agreement shall be filed with the county clerk of each county that contains territory or a portion of the territory of each affected school district.

SECTION 20. Arkansas Code § 6-13-1409 is amended to read as follows:

6-13-1409. State Board of Education.

(a) The State Board of Education shall have the following duties regarding consolidations and annexations:

(1) To form local school districts, change boundary lines of school districts, dissolve school districts and annex the territory of such districts to another district, create new school districts, and perform all other functions regarding changes in school districts in accordance with the law;

(2) To transfer funds and attach territory that is in no school district to other school districts as may seem best for the educational welfare of the children; and

(3) To enact rules and regulations regarding the consolidation and annexation of school districts under this title.

~~(b)(1) Any person being a party to a proceeding before the state board concerning consolidation or annexation who feels aggrieved by any final order or decision of the state board may file a petition for appeal from such a final order or decision, provided, within thirty (30) days from the date of the final order or decision complained of, the person shall:~~

~~(A) Make an affidavit that the appeal taken from such a final order or decision of the state board is not taken for purposes of delay; and~~

~~(B) Enter into a bond with good and sufficient surety thereon in such sum as shall be ordered by the state board, not to exceed twice the amount of property tax revenues involved in the appeal.~~

~~(2) The appeal provided in this section shall be to the Circuit Court of Pulaski County.~~

(b) The millage rate of the electors of the affected district shall remain the same until an election may be held to change the rate of taxation for the resulting district or receiving district.

SECTION 21. Arkansas Code Title 6, Chapter 13, Subchapter 14 is amended to add an additional section to read as follows:

6-13-1410. Appeal and election.

The decision of the State Board of Education regarding a consolidation or annexation shall be final with no further right of appeal except an aggrieved school district may appeal to circuit court in Pulaski County pursuant to the Administrative Procedures Act, § 25-15-201, et seq.

SECTION 22. Arkansas Code, Title 6, Chapter 20, Subchapter 16 is repealed.

~~6-20-1601. Purpose.~~

~~The purpose of this subchapter shall be to improve the capacity of local school districts whose students are not achieving at academically desired levels and local school districts in fiscal distress through targeted assistance coordinated by the Department of Education.~~

~~6-20-1602. Definitions.~~

~~(a) For purposes of this subchapter, a "school district in academic distress" shall mean any school district whose students do not score at levels established by the Department of Education on:~~

~~(1) The Arkansas Writing Assessment;~~

~~(2) The Stanford 8 Achievement Test;~~

~~(3) The exit examination administered by the department; or~~

~~(4) Any other test approved by the department.~~

~~(b) For purposes of this subchapter, a "school district in fiscal distress" shall mean any school district that:~~

~~(1) Has a steadily declining balance;~~

~~(2) Has not complied with the audit requirements in § 6-20-301 et seq.;~~

~~(3) Has failed to comply with a statute that automatically~~

~~places the school district in fiscal distress; or~~

~~(4) Has any other fiscal condition deemed to have a detrimental negative impact on continuation of educational services.~~

~~All of these determinations for fiscal distress except for subdivision (b)(3) of this section shall be as defined by the department through rules and regulations promulgated by the State Board of Education.~~

~~6-20-1603. Rules and regulations - State Board of Education.~~

~~(a) By March 1, 1996, the State Board of Education shall promulgate rules and regulations to establish and implement a program for identifying, evaluating, assisting, and addressing school districts in fiscal or academic distress.~~

~~(b)(1) The state board shall further promulgate rules and regulations by which a school district shall be classified as a Phase I, Phase II, or Phase III district and by which a local school board may appeal to the state board any ruling by the Department of Education that is relative to classification under this subchapter.~~

~~(2) An appeal shall be made within thirty (30) days of the ruling, and the state board shall act on the appeal within sixty (60) days.~~

~~6-20-1604. Rules and regulations - Department of Education.~~

~~The Department of Education is hereby authorized to develop indicators of fiscal distress and academic distress in school districts and to promulgate the necessary rules and regulations so that the Director of the Department of Education shall provide technical assistance to school districts determined by the director to be in fiscal or academic distress and shall ensure, to the extent possible, that a fiscal crisis or an academic crisis will not interrupt the educational services provided to the students of a school district.~~

~~6-20-1605. Identification of districts in distress.~~

~~Prior to the beginning of the 1996-1997 school year and each school year thereafter, the Department of Education shall identify all school districts that are in academic or fiscal distress and shall further document any school districts that meet the criteria for academic or fiscal distress but which, after investigation, the department determines are not in academic~~

~~or fiscal distress.~~

~~6-20-1606. School improvement plan.~~

~~(a) Those school districts identified by the Department of Education as being in academic or fiscal distress shall be classified as Phase I school districts.~~

~~(b)(1)(A) A district classified as a Phase I school district shall develop and file with the department a school improvement plan to address any areas in which the school district is experiencing academic or fiscal distress as identified by the department.~~

~~(B) If a district does not file a school improvement plan with the department, the district shall be immediately classified as a Phase II school district.~~

~~(2) The department shall provide technical assistance to any district classified as a Phase I district.~~

~~(A) The department shall monitor the progress of school districts in Phase I.~~

~~(B) Districts that are implementing school improvement plans shall continue to be classified as Phase I school districts for the remainder of the school year.~~

~~(C) If the department determines that a district is not implementing its school improvement plan according to department regulations, the district shall be immediately classified as a Phase II school district.~~

~~6-20-1607. Classification of school districts in distress.~~

~~(a)(1) During the 1997-1998 school year and each school year thereafter, the Department of Education shall determine which school districts shall be classified as Phase I districts or Phase II districts.~~

~~(2) A school district may be classified a Phase I district for more than one (1) year.~~

~~(b) No Phase I or Phase II district shall incur additional debt without the approval of the department.~~

~~(c)(1) During the 1997-1998 school year and each school year thereafter, only those districts classified as Phase II districts by the Director of the Department of Education shall be required to receive on-site technical assistance by a team of educators assigned by the department to~~

~~work directly with the districts.~~

~~(2) During the first six (6) months of the school year in which a district is classified as a Phase II district, the department team shall evaluate and make recommendations to the district superintendent regarding the staffing of the district and concerning fiscal or academic policies or practices of the district if necessary to address the fiscal or academic distress of the district as defined by the department.~~

~~(3)(A) The recommendations of the department shall be binding on the district, the superintendent, and the school board; provided, however, that it shall be the duty of the district to follow all Arkansas laws.~~

~~(B) A district classified as a Phase II school district that fails to follow recommendations of the department shall be immediately classified as a Phase III school district.~~

~~(d) At the conclusion of the 1997-98 school year, and each year thereafter, the department shall report the progress of all districts classified as Phase II school districts to the State Board of Education.~~

~~6-20-1608. Limitation on Department of Education's authority.~~

~~The Department of Education shall not take over the operation of a Phase I or Phase II school district.~~

~~6-20-1609. Phase III school districts.~~

~~(a) Those school districts that do not meet the Department of Education's criteria for repeating procedures set forth for Phase II and those districts that did not follow the recommendations of the department for Phase II school districts shall be classified as Phase III school districts.~~

~~(b) During the 1998-1999 school year and each year thereafter until the school district is no longer classified as a Phase III district, the department shall have the following authority in dealing with any district classified as a Phase III school district:~~

~~(1) To require the superintendent to relinquish all authority with respect to the district, to appoint an individual to operate the district under the supervision of the Director of the Department of Education, and to compensate non-department employees for operating the district using the salary formerly given to the district superintendent;~~

~~(2) To have all the powers and duties of the local school board~~

~~under § 6-13-620;~~

~~(3) To determine that it is in the best interests of the students in the district to continue operation of the district or that annexation to an adjacent district or districts is necessary;~~

~~(4) To call for the election of a new school board for the district, in which case the district shall reimburse the county board of election commissioners for election costs as otherwise required by law;~~

~~(5) To allow the district to operate without a local school board under the supervision of the local school district administration;~~

~~(6) To turn the administration of the district over to the former board or to a newly elected school board; and~~

~~(7) To waive the application of Arkansas law, with the exception of §§ 6-17-1501 et seq. and 6-17-1701 et seq., or department rules and regulations.~~

~~6-20-1610. Annexation — Appeals.~~

~~(a) If it is in the best interests of students in a district classified as a Phase III school district to be annexed to another district or districts, as determined by the Department of Education, the department shall hold a public hearing to discuss the annexation of the district.~~

~~(b) After the public hearing, the State Board of Education may annex the district to another district or districts upon a majority vote of the members of the state board.~~

~~(c) If the state board annexes the district, the state board shall have exclusive authority to determine the boundary lines of the new district or districts and to allocate the assets and liabilities of the district.~~

~~(d) Any district that appeals the decision of the state board in regard to annexation shall file the appeal in Pulaski County Circuit Court. Jurisdiction and venue shall not lie in any other court or the circuit court in the county where the adminstrative office of the district is located.~~

SECTION 23. Effective Date.

Unless otherwise provided in this act, this act shall become effective on July 1, 2003.

/s/ Green, et al **APPROVED: 04/17/2003**

Stricken language would be deleted from and underlined language would be added to present law.
Act 35 of the 2nd Extraordinary Session

State of Arkansas *As Engrossed: S12/30/03 H1/7/04* Call Item 4
84th General Assembly
A Bill
Second Extraordinary Session, 2003 SENATE BILL 33

By: Senators Bryles, Argue, Baker, Bisbee, B. Johnson, Faris, Salmon, Trusty, Whitaker, Womack, Wooldridge, Wilkinson, *Altes, Broadway, Gullett, Higginbothom, Horn, G. Jeffress, J. Jeffress*
By: Representatives Hardwick, Cleveland, Agee, Anderson, Bledsoe, Borhauer, Bennett, Bright, Dickinson, L. Evans, Harris, House, Hutchinson, Kenney, Key, Martin, Matayo, Mathis, Pace, Parks, Pritchard, Rosenbaum, Schulte, R. Smith, *Blair, Bolin, Bond, Bradford, Childers, Clemons, Creekmore, Dees, Eason, Edwards, D. Evans, Ferguson, Fite, Green, Haak, Hathorn, Jackson, Jacobs, C. Johnson, J. Johnson, Judy, King, Medley, Moore, Nichols, Norton, Oglesby, Penix, Petrus, Seawel, Sullivan, Sumpter, C. Taylor, Thomas, Thyer, White, Wood*

For An Act To Be Entitled

AN ACT TO ESTABLISH A COMPREHENSIVE SYSTEM OF TESTING FOR ARKANSAS STUDENTS; TO ESTABLISH A PROGRAM OF SCHOOL AND SCHOOL DISTRICT ACCOUNTABILITY FOR STUDENT PERFORMANCE AND TO ESTABLISH A SYSTEM OF REWARDS AND SANCTIONS; TO GIVE STUDENTS ATTENDING UNDERPERFORMING SCHOOLS CERTAIN CHOICES, KNOWN AS THE ARKANSAS OPPORTUNITY PUBLIC SCHOOL CHOICE ACT; TO ESTABLISH A FINANCIAL MANAGEMENT PRACTICES SYSTEM *FOR ARKANSAS SCHOOL DISTRICTS; AND FOR OTHER PURPOSES.*

Subtitle

AN ACT TO BE KNOWN AS THE ARKANSAS STUDENT ASSESSMENT AND EDUCATIONAL ACCOUNTABILITY ACT OF *2004*.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:

SECTION 1. Arkansas Code § 6-15-404 is amended to read as follows:

6-15-404. Program implementation.

(a) The State Board of Education ~~will~~ shall establish clear, specific, and challenging academic content standards which define what students shall know and be able to do in each content area. Instruction in all public schools shall be based on these academic content standards.

(b) The state board shall establish a schedule for periodic review and revision of academic content standards to ensure that Arkansas academic content standards are rigorous and equip students to compete in the global work force.

(c) The state board shall include the following elements in the periodic review and revision of Arkansas academic content standards:

(1) External review by outside content standards experts;

(2) Review and input by higher education, workforce education, and community members;

(3) Study and consideration of academic content standards from across the nation and the international level as appropriate;

(4) Study and consideration of evaluation from national groups or organizations as appropriate;

(5) Revisions by committees of Arkansas teachers and instructional supervisor personnel from public schools, assisted by teachers from institutions of higher education; and

(6) Public dissemination of revised academic content standards at the state board meeting and Department of Education website.

(d) The state board shall establish a clear concise system of reporting the academic performance of each school on the state-mandated criterion-referenced exam which conforms with the requirements of the No Child Left Behind Act of 2001.

(e) The state board shall develop and the department shall implement a developmentally appropriate uniform school readiness screening to validate a child's school readiness as part of a comprehensive evaluation design. Beginning with the 2004-2005 school year, the department shall require that all school districts administer the uniform school readiness screening to each kindergarten student in the district school system upon the student's entry into kindergarten. Children who enter public school for the first time in first grade must be administered the uniform school readiness screening developed for use in the first grade.

(f)(1) The department shall select a developmentally appropriate assessment to be administered to all students in first grade and second grade in reading and mathematics.

(2) Professional development activities shall be tied to the comprehensive school improvement plan and designed to increase student learning and achievement.

(3) Longitudinal and trend data collection shall be maintained for the purposes of improving student and school performance.

(4) A public school or public school district classified as in "school improvement" shall develop and file with the department a comprehensive school improvement plan designed to ensure that all students demonstrate proficiency on all portions of state-mandated criterion-referenced assessment. The comprehensive school improvement plan shall include strategies to address the achievement gap existing for any identifiable group or subgroup as identified in the Arkansas Comprehensive Testing, Assessment, and Accountability Program and the gap of that subgroup from the academic standard.

(g)(1) ~~The department shall develop and implement testing for public school students at the primary and middle-level grades, as well as end-of-course testing, which is criterion-referenced and which measures application of knowledge and skills in reading and writing literacy, mathematics and, as funds are available, in science and social studies.~~

~~(2) The department shall test public school students in a manner and with a nationally norm-referenced test to be selected by the state board.~~

~~(3) The state board shall establish expected levels of achievement on the criterion-referenced examinations for all areas of assessment and accountability.~~

~~(4) The State of Arkansas shall participate in the administration of the National Assessment of Educational Progress Examinations.~~ By July 1, 2006, the department shall develop and implement a criterion-referenced testing program which is valid, reliable, externally linked to a national norm and vertically scaled for public school students grades three through eight (3-8), which measures application of knowledge and skills in reading and writing literacy, and mathematics. Science, civics, and government shall be measured on a schedule as determined by the state board.

(2) The testing program shall be adopted by the state board and shall be known as the Arkansas Comprehensive Assessment Program exams. These exams shall be used as the assessment portion of the Arkansas Comprehensive Testing, Assessment, and Accountability Program to determine school and district performance awards and sanctions.

(3) The board shall establish expected levels of achievement on the Arkansas Comprehensive Assessment Program exams.

(4) The State of Arkansas shall participate in the administration of the National Assessment of Educational Progress examinations.

~~(h) Any student failing to achieve the established standard on the criterion-referenced examinations shall be evaluated by school personnel, who shall jointly develop an academic improvement plan to assist the student in achieving the expected standard in subject areas where performance is deficient.~~ Any student failing to achieve the established standard on the Arkansas Comprehensive Assessment Program exams shall be evaluated by school personnel, who shall jointly develop with the student's parents an academic improvement plan to assist the student in achieving the expected standard in subject areas where performance is deficient. The academic improvement plan shall describe the parent's role and responsibilities as well as the consequences for the student's failure to participate in the plan.

(i)(1) Each school shall develop one (1) comprehensive, long-range school improvement plan focused on student achievement which shall be reported to the public.

(2)(A) ~~Any school that fails to achieve established levels of student performance on criterion-referenced tests and related indicators, as defined by rule and regulation, shall implement a comprehensive school improvement plan accepted by the department. This improvement plan shall assist those students performing below grade level in achieving the established standard.~~ Any school that fails to achieve expected levels of student performance on the Arkansas Comprehensive Assessment Program exams and related indicators, as defined in this subchapter, shall participate in a school improvement plan accepted by the department. This improvement plan shall assist those students performing below-grade level in achieving the expected standard. ~~(B) This plan shall be part of each school's long-range comprehensive school improvement plan and shall be~~

~~reported to the public.~~

~~(C)~~(B) Progress on improved achievement shall be included as part of the school's and school district's annual report to the public.

(j) The department and the local school districts shall annually compile and disseminate to the public results of all required examinations. The results of the ~~end-of-course~~ End of Course testing shall become a part of each student's transcript or permanent record and shall be recorded on these documents in a manner prescribed by the state board.

(k)(1) Parents, students, families, educational institutions, and communities are collaborative partners in education and each plays an important role in the success of individual students. Therefore, the State of Arkansas cannot be the guarantor of each individual student's success.

(2) The goals of Arkansas's grades kindergarten through twelve (K-12) education system are not guarantees that each individual student will succeed or that each individual school will perform at the level indicated in the goals.

SECTION 2. Arkansas Code § 6-15-421 is amended to read as follows:

6-15-421. Awards and sanctions.

(a) The Department of Education is authorized to develop and implement, contingent upon appropriation and funding being provided by the General Assembly, a program of rewards to recognize individual schools that demonstrate exceptional performance in levels of student achievement and to recognize schools that demonstrate significant improvement in student achievement.

(b)(1) Each school that does not attain the expected levels of student performance on state-mandated indicators and individual school improvement indicators shall be designated by one (1) of several levels of sanction.

(2) Each level of sanction shall determine specific interventions to be provided to the students of public schools or public school districts by the department. The levels of sanction developed under ~~this subchapter~~ Act 1467 of 2003 shall be incorporated into the existing comprehensive school improvement plan.

(c) The State Board of Education shall develop a clear, concise system of reporting the academic performance of each public school on the state-mandated, criterion-referenced tests, developmentally appropriate assessments *for grades kindergarten through one and two (K-2), Benchmark exams, and End of Course exams,* *which conforms with current state and federal law.*

(d) The state board, through the department, is hereby authorized to promulgate rules and regulations as may be necessary to carry out the provisions of this subchapter.

SECTION 3. Arkansas Code § 6-15-402 is amended as follows:

6-15-402. Purpose.

(a)(1) The purpose of this subchapter is to provide the statutory framework necessary to ensure that all students in the public schools of this state have an equal opportunity to demonstrate grade-level academic proficiency through the application of knowledge and skills in ~~the~~ core academic subjects consistent with state curriculum frameworks, performance standards, and assessments. The State of Arkansas recognizes and declares that students who are not performing at grade-level standards of academic proficiency are especially harmed by social promotion because they are not equipped with the necessary academic skills to be successful and productive members of society. For this reason, the Arkansas Comprehensive Testing, Assessment, and Accountability Program will emphasize point-in-time intervention and remediation upon the discovery that any student is not performing at grade level. The state is committed to all students having the opportunity to perform at their age-appropriate grade level and beyond.

(2) This subchapter is constructed around a system that includes statewide indicators, individual school improvement indicators, and a locally generated school accountability narrative. The total program shall be applied to each school in the state public school system.

(3) This subchapter is designed to be a multiyear commitment to assess the academic progress and performance of Arkansas' public school students, classrooms, schools, and school districts.

(4) It shall also be the purpose of this subchapter to provide information needed to improve the public schools by measuring annual learning gains of all students through longitudinal tracking and analysis of value-added computations of student gains against a national cohort to inform parents of the educational progress of their public school children, and to inform the public of the performance of schools. The program shall be designed to:

(A) Assess the annual learning gains of each student toward achieving the academic content standards appropriate for the student's grade level;

(B) Provide data for building effective staff development programs and school accountability and recognition;

(C) Identify the educational strengths and weaknesses of students and to help the teacher tailor instruction to the needs of the individual student;

(D) Assess how well academic goals and performance standards are met at the classroom, school, school district, and state levels;

(E) Provide information to aid in the evaluation and development of educational programs and policies;

(F) Provide information on the performance of Arkansas students compared with other students from across the United States; and

(G) Identify best practices and schools that are in need of improving their practices.

(b) The purposes of the assessment and accountability program developed under this subchapter shall be to:

(1) Improve student learning and classroom instruction;

(2) Provide public accountability by ~~exemplifying~~ mandating expected achievement levels, by reporting on school and school district performance, and applying a framework for state action for a school or school district that fails expected achievement levels as defined in the ~~program~~ Arkansas Comprehensive Testing, Assessment, and Accountability program rules and regulations; and

(3) Provide evaluation data of school and school district performance in order to assist policymakers at all levels in decision making.

(c) The priorities of the assessment and accountability program developed pursuant to the provisions of this subchapter shall include:

(1) All students have an opportunity to demonstrate increased learning and completion at all levels, graduate from high school, and enter postsecondary education or the workforce without remediation;

(2) Students demonstrate that they meet the expected academic standards consistently at all levels of their education;

(3) Academic standards for every level of the grades kindergarten through twelve (K-12) education system are aligned and education financial resources are aligned with student performance expectations at each level of the grades kindergarten through twelve (K-12) education system; and

(4) The quality of educational leadership at all levels of grades kindergarten through twelve (K-12) education is improved.

SECTION 4. Arkansas Code Title 6, Chapter 15, Subchapter 4 is amended to add additional sections to read as follows:

6-15-433. Statewide assessment program.

(a) Upon approval by the State Board of Education, the Department of Education shall implement a statewide program of educational assessment that provides information for the improvement of the operation and management of the public schools.

(b) Pursuant to the statewide assessment program, the department shall:

(1) Determine and designate the appropriate offices within the department which shall report to the state board and shall be responsible for determining each school's improvement and performance levels;

(2) Develop and implement a uniform system of indicators to describe the performance of public school students and the characteristics of the public school districts and the public schools; and

(3)(A) Implement student achievement testing as part of the statewide assessment program, to be administered annually to measure reading, writing, and mathematics and that includes:

(i) Developmentally appropriate testing for grades kindergarten through two (K-2);

(ii)(a) Norm-referenced tests using nationally normed metrics in grades three through nine (3-9), and criterion-referenced tests, as defined in § 6-15-404(g)(1) known as the Benchmark exams, in grades three through eight (3-8); or

(b) Other assessments which are based on researched best practices as determined by qualified experts which would be in compliance with federal and state law;

(iii) Any other tests required by the State Board of Education; and *(iv) End of Course exams shall be administered for Algebra I, geometry, literacy, and other content areas as directed by the state board.*

(B) Science, civics, and government shall be measured on a schedule as determined by the state board.

(c) The testing program shall be designed so that:

(1)(A) The tests measure student skills and competencies adopted by the state board as specified in § 6-15-404(a). The tests shall measure and report student achievement levels in reading, writing, and mathematics including longitudinal tracking of the same students, as well as an analysis of value-added computations of student achievement gains against a national cohort.

(B) The department shall provide for the tests to be obtained or developed, as appropriate, through contracts and project agreements;

(2) The testing program, as determined by the state board, shall consist of norm-referenced and criterion-referenced testing or other assessments as defined in § 6-15-433(b)(3)(A)(ii)(b). Questions shall require the student to produce information and perform tasks in such a way that the skills and competencies he or she uses can be measured in a statistically reliable and valid manner;

(3) Each testing program, whether at the elementary beginning at grade three (3), middle school, or high school level, shall include to the fullest extent possible, a test of writing in which students are required to produce writings that are then scored by appropriate analytic methods that ensure overall test validity and reliability, including inter-rater reliability. Writing test results shall be scored and returned for district and school use no later than July 1 of each year beginning in 2005-2006 and each year thereafter;

(4) A score shall be designated for each subject area tested that will be the required level of proficiency, below which score, a student's performance is deemed inadequate;

(5) Beginning in the 2004-2005 school year, students in grades kindergarten through twelve (K-12) who do not demonstrate proficiency on the Arkansas Comprehensive Assessment Program exams shall participate in an intense remediation program specific to identified deficiencies;

(6) The state board shall designate, based on valid and reliable statistical models, the proficiency levels for each part of the Arkansas Comprehensive Assessment Program exams;

(7) Participation in the testing program is mandatory for all students attending public school except as otherwise prescribed by the state board. If a student does not participate in the Arkansas Comprehensive Assessment Program exams, the district shall notify the student's parent or guardian and provide the parent or guardian with information regarding the reasons for and implications of such nonparticipation. The state board shall adopt rules in compliance with federal and state law, based upon recommendations of the department, for the provision of test accommodations and modifications of procedures as necessary for students in exceptional education programs and for limited-English proficient students. The State Board of Education shall not make accommodations that negate the validity of a statewide assessment or interpretations or implementations which result in less than ninety-five percent (95%) of all students attending public school participating in the testing program;

(8) The department shall implement student testing programs for any grade level and subject area necessary to effectively monitor educational achievement in the state and shall provide data access to any unit within the department or contracted firm or firms for the purpose of analyzing value-added computations and posting school, district, and state student achievement, provided such disclosures are in not in conflict with applicable federal and state law;

(9) Each district shall ensure that educators in their district provide instruction to prepare students to demonstrate proficiency in the skills and competencies necessary for successful grade-to-grade progression and high school graduation. The department shall verify that the required skills and competencies are part of the district instructional programs;

(10) Conduct ongoing research to develop improved statistically reliable and valid methods of assessing student performance, including, without limitation, the:

(A) Use of technology to administer, score, or report the results of tests; and

(B) Use of electronic transfer of data;

(11) Conduct or contract with a provider to conduct ongoing

research and analysis of individual student, classroom, school, district, and state achievement data, including, without limitation, monitoring value-added trends in individual student, school, district, and state achievement, identifying school programs that are successful, and analyzing correlates of school achievement; and

(12) Provide technical assistance to school districts in the implementation of state and district testing programs and the use of the data produced pursuant to such programs, including longitudinal tracking data.

6-15-434. School testing programs.

(a) Student performance data shall be analyzed and reported to parents, the community, and the state, provided such disclosures are not in conflict with applicable federal and state law.

(b) Student performance trend data shall be one (1) of the components used in developing objectives of the school improvement plan, internal evaluations of instructional and administrative personnel, assignment of staff, allocation of resources, acquisition of instructional materials and technology, performance-based budgeting, and assignment of students into educational programs of the local school district.

6-15-435. Required analyses.

The Department of Education shall provide, at a minimum, for the following analyses of data produced by the student achievement testing program:

(1) The statistical system for the annual assessments shall use the Arkansas Comprehensive Assessment Program exams and other valid and reliable measures of student learning deemed appropriate by the State Board of Education to determine classroom, school, and school district statistical distributions that shall measure the differences in a student's previous year's achievement compared to the current year achievement for the purposes of improving student achievement, accountability, and recognition;

(2)(A) The statistical system shall provide the best estimates of classroom, school, and school district effects on student progress based on established, value-added longitudinal calculations.

(B) The approach used by the department shall be approved by the state board before implementation; and

(3)(A)(i) The approach used by the department shall be in alignment with federal statutes and be piloted in 2004-2005 to collect data to allow research and evaluation of student achievement growth models.

(ii) The approach shall include the following:

(a) Value-added longitudinal calculations;

(b) Sufficient transparency in the models' conception and operation to allow others in the field to validate or replicate the results; and

(c) An assessment of the models' accurateness in relation to other models.

(iii) A team of relevant technical experts in student assessment and the State Board shall review and approve the cost effectiveness of the model in terms of actual and in kind costs before implementation.

(B) The department shall establish a schedule for the administration of the statewide assessments.

(C) Beginning in the 2005-2006 school year and each subsequent year thereafter, in establishing such schedule, the department is charged with the duty to accomplish the latest possible administration of the statewide assessments and the earliest possible provision, but no later than July 1, of the results to the school districts.

(D) District school boards shall not establish school calendars that jeopardize or limit the valid testing and comparison of student learning gains.

6-15-436. Local assessments.

(a) School districts may elect to measure the learning gains of students in subjects and at grade levels in addition to those required for the Arkansas Comprehensive Assessment Program exams.

(b) Measurement of the learning gains of students in all subjects and grade levels other than subjects and grade levels required for the Arkansas Comprehensive Assessment Program is the responsibility of the school districts.

(c) The results of these assessments shall be provided to the Department of Education upon request of the Director of the Department of Education.

6-15-437. Rules.

The State Board of Education shall adopt any rules necessary to implement the Arkansas Comprehensive Testing, Assessment, and Accountability Program, § 6-15-401 et seq. pursuant to the Arkansas Administrative Procedure Act, § 25-15-201 et seq.

6-15-438. Test security and confidentiality

(a) Violation of the security or confidential integrity of any test or assessment is prohibited.

(b)(1) The State Board of Education shall sanction a person who engages in conduct prohibited by this section, as provided under Arkansas Code § 6-17-405 and following the Process for Certificate Invalidation as approved by the Board.

(2) Additionally, the state board may sanction a school district or school, or both in which conduct prohibited in this section occurs.

(c)(1) Procedures for maintaining the security and confidential integrity of all testing and assessment instruments and procedures shall be specified in the appropriate test or assessment administration instructions.

(2) Conduct that violates the security or confidential integrity of a test or assessment is defined as any departure from either the requirements established by the Director of the Department for the administration of the assessment or from the procedures specified in the applicable test administration materials.

(3) Conduct that violates the security or confidential integrity of a test or assessment may include, but is not limited to the following acts and omissions:

(A) Viewing secure assessment materials;

(B) Duplicating secure assessment materials;

(C) Disclosing the contents of any portion of secure assessment materials;

(D) Providing, suggesting, or indicating to an examinee a response or answer to any secure assessment items;

(E) Aiding or assisting an examinee with a response or answer to any secure assessment item;

(F) Changing or altering any response or answer of an

examinee to a secure assessment item;

(G) Failing to follow the specified testing procedures or to proctor students;

(H) Failing to administer the assessment on the designated testing dates;

(I) Encouraging or assisting an individual to engage in the conduct described in this subsection;

(J) Failing to report to appropriate authority that an individual has engaged in conduct set forth is this section;

(K) Failing to follow the specified procedures and required criteria for alternate assessments; or

(L) Failing to return the secured test booklets back to the testing company in a timely manner.

SECTION 5. Arkansas Code Title 6, Chapter 15, is amended to add an additional subchapter to read as follows:

6-15-1801. Public school student progression – Remedial instruction – Reporting requirements – Intent.

It is the intent of the General Assembly subsequent to §§ 6-15-1804 that:

(1) Each student's progression from one (1) grade to another be determined, in part, upon proficiency in reading, writing, and mathematics;

(2) District school board policies facilitate such proficiency; and

(3) Each student and his or her parent be informed of the student's academic progress.

6-15-1802. Public school student progression – Remedial instruction – Reporting requirements – Comprehensive program.

The State Board of Education shall establish a comprehensive program for student progression that shall include:

(1) Standards for evaluating each student's performance, including the student's mastery level with respect to the academic content standards;

(2) Specific levels of performance in reading, writing, and mathematics for each grade level and specific proficiency levels of

performance on statewide assessments including End of Course exams, below which a student shall be remediated within an intensive program that is different from the previous year's program and that takes into account the student's learning style; and

(3) Appropriate alternative education intervention programs as developed by the local school district in compliance with state and federal law and approved by the Department of Education for a student who has been retained two (2) consecutive years.

6-15-1803. Public school student progression — Remedial instruction — Reporting requirements — Assessment and remediation.

(a)(1) Each student shall participate in the statewide program of educational assessment required by § 6-15-433 and shall participate in an academic improvement plan when required as a result of the assessments. The Department of Education shall determine satisfactory proficiency levels and shall promulgate rules and regulations of the student's academic improvement plan.

(2) After the development of the plan, each student identified as not meeting satisfactory proficiency levels in the previous spring test shall participate in his or her activities outlined in his or her academic improvement plan. The district shall notify the student's parent of the parent's role and responsibilities as well as the consequences for the student's failure to participate in the plan. Beginning with the 2005-2006 school year, students in grades one through six (1-6) identified for an academic improvement plan who do not participate in the program shall be retained. Retention for failure to participate in the academic improvement plan shall expand by at least one (1) grade level for each subsequent academic year after implementation. The Department of Education shall submit a report to the House Interim Committee on Education and the Senate Interim Committee on Education prior to September 2004 of the established additional course requirements for failure to achieve proficiency on End of Course exams. These requirements shall become effective beginning with the 2009-2010 school year. Multiple opportunities to pass End of Course exams shall be provided as defined by the Department of Education. Prior to the 2009-2010 school year, students who are not proficient on the End of Course exams shall participate in a remediation program to receive credit for the

corresponding course.

(3) If the student has been identified as having a deficiency in literacy or mathematics, the academic improvement plan shall identify the student's specific areas of deficiency in these subjects, the desired levels of performance in these areas, and the instructional and support services to be provided to meet the desired levels of performance.

(4) Schools shall also provide for the frequent monitoring of the student's progress in meeting the desired levels of performance. Remedial instruction provided during high school may not be in lieu of English, mathematics, science, or history core courses required for graduation.

(b) Each student who does not meet the minimum performance expectations defined by the state board for the statewide assessment tests in reading, writing, and mathematics shall continue to be provided with remedial or supplemental instruction until the expectations are met or the student is not subject to compulsory school attendance.

(c) In the event this section is construed to conflict with or violate any federal regulations or guidelines, its enforcement shall be suspended pending compliance with the federal regulations or guidelines.

6-15-1804. Public school student progression – Remedial instruction – Reporting requirements – Reading deficiency and parental notification.

(a) It is the ultimate goal of the General Assembly that every student read at or above his or her grade level. Any student who exhibits a substantial deficiency in reading, based upon statewide assessments conducted in grades kindergarten through two (K-2), or through teacher observations, shall be given intensive reading instruction utilizing a reading program approved by the State Board of Education as soon as practicable following the identification of the reading deficiency. The student's reading proficiency shall be reassessed by utilizing assessments within the state board approved reading program. The student shall continue to be provided with intensive reading instruction until the reading deficiency is corrected.

(b) Beginning with the 2005-2006 school year, the parent or guardian of any student who exhibits a substantial deficiency in reading, as described in subsection (a) of this section, shall be notified in writing of the following:

(1) That his or her child has been identified as having a substantial deficiency in reading;

(2) A description of the current services that are provided to the child; and

(3) A description of the proposed supplemental instructional services and supports that will be provided to the child that are designed to remediate the identified area of reading deficiency.

6-15-1805. Public school student progression – Remedial instruction – Reporting requirements – Elimination of social promotion.

No student may be assigned to a grade level based solely on age or other factors that constitute social promotion, except as provided by applicable federal and state law.

6-15-1806. Public school student progression – Remedial instruction – Reporting requirements – Annual report.

(a) In addition to the requirements in § 6-15-1804(b), each district school board shall annually report to the parent or guardian of each student the progress of the student toward achieving state expectations for proficiency in reading, writing, and mathematics. The district school board shall report to the parent, guardian, or the student, if the student is eighteen (18) years of age or older, the student's results on each statewide assessment test. The evaluation of each student's progress shall be based upon the student's classroom work, observations, tests, state assessments, and other relevant information. Progress reporting shall be provided to the parent, guardian, or the student, if the student is eighteen (18) years of age or older, in writing in a format adopted by the district school board which is consistent with § 6-15-1901(b).

(b) Beginning with the 2004-2005 school year, each district school board shall annually publish in the local newspaper the school performance report required by § 6-15-1402 and report in writing to the State Board of Education by October 15 of each year, the following information on the prior school year or the latest information available:

(1) By grade level, economic status, and ethnicity, the number and percentage of all students in grades kindergarten through twelve (K-12) performing at each category level on the Benchmark exams, on End of Course

exams, and the percentile rankings by school and grade level on norm-referenced exams, any other assessments as required by the State Board of Education, the number of students taking advanced placement courses, the number taking the advanced placement exams, and the percent of students making a 3.0, 4.0, or 5.0 on advanced placement exams;

(2) By grade level the number and percentage of all student retained in grades one through eight (1-8);

(3) The graduation rate, grade inflation rate, drop-out rate for grades nine through twelve (9-12) and college remediation rate;

(4) Number of students transferring pursuant to the unsafe school provision of § 6-15-439; and

(5) Number of students transferring pursuant to the Arkansas Opportunity Public School Choice Act of 2003 § 6-18-227 et seq.

(c) This section shall apply to the extent that it is not in violation of applicable state or federal law.

6-15-1807. Public school student progression – Remedial instruction – Reporting requirements – State Board of Education authority and responsibilities.

The state board shall adopt rules for the administration of this subchapter pursuant to the Arkansas Administrative Procedure Act, § 25-15-201 et seq.

6-15-1808. Public school student progression – Remedial instruction – Reporting requirements – Technical assistance.

(a) The Department of Education shall provide technical assistance as needed to aid school districts in administering this subchapter.

(b)(1) The Department of Education shall, at least semi-annually, provide a report to the House Interim Committee on Education and the Senate Interim Committee on Education setting forth the districts requesting assistance, the date of the requests, the dates and actions taken.

(2) The Department of Education shall further report the results of the action taken or assistance provided.

SECTION 6. Arkansas Code Title 6, Chapter 15, is amended to add an additional subchapter to read as follows:

6-15-1901. School rating system — Annual reports.

(a) The Department of Education shall prepare annual reports of the results of the statewide assessment program which describe student achievement in the state, each district and each school, as well as the school performance category levels pursuant to §§ 6-15-1902 and 6-15-1903. The department shall prescribe the design and content of these reports that shall include, without limitation, descriptions of achievement of all schools participating in any assessment program and all of their major student populations as determined by the department, provided that the provisions of § 6-15-415 pertaining to student records apply to this section. Annual school performance reports shall be sent to all parents or guardians, posted on the department's website, and published by the local school district in the local newspaper.

(b) The department shall provide information regarding performance of students and educational programs as required pursuant to §§ 6-15-433 and 6-15-2301 and implement a system of school reports as required by statute and State Board of Education rule. Annual school performance reports shall be in an easy-to-read format and shall include both the school improvement and performance level designations.

(c) The annual report shall designate two (2) category levels for each school, one (1) for the school's improvement gains, tracked longitudinally and using value-added calculations on the criterion-referenced test as defined in § 6-15-404(g)(1), in the latest available test results, known as the annual improvement category level and one (1) based on performance from the prior year on the criterion-referenced test as defined in § 6-15-404(g)(1) and End of Course exams, hereafter referred to as annual performance pursuant to § 6-15-1903. If the criterion-referenced test is not in compliance with § 6-15-404(g)(1), then the Department of Education shall rely on other assessments as defined in 6-15-404(g)(1) test for the calculation of the improvement level.

6-15-1902. School rating system — Annual improvement category levels.

(a) For the designation determined by annual improvement, annual improvement gains on criterion-referenced tests, as defined in § 6-15-404(g)(1), shall identify schools as being in one (1) of the following category levels defined according to rules of the State Board of Education:

(1) "Level 5", schools of excellence for improvement;

(2) "Level 4", schools exceeding improvement standards;

(3) "Level 3", schools meeting improvement standards;

(4) "Level 2", schools on alert; or

(5) "Level 1", schools in need of immediate improvement.

(b) The base year for improvement gains shall be established in the 2006-2007 school year, with annual improvement category levels assigned in the 2007-2008 school year and each school year thereafter.

(c) School annual improvement category level designations shall be based on the following:

(1) A combination of student achievement scores as measured by annual academic gain scores on criterion-referenced tests, as defined in § 6-15-404(g)(1), or assessments in grades kindergarten through twelve (K-12);

(2) Student assessment data used to determine annual improvement category levels shall include the aggregate scores of the combined population;

(d) The state board shall adopt appropriate criteria for each school improvement category levels.

(e) Schools that receive an annual improvement category levels of Level 5 or Level 4 are eligible for school recognition awards and performance-based funding pursuant to § 6-15-1909.

6-15-1903. School rating system – Annual Performance Goals -School annual performance category levels.

(a) The annual report shall identify schools as being in one (1) of the following category levels, based on the criterion-referenced Benchmark exams, as defined in 6-15-404(g)(1), and defined according to rules of the State Board of Education:

(1) "Level 5", schools of excellence;

(2) "Level 4", schools exceeding standards;

(3) "Level 3", schools meeting standards;

(4) "Level 2", schools on alert; or

(5) "Level 1", schools in need of immediate improvement.

(b)(1) For the years 2004-2005 through 2008-2009, schools will not be assigned annual performance category levels, unless an annual performance category levels is requested by the school.

(2) For schools that receive an improvement category level of Level 5 or Level 4 in the 2009-2010 and 2010-2011 school years, the performance category level may be waived.

(c)(1) For all schools that have received an annual performance category levels of Level 1 for two (2) consecutive years, the students in these schools shall be offered the opportunity public school choice option with transportation provided pursuant to § 6-18-227 et seq.

(2) In addition, the school district board shall provide supplemental educational services, approved by the State Board, to affected students.

(d) The state board shall adopt appropriate criteria for each school performance category levels.

(e) Schools that receive an annual performance category level of Level 5 or Level 4 are eligible for school recognition awards and performance-based funding pursuant to § 6-15-1907.

6-15-1904. Mobility.

The Department of Education shall study the effects of mobility on the performance of highly mobile students and recommend programs to improve the performance of such students.

6-15-1905. School rating system – School improvement and performance category level and improvement and performance rating reports.

(a) School annual improvement and performance category level designations and ratings shall apply to each school's achievement for the year in which the achievement is measured.

(b) Each school's designation and rating shall be published annually by the Department of Education and the school district, and shall be available on the department's website. Parents and guardians shall be entitled to an easy-to-read written report describing the designation and rating of the school in which their child is enrolled.

6-15-1906. School rating system – Improvement and performance category levels - Annual.

The State Board of Education shall adopt rules necessary to implement § 6-15-1901 et seq. pursuant to the Arkansas Administrative Procedure Act, §

25-15-201 et seq.

6-15-1907. Arkansas School Recognition Program.

(a) The General Assembly finds that there is a need for an incentive program for outstanding schools. The General Assembly further finds that performance-based incentives are commonplace in the private sector and should be infused into the public sector as a reward for productivity.

(b) The Arkansas School Recognition Program is created to provide financial awards to public schools that are at:

(1) A category level of Level 5 or Level 4 pursuant to § 6-15-1903 and at least a Level 3 pursuant to § 6-15-1902; or

(2) A category level of Level 5 or Level 4 school pursuant to § 6-15-1902.

(c) Each school meeting the requirements set out in subdivisions (b)(1) or (b)(2) of this section shall receive performance-based funding in the amount of one hundred dollars ($100) per student who participated in the school's assessment program. All schools meeting both criteria shall receive rewards for both categories. Each school that receives performance-based funding shall submit a proposal for its spending of the performance-based funding to the Department of Education. The department shall review and approve each proposal. The department shall approve spending of performance-based funding for academic expenses only as set forth in subsection (f) of this section.

(d) All public schools, including charter schools, that receive school category levels pursuant to §§ 6-15-1902 and 6-15-1903 are eligible to participate in the program.

(e) All eligible schools shall receive performance-based funding. Funds shall be distributed to the school's fiscal agent and placed in the school's account and shall be used for purposes listed in subsection (f) of this section as determined by a committee which shall include the principal, a teacher elected by the faculty, and a parent representative selected by the local Parent Teacher Association or some other local parental involvement group. The committee shall make its determination by December 15 of each applicable year.

(f) School recognition awards shall be used for the following:

(1) Nonrecurring bonuses to the faculty and staff;

(2) Nonrecurring expenditures for educational equipment or materials to assist in maintaining and improving student performance; or

(3) Temporary personnel for the school to assist in maintaining and improving student performance.

(g) The General Assembly shall appropriate and fund sufficient funds to implement this section.

SECTION 7. Arkansas Code Title 6, Chapter 18, Subchapter 2 is amended to add an additional section to read as follows:

6-18-227. Title.

(a)(1) This section may be referred to and cited as the "Arkansas Opportunity Public School Choice Act of 2004".

(2) The purpose of this section is to provide enhanced opportunity for students in this state to gain the knowledge and skills necessary for postsecondary education, a technical education, or the world of work. The General Assembly recognizes that the Arkansas Constitution, as interpreted by the Arkansas Supreme Count in Lake View School District No. 25 v. Mike Huckabee, 351 Ark. 31 (2002), makes education a paramount duty of the state. The General Assembly finds that the State Constitution requires the state to provide an adequate education. The General Assembly further finds that a student should not be compelled, against the wishes of the parent, guardian, or the student, if the student is over eighteen (18) years of age, to remain in a school designated as a Level 1 school under § 6-15-1903 for two (2) or more consecutive years. The General Assembly shall make available a public school choice option in order to give a child the opportunity to attend a public school that is performing satisfactorily. The Arkansas Opportunity Public School Choice Act shall take effect with the implementation of school performance category levels.

(3) The General Assembly further finds that giving more options to parents and students with respect to where the students attend public school will increase the responsiveness and effectiveness of the state's schools, since teachers, administrators, and school board members will have added incentives to satisfy the educational needs of the students who reside in the district.

(4) A public school choice program is hereby established to enable any student to transfer from a failing school to another public school

in the state, subject to the restrictions contained in this section.

(b)(1) Upon the request of a parent, guardian, or the student, if the student is over eighteen (18) years of age, a student may transfer from his or her resident district to another public school in accordance with the provisions of this section if:

(A) The resident public school has been designated pursuant to § 6-15-1903 as a Level 1 school for two (2) or more consecutive school years; and

(B) The parent, guardian, or the student, if the student is over eighteen (18) years of age, has notified the Department of Education and both the sending and receiving school districts of the request for a transfer no later than July 30 of the first year in which the student intends to transfer.

(2)(A) For the purposes of continuity of educational choice, the transfer shall operate as an irrevocable election for each subsequent entire school year and shall remain in force until the student completes high school or the parent, guardian, or the student, if the student is over eighteen (18) years of age, makes application no later than July 30 for attendance or transfer as provided for by §§6-18-202, 6-18-206, and 6-18-316. Such transfer shall be effective at the beginning of the next academic year.

(B) Application for the Arkansas Opportunity Public School Choice Act of 2004 shall be provided by the Department of Education and shall contain a notice that a transfer under this subsection shall operate as an irrevocable choice for at least one (1) entire school year, and shall remain in force until the student completes high school as provided in this subsection, and except as otherwise provided by law.

(3)(A) A school district shall, for each student enrolled in or assigned to a school that has been designated as a Level 1 school for two (2) or more consecutive school years:

(i) Timely notify the parent, guardian, or the student, if the student is over eighteen (18) years of age, as soon as such practicable after such designation is made of all options available pursuant to this section; and

(ii) Offer the parent, guardian, or the student, if the student is over eighteen (18) years of age, an opportunity to enroll the student in any public school that has been designated by the state pursuant *to § 6-15-1903 as a school performing higher than that in which the student is currently enrolled or to which the student has been assigned, but not less than annual performance category Level 3. The opportunity to continue attending the higher performing public school shall remain in force until the student graduates from high school.*

(B) The parent or guardian of a student enrolled in or assigned to a school that has been designated as a school in Level 1 under § 6-15-1903 for two (2) or more consecutive years may choose as an alternative to enroll the student in a legally allowable category Level 3 or higher performing public school nearest to the student's legal residence. That school or school district shall accept the student and report the student for purposes of the funding pursuant to applicable state law.

(C) Students with disabilities who are eligible to receive services from the school district under federal or state law, including students receiving additional funding through Federal Title Programs specific to the Elementary and Secondary Education Act, and who participate in this program, remain eligible to receive services from the school district as provided by federal or state law and any funding for such student shall be transferred to the district to which the student transfers.

(c)(A) Transportation costs shall be the responsibility of the state, and the State Board of Education shall establish rules pertaining to state reimbursement of transportation costs.

(B) However, upon the transferring district receiving a category Level 3 or higher for its annual performance, then the transportation costs shall no longer be the responsibility of the state, and the student's transportation and the costs thereof shall be the responsibility of the parents.

(d)(1) Each district school board shall offer the opportunity public school choice option within the public schools. The opportunity public school choice option shall be offered in addition other to other existing choice programs.

(2) In the event that the opportunity public school choice option results in a receiving district requiring temporary facilities or faculty as a result of and to accommodate the additional students, expenses related thereto in excess of that received for each student electing the opportunity public school choice option shall be borne by the state.

(e) The provisions of this section and all student choice options created in this section are subject to the limitations of § 6-18-206(d) through (f):

(f) The department shall develop an annual report on the status of school choice and deliver the report to the State Board of Education, the Governor, and the Legislative Council at least ninety (90) days prior to the convening of the regular session of the General Assembly.

(g) Each district school board shall annually report the number of students applying for and attending the various types of public schools of choice in the district, including schools such as magnet schools, according to rules adopted by the state board.

(h)(1) A receiving district shall accept credits toward graduation that were awarded by another district.

(2) The receiving district shall award a diploma to a nonresident student if the student meets the receiving district's graduation requirements.

(i) For purposes of determining a school district's state equalization aid, the nonresident student shall be counted as a part of the average daily membership of the district to which the student has transferred.

(j)(1) All school districts shall report to the department on an annual basis the race, gender, and other pertinent information needed to properly monitor compliance with the provisions of this section.

(2) The reports may be on those forms that are prescribed by the department or the data may be submitted electronically by the district using a format authorized by the department.

(3) The department may put on probation the superintendent of any school district that fails to file its report each year or fails to file any other information with a published deadline requested from school districts by the department so long as thirty (30) calendar days are given between the request for the information and the published deadline.

(4) A copy of the report shall be provided to the Joint Interim Committee on Education.

(k)(1) Any student participating in the opportunity public school choice option shall remain in attendance throughout the school year, unless excused by the school for illness or other good cause, and shall comply fully with the school's code of conduct.

(2) The parent or guardian of each student participating in the opportunity public school choice option shall comply fully with the receiving public school's parental involvement requirements, unless excused by the school for illness or other good cause.

(3) The parent or guardian shall ensure that the student participating in the opportunity public school choice option takes all statewide assessments, including, but not limited to, Benchmark exams, required pursuant to § 6-15-433.

(4) A participant who fails to comply with this section shall forfeit the opportunity public school choice option.

(l)(1) The maximum opportunity public school choice funds granted for an eligible student shall be calculated based on applicable state law.

(2) The receiving school district shall report all students who transfer from another public school under this program. The students attending public schools pursuant to the opportunity public school choice option shall be reported separately from those students reported for purposes of compliance with applicable state law.

(3) The public school that provides services to students with disabilities shall receive funding as determined by applicable federal and state law.

(m) The state board shall adopt any rules necessary for the implementation of the Arkansas Opportunity Public School Choice Act of 2004, § 6-18-227 et seq. pursuant to the Arkansas Administrative Procedure Act, § 25-15-201 et seq.

(n) Losses in revenue to a district directly related to the transfer of students pursuant to this section shall not be considered when determining a district's eligibility for funding pursuant to § 6-20-326 or other school funding formulas as approved by the General Assembly.

(o) A district under this program shall request public service announcements to be made over the broadcast media and in the print media at such times and in such manner as to inform parents or guardians of students in adjoining districts of the availability of the program, the application deadline, and the requirements and procedure for nonresident students to participate in the program.

SECTION 8. Arkansas Code Title 6, Chapter 15, is amended to add an *additional subchapter to read as follows:*

6-15-2001. Implementation of state system of school improvement and education accountability.

(a) The Department of Education is responsible for implementing and maintaining a system of intensive school improvement and education accountability that shall include policies and programs to implement the following:

(1) A system of data collection and analysis that will improve information about the educational success of individual students and schools. The information and analyses shall be capable of identifying educational programs or activities in need of improvement and reports prepared pursuant to this section shall be distributed to the appropriate district school boards prior to distribution to the general public. No disclosure shall be made that is in violation of applicable federal or state law;

(2) A program of school improvement that will analyze information to identify schools educational programs or educational activities in need of improvement;

(3) A method of delivering services to assist school districts and schools to improve; and

(4) A method of coordinating the state educational goals and school improvement plans with any other state program that creates incentives for school improvement.

(b) The department shall be responsible for the implementation and maintenance of the system of school improvement and education accountability outlined in this section. There shall be an annual determination of whether each school is progressing toward implementing and maintaining a system of school improvement.

(c) If progress is not being made, the local school district shall prepare and implement a revised school improvement plan. The department and State Board of Education shall monitor the development and implementation of the revised school improvement plan.

(d) The department shall report to the Legislative Council and recommend changes in state policy necessary to foster school improvement and education accountability. Included in the report shall be a list of the schools for which district school boards have developed assistance and intervention plans and an analysis of the various strategies used by the

school boards. School reports shall be distributed pursuant to this subsection (d) and § 6-15-1901 and according to rules adopted by the state board.

(e)(1) The department shall implement a training program to develop among state and district educators a cadre of facilitators of school improvement. These facilitators shall assist schools and districts to conduct needs assessments and develop and implement school improvement plans to meet state goals.

(2) Upon request, the department shall provide technical assistance and training to any school, school district, or district school board for conducting needs assessments, developing and implementing school improvement plans, developing and implementing assistance and intervention plans, or implementing other components of school improvement and accountability. Priority for these services shall be given to schools designated as school districts in academic distress or schools in need of school improvement under state or federal law. The Department of Education shall, no less than semi-annually, provide a report to the House Interim Committee on Education and the Senate Interim Committee on Education setting forth the districts requesting assistance, the state of each request, and the dates and actions taken. The Department of Education shall further report the results of the actions taken or assistance provided.

(3) The department shall provide technical assistance to each school that is designated as a Level 1 school or a Level 2 school under § 6-15-1903 to develop a revised school improvement plan.

(f) As a part of the system of educational accountability, the department shall:

(1) Develop minimum performance standards for various grades and subject areas, as required in §§ 6-15-404 and 6-15-433;

(2) Administer the statewide assessment testing program created by § 6-15-433; and

(3) Conduct or contract with a provider to conduct the program assessments required by § 6-15-403; and

(4) Conduct or contract with any provider for implementation for any part or portion of this act; and

(5) Perform any other functions that may be involved in educational planning, research, and evaluation or that may be required by the

state board rules and regulations or federal or state law.

SECTION 9. Arkansas Code Title 6, Chapter 15 is amended to add an additional subchapter to read as follows:

6-15-2101. Best financial management practices for school districts – Standards – Reviews – Designation of school districts.

(a) The purpose of best financial management practices reviews are to improve Arkansas school district management's use of resources and to identify cost savings. The Department of Education and the Division of Legislative Audit of the Legislative Joint Auditing Committee of the General Assembly are directed to develop a system for reviewing the financial management practices of school districts. In this system, the division shall assist the department in examining district operations to determine whether they meet "best financial management code practices".

(b) The best financial management practices adopted by the State Board of Education may be updated periodically after consultation with the Legislative Council, the Governor, the department, school districts, and the division. The department shall submit to the state board for review and possible adoption proposed revisions to the best financial management practices adopted by the state board and reviewed by the Legislative Council. Revised best financial management practices adopted by the state board shall be used in the next scheduled school district reviews conducted according to this section. The best financial management practices, at a minimum, shall be designed to instill public confidence by addressing the school district's use of resources, identifying ways that the district could save funds, and improving districts' performance accountability systems, including public accountability. To achieve these objectives, best practices shall be developed for, but need not be limited to, the following areas:

(1) Management structures;

(2) Performance accountability;

(3) Efficient delivery of educational services, including instructional materials;

(4) Administrative and instructional technology;

(5) Personnel systems and benefits management;

(6) Facilities construction;

(7) Facilities maintenance;

(8) Student transportation;

(9) Food service operations;

(10) Cost control systems, including asset management, risk management, financial management, purchasing, internal auditing, and financial auditing;

(11) Athletics; and

(12) Other extra-curricular activities.

(c) The department shall conduct the reviews or contract with a private firm selected through a formal request for proposal process to perform the review. At least one (1) member of the private firm review team shall have expertise in school district finance. The scope of the review shall focus on the best practices adopted by the state board pursuant to subsection (b) of this section.

(d) The state board shall consult with the department throughout the best practices review process to ensure that the technical expertise of the department benefits the review process and supports the school districts before, during, and after the review.

(e)(1) Each school district shall be subject to a best financial management practices review. The General Assembly also intends that all school districts shall be reviewed biennially by on-site visits and shall be given one of the following designations:

(A) "A", schools comprehensively complying with best financial practices;

(B) "B", schools complying with best financial practices at significant levels;

(C) "C", schools adequately complying with best financial practices;

(D) "D", schools less than adequately complying with best financial practices; or

(E) "F", schools failing to comply with best financial practices.

(2) The department shall prepare annual reports of the results of the best financial management practices reviews and shall post to its website the school and the district financial grades. The report, which shall be part of the overall school and district report card requirement pursuant to § 6-15-1806, shall include both revenue sources and

expenditures. The reporting of expenditures shall include breakdowns of administrative, instructional, support, and operations expenditures, as well as any other financial commitments of the school and district.

(f) The Legislative Council may adjust the schedule of districts to be reviewed when unforeseen circumstances prevent initiation of reviews scheduled.

(g) The department, subject to funding by the General Assembly, may contract with a private firm to conduct best financial management practices reviews.

(h) Reviews shall be conducted by the division, the department, or the consultant. Funds may be used for the cost of reviews by the division and private consultants contracted by the state board. Costs may include professional services, travel expenses of the department and of the staff of the division, and any other necessary expenses incurred as part of a best financial management practices review and as preapproved by the department.

(i) Districts shall complete a self-assessment instrument provided by the department that indicates the school district's evaluation of its performance on each best practice. The district shall begin the self-assessment no later than sixty (60) days prior to the commencement of the review. The completed self-assessment instrument and supporting documentation shall be submitted to the department no later than the date of commencement of the review as notified by the department. The best practices review team will use this self-assessment information during their review of the district.

(j) During the review, the department or the consultant conducting the review, if any, shall hold at least one (1) advertised public forum as part of the review in order to explain the best financial management practices review process and obtain input from students, parents or guardians, the business community, and other district residents regarding their concerns about the operations and management of the school district.

(k) District reviews conducted under this section shall be completed within six (6) months after commencement. The department shall issue a final report to the Legislative Council regarding the district's use of best financial management practices and cost savings recommendations within sixty (60) days after completing the reviews. Copies of the final report shall be provided to the Governor, the state board, the district superintendent, and

the districts' school board members. The district superintendent shall notify the press that the final report has been delivered. The notification shall state the department's website address at which an electronic copy of the report is available.

(l)(1) If the district is found not to conform to best financial management practices, the report shall contain an action plan, taking public input into consideration, detailing how the district could meet the best practices within two (2) years. The district school board shall develop and approve the implementation schedule within sixty (60) days after receipt of the final report. If a district fails to vote on the action plan within sixty (60) days, the district superintendent and school board members shall be required to appear and present testimony before the state board and the Legislative Council.

(2) Within sixty (60) days after the receipt of the final report, the district school board shall notify the state board and the department in writing of the implementation schedule for the action plan. The department shall contact the school district, assess the situation, and offer technical assistance, if needed.

(m) After a district school board votes to implement the action plan:

(1) No later than six (6) months after receipt of the final best financial practices report, the district school board shall submit an initial status report to the Governor, the state board, the division, the department and the Legislative Council on progress made toward implementing the action plan and whether changes have occurred in other areas of operation that would affect compliance with the best practices; and

(2)(A) A second status report shall be submitted by the school district to the Governor, the state board, the division, the department, and the Legislative Council no later than six (6) months after submission of the initial report, and every six (6) months thereafter, until status reports are not required.

(B) Status reports are not required once the state board concludes that the district is using best financial management practices and the district is designated a grade category "A" for its financial practices.

(n) School districts that are determined in their review to be using the best practices and are graded a category "A" pursuant to subsection (e) of this section, shall receive a "Seal of Best Financial Management". The

state board designation shall be effective until a district's financial accountability grade decreases. The state board shall revoke the designation of a district school board at any time if it determines that a district is no longer complying with the state's best financial management practices.

(o) District school boards that receive a best financial management practices review shall maintain records that will enable independent verification of the implementation of the action plan and any related fiscal impacts.

(p) Unrestricted cost savings resulting from implementation of the best financial management practices shall be spent at the school and classroom levels for teacher salaries, teacher professional development, improved classroom and school facilities, student supplies, textbooks, classroom technology, and other direct student instruction activities. Cost savings identified for a program that has restrictive expenditure requirements shall be used for the enhancement of the specific program. If the district is in fiscal distress, the cost savings may be used in accordance with the fiscal distress plan.

SECTION 10. Arkansas Code Title 6, Chapter 15 is amended to add an additional subchapter to read as follows:

6-15-2201. Postsecondary feedback of information to high schools.

(a) Representatives from the Arkansas Department of Higher Education and the Arkansas Department of Education will meet with the chairmen of the Senate and House Education Committees or their designees along with the selected superintendents, high school principals, and high school counselors once every biennium to review the Arkansas Placement Status Reports to determine if any revisions in the format of the reports, the information that is reported, or the reporting process need to be made. Agreed upon changes would be reported to the Arkansas Higher Education Coordinating Board, the Arkansas State Board of Education and the Senate and House Education Committees.

(b) The department shall report, by high school, to the state board and the General Assembly, no later than November 30 of each year, on the number of prior-year Arkansas high school graduates who enrolled for the first time in public postsecondary education in this state during the previous summer, fall, or spring term indicating the number of students whose scores on the common placement test indicated the need for remediation through college-preparatory instruction, provided such disclosure is not in conflict with applicable federal or state law.

(c) The department shall organize school summary reports and student-level records by school district and high school in which the postsecondary education students were enrolled and report the information to each school district no later than January 31 of each year, provided such information is not in conflict with federal or state law.

(d) As a part of the school improvement plan pursuant to § 6-15-2001, the state board shall ensure that each school district and high school develops strategies to improve student readiness for the public postsecondary level based on annual analysis of the feedback report data.

(e) The department shall biennially recommend to the General Assembly statutory changes to reduce the incidence of postsecondary remediation in mathematics, reading, and writing for first-time-enrolled recent high school graduates.

SECTION 11. Arkansas Code § 6-15-419 is amended to read as follows:

6-15-419. Definitions.

The following definitions shall apply in this subchapter, 6-15-1801 et seq., 6-15-1901 et seq., 6-18-227, 6-15-2001, 5-15-2101, and 6-15-2201, unless the context otherwise requires:

(1) "Academic Content Standards" means standards which are approved by the State Board of Education and set the skills to be taught and mastery level for each grade and content area;

~~(1)(A)~~(2)(A) "Academic improvement plan" means a plan detailing supplemental or intervention and remedial instruction, or both, in deficient academic areas for any student who is not proficient on a portion or portions of the state-mandated ~~criterion-referenced assessments~~ Arkansas Comprehensive Assessment Program.

(B)(i) Such a plan shall be created and implemented by appropriate teachers, counselors, and any other pertinent school personnel.

(ii) All academic improvement plans shall be annually reviewed and revised to ensure an opportunity for student demonstration of proficiency in the targeted academic areas on the next *state-mandated ~~criterion-referenced assessments~~ Arkansas Comprehensive Assessment Program.*

(iii) A cumulative review of all academic improvement plans shall be part of the data used by the school in creating and revising its comprehensive school improvement plan.

(iv) All academic improvement plans shall be subject to review by the Department of Education.

(C) In any instance where a student with disabilities identified under the Individuals with Disabilities Education Act has an individualized education program that already addresses any academic area or areas in which the student is not proficient on state-mandated criterion-referenced assessments, the individualized education program shall serve to meet the requirement of an academic improvement plan;

~~(2)~~(3) "Adequate yearly progress" means that level of academic improvement required of public schools or school districts on the state-mandated criterion-referenced examinations and other indicators as required in the Arkansas Comprehensive Testing, Assessment, and Accountability Program, which shall comply with The Elementary and Secondary Education Act as reauthorized in The No Child Left Behind Act of 2001, 20 U.S.C. § 6301, et seq. (2002);

~~(3)~~(4) "Annexation" means the joining of an affected school district or part of the school district with a receiving district under §§ 6-13-1401 et seq.;

(5) "Annual improvement gains" or "student learning gains" means calculating a student's academic progress from one year to the next, based on a same series nationally-normed assessment given in the same time frame from one (1) year to the next, used as a pre-post measure of learning for the content areas tested;

(6) "Ánnual performance" means that level of academic achievement required of public schools or school districts on the state-mandated criterion-referenced examinations;

(7) "Arkansas Comprehensive Assessment Program " means the testing component of Arkansas Comprehensive, Testing, Assessment, and Accountability Program which shall consist of developmentally appropriate assessments for Kindergarten, grades one and two (K-2), national norm-referenced tests in grades three through nine (3-9), any other assessments as

required by the State Board of Education, criterion-referenced tests for grades three through eight (3-8), or other assessments which are based on researched best practices as determined by qualified experts which would be in compliance with federal and state law, and End of Course exams for designated grades and content areas

(8) "Arkansas Comprehensive Testing, Assessment, and Accountability Program" means a comprehensive system that focuses on high academic standards, professional development, student assessment, and accountability for schools;

~~(4)~~(9) "Comprehensive school improvement plan" means the individual school's comprehensive plan based on priorities indicated by assessment and other pertinent data and designed to provide an opportunity for all students to demonstrate proficiency on all portions of state-mandated ~~criterion-referenced assessments~~ Arkansas Comprehensive Assessment Program;

~~(5)~~(10) "Consolidation" means the joining of two (2) or more school districts or parts of the school districts to create a new single school district under §§ 6-13-1401 et seq.;

~~(6)~~(11) "Department" means the Department of Education;

~~(7)~~(12) "District improvement plan" means a districtwide plan coordinating the actions of the various comprehensive school improvement plans within a district. The main focus of the district improvement plan shall be to ensure that all students demonstrate proficiency on all portions of state-mandated ~~criterion-referenced assessments~~ Arkansas Comprehensive Assessment Program;

~~(8)~~(13) "Early intervention" means short-term, intensive, focused, individualized instruction developed from ongoing, daily, systematic diagnosis that occurs while a child is in the initial, kindergarten through grade one (K-1), stages of learning early reading, writing, and mathematical strategies to ensure acquisition of the basic skills and to prevent the child from developing poor problem-solving habits which become difficult to change. The goal is to maintain a student's ability to function proficiently at grade level;

~~(9)~~(14) "End of Course" means an examination taken at the completion of a course of study to determine whether a student demonstrates attainment of the knowledge and skills necessary to mastery of that subject;

(15) "Grade inflation rate" means the statistical gap between

actual grades assigned for core classes at the secondary level and student performance on corresponding subjects on nationally normed college entrance exams, such as the American College Test;

~~(10)~~(16) "Grade level" means performing at the proficient or advanced level on state-mandated ~~criterion-referenced~~ Arkansas Comprehensive Assessment Program tests;

~~(11)~~(17) "High school" means grades nine through twelve (9-12);

(18) "Longitudinal tracking" means tracking individual student yearly academic achievement gains based on scheduled and annual assessments;

~~(12)~~(19) "Middle level" means grades five through eight (5-8);

(20) "No Child Left Behind Act" means the No Child Left Behind Act of 2001 signed into federal law on January 8, 2002;

(21)(A) "Parent" means a parent, parents, legal guardian, a person standing in loco parentis, or legal representative, as appropriate, of a student; or

(B) The student if the student is eighteen (18) years of age or older;

~~(13)~~(22) "Point-in-time intervention and remediation" means intervention and remediation applied during the academic year upon the discovery that a student is not performing at grade level;

~~(14)~~(23) "Primary" means kindergarten through grade four (K-4);

~~(15)~~(24) "Public school" means those schools or school districts created pursuant to title 6 of the Arkansas Code and subject to the Arkansas Comprehensive Testing, Assessment, and Accountability Program except specifically excluding those schools or educational programs created by or receiving authority to exist pursuant to § 6-15-501, § 9-28-205, §§ 12-29-301 et seq., or other provisions of Arkansas law;

~~(16)~~(25) "Public school in school improvement" or "school ~~distri~~ct in school in need of immediate improvement" means any public school or public school district identified as failing to meet certain established levels of academic achievement on the state-mandated criterion-referenced and norm referenced tests as required by the State Board of Education in the program;

~~(17)~~(26) "Reconstitution" means a reorganization intervention in the administrative unit or governing body of a public school district, including, but not limited to, the suspension, reassignment, replacement, or *removal of a current superintendent or the suspension, removal, or replacement of some or all of the current school board members, or both;*

~~(18)(A)(i)~~(27)(A)(i) "Remediation" means a process of using diagnostic instruments to provide corrective, specialized, supplemental instruction to help a student in grades two through four (2-4) overcome academic deficiencies.

(ii) For students in grades five through twelve (5-12), remediation shall be a detailed, sequential set of instructional strategies implemented to remedy any academic deficiencies indicated by below-basic or basic performance on the state-mandated criterion-referenced assessments.

(B) Remediation shall not interfere with or inhibit student mastery of current grade level academic learning expectations;

~~(19)~~(28) "School district in academic distress" means any public school district failing to meet the minimum level of academic achievement on the state-mandated criterion-referenced examinations as required by the State Board of Education in the program;

(29) "School improvement plan" means the individual school's comprehensive plan based on priorities indicated by assessment and other pertinent data and designed to ensure that all students demonstrate proficiency on all portions of state-mandated Arkansas Comprehensive Assessment Program exams;

~~(20)~~(30) "Social promotion" means the passage or promotion from one grade to the next of a student who has not demonstrated knowledge or skills required for grade-level academic proficiency;

~~(21)~~(31) "State board" means the State Board of Education; ~~and~~

~~(22)~~(32) "Uniform school readiness screening" means uniform, objective evaluation procedures which are geared to either kindergarten or first grade, as appropriate, and developed by the state board and specifically formulated for children entering public school for the first time~~.~~; and

(33) Value-added computations of student gains are statistical analyses of the educational impact of the school's instructional delivery system on individual student learning, using a comparison of previous and post student achievement gains against a national cohort.

SECTION 12. <u>Comprehensive Financial Impact Study.</u>

<u>The Department of Education shall conduct a comprehensive financial impact study of the cost of implementing the requirements of this act. The results of the study shall be presented to the House Committee on Education and the Senate Committee on Education by February 1, 2005. If necessary, the department shall supplement or modify its initial report . Any such supplemental report shall be completed and presented to the committees by February 1, 2007.</u>

SECTION 13. <u>Effective date.</u>

<u>Unless otherwise provided herein, this subchapter shall become effective on July 1, 2004.</u>

SECTION 14. <u>EMERGENCY CLAUSE. It is found and determined by the General Assembly of the State of Arkansas that the Arkansas Supreme Court in Lake View School District No. 25 v. Huckabee, 351 Ark. 31 (2002) has declared the now current system of education to be unconstitutional because it is both inequitable and inadequate; that the Arkansas Supreme Court has set forth the test for a constitutional system to be one in which the state has an "absolute duty" to provide and "equal opportunity to an adequate education"; that the Arkansas Supreme Court has instructed the General Assembly to define and provide what is necessary to provide an adequate and equitable education for the children of Arkansas. Therefore, an emergency is declared to exist and this act being immediately necessary for the preservation of the public peace, health, and safety shall become effective on:</u>

<u>(1) The date of its approval by the Governor;</u>

<u>(2) If the bill is neither approved nor vetoed by the Governor, the expiration of the period of time during which the Governor may veto the bill; or</u>

<u>(3) If the bill is vetoed by the Governor and the veto is overridden, the date the last house overrides the veto.</u>

/s/ Bryles, et al

APPROVED: 1/14/2004

Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
Arkansas Standards and Indicators for School Improvement	SCHOOL INTERVENTIONS (Interventions from previous categories or labels can be assessed and continued if progress is being made.)					
Academic Performance	Ensure that each student experiences a rigorous curriculum aligned to the Arkansas Curriculum Framework	X	X			
	**Analyze test data and secondary indicators to determine school improvement plans*	X	X			
	Identify content, subpopulations and secondary indicators to be continually monitored for growth; using a math and literacy "Assessment Wall" to track grade level, classroom and student growth	X	X			
	Implement targeted research-based practices that address the specific needs of the subpopulation identified for math and literacy	X				
	Implement targeted research-based practices that address the specific needs of all students identified as below proficient		X			
	Assess student learning frequently with standards-based assessments		X			
	Provide additional time on task by implementing quality after school, before school, and/or summer school for the purpose of alternative instruction, small group intervention, one-to-one intervention or acceleration for schools		X – Year 3			
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X		
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*				X	

* *Interventions in italics indicate efforts currently being done by or with most or all schools.*

Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
Learning Environment	**Provide state-approved SES *or* offer PSC to all students* — **Provide state-approved SES <u>or</u> offer PSC to all students*	X – Year 1	X – Year 1			
	**Provide state-approved SES <u>and</u> offer PSC to all students at the school*	X- Year 2 & 3	X- Year 2 & 3	X	X	X
	Require schools to post math and/or literacy AIP or IRI on-line	X	X			
	Participate in professional development on how to analyze and effectively use data	X	X			
	Implement a quality instructional coaching model with trained educators for math and/or literacy	X – Year 3	X – Year 3			
	**Require teachers to make individual professional development plans based on student data and classroom observations*	X	X			
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X		
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*				X	
Efficiency	Require documentation of daily "classroom walk through" observations by the building administrator to monitor classroom instruction	X	X			
	Report school improvement plan progress to the superintendent quarterly, who in turn will report the progress to the school board	X	X			
	**Notify parents that the school is identified in school improvement*	X	X	X	X	X
	Review policies, procedures and practices that may present barriers to all students' achievement	X	X			
	Conduct an audit of time resource allocation for the principal and increase the amount of time for instructional leadership		X			
	Provide assistance in development and implementation of a school leadership team that		X			

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Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
	focuses on the targeted subpopulation(s) missing the AMO. The leadership team would be responsible for reviewing progress monitoring data and making adjustments in student interventions monthly and overseeing the implementation of the school improvement plan.					
	Develop a school improvement plan that follows the school improvement process and clearly outlines the necessary interventions and actions to move all students to proficiency by 2013-2014		X			
	**Schedule and participate in a scholastic audit*			X	X	
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X	X	
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*			X	X	

* *Interventions in italics indicate efforts currently being done by or with most or all schools.*

Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
Arkansas Standards and Indicators for School Improvement	**STATE and/or REGIONAL INTERVENTION ASSISTANCE** (ADE staff and/or experts around the state (State Specialty Teams) shall provide on-site technical assistance and assist schools in enhancing the quality and effectiveness of the school improvement system.)					
Academic Performance	Provide information and direction on best practices as noted in Scientific Based Reading Research (SBRR) and clearinghouses	X	X			
	Implement a Response-to Intervention Plan (Arkansas' Closing the Gap Model) that address curriculum, instruction, assessments and appropriate student interventions			X	X	
	Implement an ongoing, systematic and coherent assessment system			X	X	
	Implement with high-fidelity, proven academic programs that will enable all students to meet academic objectives			X	X	
	Analyze a complete data set that examines both early childhood services and higher education entry and retention				X	
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X		
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*				X	
Learning Environment	Provide opportunities for leadership training to school leadership teams	X	X			
	Provide professional development on how to analyze and effectively use data to build school capacity and improve student performance	X	X			
	Provide professional development for all faculty members focusing on high expectations for all		X – Year 3	X	X	

* *Interventions in italics indicate efforts currently being done by or with most or all schools.*

Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
	students					
	Provide leadership training and facilitate the leadership team process for all faculty members		X – Year 3	X	X	
	Provide training based on the scholastic audit results for all faculty members			X	X	
	Assist with the design of a comprehensive instructional coaching plan that addresses classroom needs in deficit areas of math and/or literacy			X	X	
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X		
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*				X	
Efficiency	Provide assistance in development and implementation of a school leadership team that focuses on the targeted subpopulation(s) missing the AMO. The leadership team would be responsible for reviewing progress monitoring data, making adjustments in student interventions monthly and overseeing the implementation of the school improvement plan.	X	X			
	Assist in developing a school improvement plan that follows the school improvement process and clearly outlines the necessary interventions and actions to move all students to proficiency by 2013-2014	X	X			
	Provide assistance in analyzing the "classroom walk through" data			X		
	Assist with the reallocation of available funding, to include state and federal funds, to implement the school improvement plan			X		
	Assist in the development of a three-year school			X	X	

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Arkansas' Interventions by Status Level

		TI Year 1 *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
	improvement plan that follows the school improvement process and clearly outlines the necessary interventions and actions to move all students to proficiency by 2013-2014					
	**Implement a state-approved school turn-around model/plan.*				X	
	Assist with the analysis of the "classroom walk through" data and design of effective intervention strategies				X	
	Assist with establishing a progress monitoring plan developed to track quarterly achievement with a monthly meeting of the schools' leadership team to plan and review progress in meeting goals				X	
	Assistance with analyzing the needs of the school and reallocating funds, resources, time, personnel, materials, and etc) to meet improvement plans and a comprehensive turn around model of school reform				X	
	Assess progress and continue implementation of best instructional strategies listed in *Targeted Improvement*			X		
	Assess progress and continue implementation of best instructional strategies listed in *Whole School Improvement*				X	

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Arkansas' Interventions by Status Level

	OPTIONAL INTERVENTIONS (In addition to the required interventions, the LEA shall select **at least one additional intervention** (during the appropriate year and category) based on multi-year progress and data based identified needs in a manner consistent with Arkansas law:)	*TI Year 1* *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
	Schedule and participate in a scholastic audit	X – Year 3	X – Year 3			
	Provide preschool opportunities within the district and/or campus	X – Year 3	X – Year 3			
	Hire a parent & community specialist to assist in community and parental support	X – Year 3	X – Year 3			
	Extend learning time for students on topics and skills that lack sufficient progress in math and/or literacy	X – Year 3	X – Year 3			
	Reallocate funds for additional professional development in math and/or literacy	X – Year 3	X – Year 3			
	Accelerate community collaborations by bringing parents, students, educators, non-profit entities, foundations, and business interest together to focus on systemic improvements		X - Year 3			
	Subcontract with recognized educators, such as National Board Certified Teachers, Milken Winners and/or Arkansas State Teacher of the Year Finalists to assist in data analysis, observations, and mentoring		X – Year 3			
	**Extend the school year or school day for the school*			X	X	
	**Restructure the internal organization of the school*			X	X	
	Create a school within a school to address the needs of the targeted subpopulation (must be approved by the ADE)			X		
	**Reopen the school as a public charter school or multiple charters*			X	X	
	**Replace all or most of the school staff, including the building administrator*			X	X	
	**Enter into a contract to have an outside entity operate the school (must be approved by the ADE)*			X	X	
	**Any other major restructuring of the school's governance arrangement (approved by the ADE)*			X	X	
	The LEA shall replace the principal of the school in improvement if that principal has been at the school during the entire time of increasing school improvement status OR hire a school improvement specialist (as approved by ADE) who shall				X	

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Arkansas' Interventions by Status Level

	OPTIONAL INTERVENTIONS (In addition to the required interventions, the LEA shall select **at least one additional intervention** (during the appropriate year and category) based on multi-year progress and data based identified needs in a manner consistent with Arkansas law:)	***TI Year 1 TI Year 2 TI Year 3***	***WSI Year 1 WSI Year 2 WSI Year 3***	***TII Year 4 TII Year 5***	***WSII Year 4 WSII Year 5***	***State Directed***
	oversee the work of the principal on a full or part-time basis at the schools expense.					
	The ADE may, at anytime during this phase, determine how federal and state school improvement funds will be designated. The ADE may defer programmatic funds or reduce administrative funds, if necessary.				X	
	**Arrange for the ADE to take over operation of the school*				X	

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Arkansas' Interventions by Status Level

	STATE DIRECTED The ADE shall, in a manner consistent with Arkansas law:	***TI Year 1*** ***TI Year 2*** ***TI Year 3***	***WSI Year 1*** ***WSI Year 2*** ***WSI Year 3***	***TII Year 4*** ***TII Year 5***	***WSII Year 4*** ***WSII Year 5***	***State Directed***
STATE DIRECTED **Academic Performance, Learning Environment and Efficiency Standards are infused into the instructional plan.**	Direct a school team to participate in a leadership institute during the summer					X
	Determine how federal and state school improvement funds will be used. The ADE may defer programmatic funds or reduce administrative funds, if necessary.					X
	Replace school staff relevant to the failure of students meeting their AMO's, if necessary					X
	Reallocate resources and provide professional development to fulfill the school's mandated plan using school district funds, if necessary					X
	Determine the future of the schools status (charter, consolidation, closure, etc)					X
	At the discretion of the Commissioner of Education, the state may assign School Improvement (SI) Director who shall report to the Commissioner of Education (or designee) to oversee the administration of the school(s) learning environment. The SI Director shall be paid out of school district funds and will share progress reports to the district Superintendent and School Board. The SI Director shall direct the: • Implementation of any actions under *Targeted* and/or *Whole School Intensive Improvement* as deemed necessary. • Development of partnerships (internally and externally) to assist the school with any S*tate Directed* actions. • Implementation of a teaching design that encompasses most effective practices defined in research. • Development of comprehensive data sets with training on root cause analysis within areas such as demographics, student					X

* *Interventions in italics indicate efforts currently being done by or with most or all schools.*

Arkansas' Interventions by Status Level

STATE DIRECTED The ADE shall, in a manner consistent with Arkansas law:		*TI Year 1* *TI Year 2* *TI Year 3*	*WSI Year 1* *WSI Year 2* *WSI Year 3*	*TII Year 4* *TII Year 5*	*WSII Year 4* *WSII Year 5*	*State Directed*
	achievement, perception, and school processes across feeder patterns. • Implementation of professional development for personnel, as needed. • Implementation of an ADE-approved personnel evaluation system. • Presentation of a quarterly progress report to the Commissioner of Education (or designee). • Development of a short-term (45-60 day) action plan to achieve school improvement results. • Implementation of a scholastic audit as needed to monitor progress.					
	Assess progress and continue implementation of best instructional strategies listed in *Targeted* and/or *Whole School Improvement and Targeted* and/or *Whole School Intensive Improvement*					X

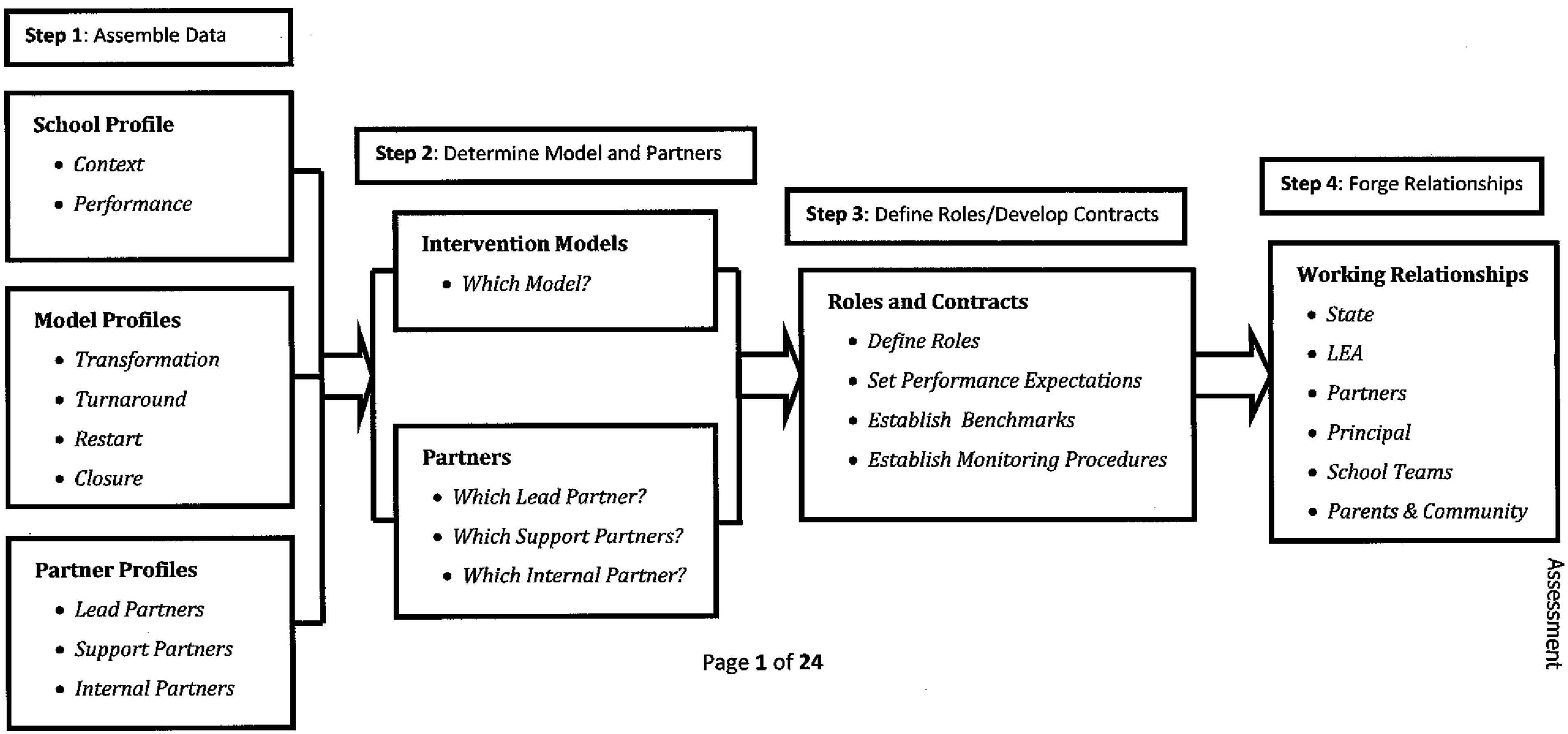
* *Interventions in italics indicate efforts currently being done by or with most or all schools.*

Selecting the Intervention Model and Partners

for a Low-Achieving School

A Decision-Making and Planning Tool for the Local Education Agency

1. Given the existing capacity of the school and LEA, which intervention model will produce the most immediate and substantial improvement in learning and school success for the students now attending this school?
2. Which partners will most effectively and expeditiously facilitate the intervention?
3. What are the roles of the state, LEA, partners, and community in support of the principal and school teams?



Step 1-A: Develop a Profile of the School's Context and Performance

Context

1. Grade levels (e.g., 9-12): ____________ 2. Total Enrollment: ____________ 3. % Free/Reduced Lunch: ____________

4. % Special Education Students: ____________ 5. % English Language Learners: ____________

6. Home Languages of English Language Learners (list up to 3 most frequent): ____________________________

7. Briefly describe the school's catchment or enrollment area (neighborhoods, communities served): ____________________________

8. List the feeder schools and/or recipient schools that supply or receive most of this school's students:

9. Briefly describe the background and core competencies of the school's current key administrators and indicate the number of years they have held the position and the number of years they have been employed in the school and LEA.

10. Describe how administrators are evaluated. By whom? How frequently? What is the process?

11. Provide a summary profile of the teaching staff. For middle schools and high schools, categorize by subject area (English, math, science, etc.). For elementary school categorize by grade level or specialty area. Use Full Time Equivalent in counts.

12. Describe how teachers are evaluated. By whom? How frequently? What is the process?

13. Briefly describe previous and current reform and improvement efforts, within the last 5 years.

Performance

1. Enter the percentage of <u>all</u> students who tested as proficient or better on the state standards assessment test for each subject available.

Reading/Language/English					
Mathematics					
Science					
Social Studies					
Writing					

2. For the most recent year available, enter the percentage of students in each <u>subgroup</u> who tested proficient or better on the state standards assessment test for each subject available. Test Year: ________________

Reading/Language/English					
Mathematics					
Science					
Social Studies					
Writing					

3. For the most recent year available, enter the percentage of students at each <u>grade level</u> in this school who tested proficient or better on the state standards assessment test for each subject available. Test Year: ________________

Reading/Language/English										
Mathematics										
Science										
Social Studies										
Writing										

4. Average daily attendance percentage for last complete school year: ____________________ Year: _____________

5. Mobility rate for last complete school year: _____________ Year: ______________

6. Graduation rate for all students: ____________________

7. Graduation rate (high schools only).

8. Explain how the graduation rate was calculated.

____

____

____

Key Questions

1. Which students are experiencing the lowest achievement?

2. Which students are experiencing the lowest graduation rates?

3. In which subjects are students experiencing the lowest achievement?

4. What characteristics of the student demographics should be taken into account in selecting a model and external partners?

5. What characteristics of the catchment (enrollment) area should be taken into account in selecting a model and external partners?

Step 1-B: Develop Profiles of Available Intervention Models

Transformation

The LEA replaces the principal with a highly capable principal with either a track record of transformation or clear potential to successfully lead a transformation (although the LEA may retain a recently hired principal where a turnaround, restart, or transformation was instituted in past two years <u>and</u> there is tangible evidence that the principal has the skills necessary to initiative dramatic change); implements a rigorous staff evaluation and development system; rewards staff who increase student achievement and/or graduation rates and removes staff who have not improved after ample opportunity; institutes comprehensive instructional reform; increases learning time and applies community-oriented school strategies; and provides greater operational flexibility and support for the school.

1. State statutes and policies that address transformation, limit it, create barriers to it, or provide support for it and how:

2. District policies that address transformation, limit it, create barriers to it, or provide support for it and how:

3. District contractual agreements, including collective bargaining, that affect transformation and how:

Turnaround

The LEA replaces the principal with a highly capable principal with either a track record of transformation or clear potential to successfully lead a transformation (although the LEA may retain a recently hired principal where a turnaround, restart, or transformation was instituted in past two years <u>and</u> there is tangible evidence that the principal has the skills necessary to initiative dramatic change) and rehiring no more than 50% of the staff; gives greater principal autonomy; implements other prescribed and recommended strategies.

1. State statutes and policies that address turnaround, limit it, create barriers to it, or provide support for it and how:

2. District policies that address turnaround, limit it, create barriers to it, or provide support for it and how:

3. District contractual agreements, including collective bargaining, that affect turnaround and how:

Restart

The LEA converts or closes and reopens a school under a charter/performance contract with a charter school governing board, , charter management organization, or education management organization.

Charter Schools

1. State statutes and policies that address the formation of charter schools, limit it, create barriers to it, or provide support for it and how:

2. District policies that address the formation of charter schools, limit it, create barriers to it, or provide support for it and how:

3. District contractual agreements, including collective bargaining, that affect the formation of charter schools and how:

Education Management Organizations

1. State statutes and policies that address district contracts with EMOs to operate schools , limit them, create barriers to them, or provide support for them and how:

2. District policies that address district contracts with EMOs to operate schools , limit them, create barriers to them, or provide support for them and how:

3. District contractual agreements, including collective bargaining, that affect district contracts with EMOs to operate schools , limit them, create barriers to them, or provide support for them and how:

Closure

The LEA closes the school and enrolls the students in other schools in the LEA that are higher achieving.

1. State statutes and policies that address school closures , limit them, create barriers to them, or provide support for them and how:

2. District policies that address school closures , limit them, create barriers to them, or provide support for them and how:

3. District contractual agreements, including collective bargaining, that affect school closures , limit them, create barriers to them, or provide support for them and how:

6. Higher achieving schools available to receive students and number of students that could be accepted at each school:

Step 1-C: Develop Profiles of Available Partners

Transformation

The LEA replaces the principal with a highly capable principal with either a track record of transformation or clear potential to successfully lead a transformation (although the LEA may retain a recently hired principal where a turnaround, restart, or transformation was instituted in past two years and there is tangible evidence that the principal has the skills necessary to initiative dramatic change); implements a rigorous staff evaluation and development system; rewards staff who increase student achievement and/or graduation rates and removes staff who have not improved after ample opportunity; institutes comprehensive instructional reform; increases learning time and applies community-oriented school strategies; and provides greater operational flexibility and support for the school.

External partners available to assist with transformation and brief description of services, the principle and the track record of success				
Partner Organization	Lead (Y/N)	Support (Y/N)	Services Provided	Experience (Types of Schools and Results)

Turnaround

The LEA replaces the principal with a highly capable principal with either a track record of transformation or clear potential to successfully lead a transformation (although the LEA may retain a recently hired principal where a turnaround, restart, or transformation was instituted in past two years <u>and</u> there is tangible evidence that the principal has the skills necessary to initiative dramatic change) and rehiring no more than 50% of the staff; gives greater principal autonomy; implements other prescribed and recommended strategies.

[illegible]				
Partner Organization	Lead (Y/N)	Support (Y/N)	Services Provided	Experience (Types of Schools and Results)

Restart

The LEA converts or closes and reopens a school under a charter/performance contract with a charter school governing board, charter management organization, or education management organization.

Charter governing boards, charter management organizations, and [illegible] available to start a charter school and [illegible]				
Charter Organization	[illegible] (Y/N)	[illegible] (Y/N)	Services Provided	Experience (Types of Schools and Results)

[illegible]				
Educational Management Organization	Lead Y/N	[illegible] Y/N	Services [illegible]	[illegible] Results

Closure

The LEA closes the school and enrolls the students in other schools in the LEA that are higher achieving.

[illegible]				
Partner Organization	[illegible]	[illegible]	Services Provided	[illegible]

Step 2: Determine Best-Fit Model and Partners

The chief question to answer in determining the most appropriate intervention model is: What improvement strategy will result in the most immediate and substantial improvement in learning and school success for the students now attending this school ***given the existing capacity in the school and the district***? There is no "correct" or "formulaic" answer to this question. Rather, relative degrees of performance and capacity should guide decision making. The following table outlines key areas and characteristics of performance and school, district, and community capacity that should be considered as part of your decision making. The checks indicate that if this characteristic is present, the respective intervention model could be an option.

Characteristics of Performance and Capacity				
	INTERVENTION MODEL			
CHARACTERISTIC	TURNAROUND	TRANSFORMATION	RESTART	CLOSURE
School Performance				
All students experiencing low achievement/graduation rates	✓		✓	✓
Select sub-groups of students experiencing low-performance		✓		
Students experiencing low-achievement in all core subject areas	✓	✓	✓	✓
Students experiencing low-achievement in only select subject areas		✓		
School Capacity				
Strong existing (2 yrs or less) or readily available turnaround leader	✓	✓	✓	
Evidence of pockets of strong instructional staff capacity		✓		
Evidence of limited staff capacity	✓		✓	✓
Evidence of negative school culture	✓		✓	✓
History of chronic-low-achievement	✓		✓	✓
Physical plant deficiencies				✓
Evidence of response to prior reform efforts	✓	✓		
District Capacity				
Willing to negotiate for waivers of collective bargaining agreements related to staff transfers and removals	✓		✓	✓
Capacity to negotiate with external partners			✓	
Ability to extend operational autonomy	✓		✓	
Strong charter school law			✓	
Experience authorizing charter schools			✓	
Capacity to conduct rigorous selection process			✓	
Capacity to exercise strong accountability for performance			✓	

Community Capacity				
Strong community commitment to school	✓	✓	✓	
Supply of external partners			✓	
Other higher performing schools in district				✓

1. **Based on a the Characteristics of Performance and Capacity table above, rank order the intervention models that seem the best fit for this school. This is only a crude estimation of the best possible model, but it is a place to start.**

   Best Fit Ranking of Intervention Models

   A. **Best Fit:**

   B. **Second Best Fit:**

   C. **Third Best Fit:**

   D. **Fourth Best Fit:**

2. **Now answer the questions below for the model you consider the best fit and the model you consider the second best fit. Review the questions for the other two models. Change the rankings if answering and reviewing the questions raises doubts about the original ranking.**

The Transformation Model

1. How will the LEA select a new leader for the school, and what experience, training, and competencies will the new leader be expected to possess?

2. How will the LEA enable the new leader to make strategic staff replacements?

3. What is the LEA's own capacity to support the transformation, including the implementation of required, recommended, and diagnostically determined strategies?

4. What changes in decision making policies and mechanisms (including greater school-level flexibility in budgeting, staffing, and scheduling) must accompany the transformation?

5. How will the district support the new leader in determining the changes in operational practice (including classroom instruction) that must accompany the transformation, and how will these changes be brought about and sustained?

The Turnaround Model

1. How will the LEA begin to develop a pipeline of effective teachers and leaders to work in turnaround schools?

2. How will the LEA select a new leader for the school, and what experience, training, and competencies will the new leader be expected to possess?

3. How will the LEA support the school leader in recruiting highly effective teachers to the lowest achieving schools?

4. How will staff replacement be executed—what is the process for determining which staff remains in the school, which are assigned to another school, and which should leave the profession (or at least the district)?

5. How will the language in collective bargaining agreements be negotiated to ensure the most talented teachers and leaders remain in the school and underperformers leave?

6. What supports will be provided to staff selected for re-assignment to other schools?

7. What are the budgetary implications of retaining surplus staff within the LEA if that is necessary?

8. What is the LEA's own capacity to execute and support a turnaround? What organizations are available to assist with the implementation of the turnaround model?

9. What changes in decision-making policies and mechanisms (including greater school-level flexibility in budgeting, staffing, and scheduling) must accompany the infusion of human capital?

10. How will the district support the new leader in determining the changes in operational practice (including classroom instruction) that must accompany the turnaround, and how will these changes be brought about and sustained?

The Restart Model

1. Are there qualified (track record of success with similar schools) charter management organizations (CMOs) or education management organizations (EMOs) interested in a performance contract with the LEA to start a new school (or convert an existing school) in this location?

2. Are there strong, established community groups interested in initiating a homegrown charter school? The LEA is best served by cultivating relationships with community groups to prepare them for operating charter schools.

3. Based on supply and capacity, which option is most likely to result in dramatic student growth for the student population to be served—homegrown charter school, CMO, or EMO?

4. How can statutory, policy, and collective bargaining language relevant to the school be negotiated to allow for closure of the school and restart?

5. How will support be provided to staff that are selected for re-assignment to other schools as a result of the restart?

6. What are the budgetary implications of retaining surplus staff within the LEA if that is necessary?

7. What role will the LEA play to support the restart and potentially provide some centralized services (e.g., human resources, transportation, special education, and related services)?

8. How will the SEA assist with the restart?

9. How will the LEA hold the charter governing board, , CMO, or EMO accountable for specified performance benchmarks?

10. Is the LEA (or other authorizer) prepared to terminate the contract if performance expectations are not met and are the specifics for dissolution of the charter school outlined in the charter or management contract?

School Closure Model

1. What are the metrics to identify schools to be closed?

2. What steps are in place to make certain closure decisions are based on tangible data and readily transparent to the local community?

3. How will the students and their families be supported by the LEA through the re-enrollment process?

4. Which higher-achieving schools have the capacity to receive students from the schools being considered for closure?

5. How will the receiving schools be staffed with quality staff to accommodate the increase in students?

6. How will current staff be reassigned—what is the process for determining which staff members are dismissed and which staff members are reassigned?

7. Does the statutory, policy, and collective bargaining context relevant to the school allow for removal of current staff?

8. What supports will be provided to recipient schools if current staff members are reassigned?

9. What safety and security considerations might be anticipated for students of the school to be closed and the receiving school(s)?

10. What are the budgetary implications of retaining surplus staff within the LEA if that is necessary?

11. How will the LEA track student progress in the recipient schools?

12. What is the impact of school closure to the school's neighborhood, enrollment area, or community?

13. How does school closure fit within the LEA's overall reform efforts?

3. Recommend the Best-Fit Intervention Model and Partners

[illegible]	
Intervention Model	**Rationale for Selecting Model**
Lead Partner	**Rationale for Selecting Lead Partner**
Internal Partner (District Staff)	**Rationale for Selecting Internal Partner**
Supporting Partner	**Rationale for Selecting Supporting Partner**
Supporting Partner	**Rationale for Selecting Supporting Partner**

Step 3: Define Roles and Develop Contracts

1. Briefly describe the role of each of the following groups or partners relative to the implementation of the intervention model.

Group/Partner	[illegible]
State Education Agency	
Local Education Agency	
Internal Partner (LEA staff): ______	
Lead Partner: ______	
Support Partner: ______	
Support Partner: ______	
Support Partner: ______	
Principal: ______	
School Teams	
Parents & Community	

2. Determine the performance expectations for the lead partner and supporting partners, with quarterly benchmarks.

Note: Developing performance expectations and benchmarks to include in the contract with each partner is one of the LEA's most important responsibilities. Please see the links to web resources below to assist in making these decisions and in developing the appropriate contracts. Also engage LEA legal counsel in this process.

3. Describe how the LEA's will monitor implementation of the intervention model. Who will do what and when?

Step 4: Forge Working Relationships

Describe how the LEA will promote the working relationships among the groups and partners committed to this intervention—the state, the LEA, the lead partner, the support partners, the internal partner, the principal, school teams, and the parents and community.

Resources

See the *Handbook on Effective Implementation of School Improvement Grants* at www.centerii.org.

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America's Choice
A History in Arkansas
Section E2

During the 2008-09 school year, the Arkansas Department of Education met with school districts and educational partners across the state of Arkansas to discuss the Smart Accountability Plan (SAP) and how this system would impact Arkansas schools. One of the changes in the new Smart Accountability Plan is how schools in different levels of school improvement are identified and labeled. Schools that met their Annual Measurable Objective (AMO) for the previous school year are identified as Achieving. Schools could also have another label that is tied to Achieving depending on the past performance. For instance, a could be labeled as Targeted Improvement – Year II Achieving which means the school was previously a school in Targeted Improvement – Year II but the school met their AMO for the last school year which adds the label of Achieving to the end. The first two years that a school does not meet their AMO they are given the label of Alert I and Alert II. Once schools progress beyond Alert, they are identified as either Targeted or Whole School depending on the percentage of subgroups that are not meeting their AMO. If the general population is not meeting the AMO, then the school is automatically identified as Whole School. Otherwise, schools are labeled as Whole School when more than 25 percent of the eligible subgroups in the school do not meet their AMO. If 25 percent or less of the eligible subgroups fail to meet their AMO the school is identified as Targeted. Schools remain in the Targeted Improvement of Whole School Improvement categories for up to three years before moving to the next level of school improvement. Schools that have not met their AMO for a period of six consecutive years become classified as either Targeted Intensive Improvement or Whole School Intensive Improvement based on the same criteria described above. Schools can remain in either Targeted Intensive Improvement or Whole School Intensive Improvement for a total of two years before moving to the category of State Directed. As schools move through this continuum, there are increasing levels of expectations and requirements that are meant to help guide these schools toward improved student achievement. The table below lists all of the schools that have been identified as State Directed based on all test results up to and including the assessments given in the spring of 2009.

Table E2
SW – Schoolwide Title I   TA – Targeted Assistance Title I

Title I Status	School District	School	Status
SW	WEST MEMPHIS SCHOOL DISTRICT	WONDER ELEMENTARY SCHOOL	State-Directed Achieving Year 6
TA	ALMA SCHOOL DISTRICT	ALMA MIDDLE SCHOOL	State-Directed Year 6
	ARKADELPHIA SCHOOL DISTRICT	ARKADELPHIA HIGH SCHOOL	State-Directed Year 6
SW	FORDYCE SCHOOL DISTRICT	FORDYCE MIDDLE SCHOOL	State-Directed Year 6
	FORREST CITY SCHOOL DISTRICT	FORREST CITY HIGH SCHOOL	State-Directed Year 6
SW	FORT SMITH SCHOOL DISTRICT	TRUSTY ELEMENTARY SCHOOL	State-Directed Year 6

	FORT SMITH SCHOOL DISTRICT	NORTHSIDE HIGH SCHOOL	State-Directed Year 6
TA	GOSNELL SCHOOL DISTRICT	GOSNELL ELEMENTARY SCHOOL	State-Directed Year 6
SW	HAMPTON SCHOOL DISTRICT	HAMPTON HIGH SCHOOL	State-Directed Year 6
SW	HELENA/ W.HELENA SCHOOL DIST.	CENTRAL HIGH SCHOOL	State-Directed Year 6
SW	HERMITAGE SCHOOL DISTRICT	HERMITAGE HIGH SCHOOL	State-Directed Year 6
	HOPE SCHOOL DISTRICT	HOPE HIGH SCHOOL	State-Directed Year 6
SW	HOT SPRINGS SCHOOL DISTRICT	HOT SPRINGS MIDDLE SCHOOL	State-Directed Year 6
SW	LEE COUNTY SCHOOL DISTRICT	ANNA STRONG MIDDLE SCHOOL	State-Directed Year 6
SW	LEE COUNTY SCHOOL DISTRICT	LEE HIGH SCHOOL	State-Directed Year 6
	LITTLE ROCK SCHOOL DISTRICT	HALL HIGH SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	DUNBAR MAGNET MIDDLE SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	FOREST HEIGHTS MIDDLE SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	HENDERSON MIDDLE SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	MABELVALE MIDDLE SCHOOL	State-Directed Year 6
	LITTLE ROCK SCHOOL DISTRICT	J.A. FAIR HIGH SCHOOL	State-Directed Year 6
	LITTLE ROCK SCHOOL DISTRICT	MCCLELLAN MAGNET HIGH SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	WATSON INTERMEDIATE SCHOOL	State-Directed Year 6
SW	LITTLE ROCK SCHOOL DISTRICT	CHICOT PRIMARY SCHOOL	State-Directed Year 6
SW	MARKED TREE SCHOOL DISTRICT	MARKED TREE ELEMENTARY SCHOOL	State-Directed Year 6
	MONTICELLO SCHOOL DISTRICT	MONTICELLO HIGH SCHOOL	State-Directed Year 6
TA	N. LITTLE ROCK SCHOOL DISTRICT	LAKEWOOD MIDDLE SCHOOL	State-Directed Year 6
	N. LITTLE ROCK SCHOOL DISTRICT	NLR HIGH SCHOOL-EAST CAMPUS	State-Directed Year 6
	N. LITTLE ROCK SCHOOL DISTRICT	NLR HIGH SCHOOL-WEST CAMPUS	State-Directed Year 6
	PINE BLUFF SCHOOL DISTRICT	PINE BLUFF HIGH SCHOOL	State-Directed Year 6

SW	PULASKI CO. SPEC. SCHOOL DIST.	LANDMARK ELEMENTARY SCHOOL	State-Directed Year 6
	PULASKI CO. SPEC. SCHOOL DIST.	FULLER MIDDLE SCHOOL	State-Directed Year 6
	PULASKI CO. SPEC. SCHOOL DIST.	JACKSONVILLE HIGH SCHOOL	State-Directed Year 6
SW	PULASKI CO. SPEC. SCHOOL DIST.	WILBUR D. MILLS HIGH SCHOOL	State-Directed Year 6
	PULASKI CO. SPEC. SCHOOL DIST.	JOE T. ROBINSON HIGH SCHOOL	State-Directed Year 6
	PULASKI CO. SPEC. SCHOOL DIST.	NORTH PULASKI HIGH SCHOOL	State-Directed Year 6
SW	PULASKI CO. SPEC. SCHOOL DIST.	NORTHWOOD MIDDLE SCHOOL	State-Directed Year 6
	SO. MISS. COUNTY SCHOOL DIST.	RIVERCREST HIGH SCHOOL	State-Directed Year 6
SW	TEXARKANA SCHOOL DISTRICT	NORTH HEIGHTS JR. HIGH SCHOOL	State-Directed Year 6
SW	TEXARKANA SCHOOL DISTRICT	ARKANSAS HIGH SCHOOL	State-Directed Year 6
	WATSON CHAPEL SCHOOL DISTRICT	WATSON CHAPEL JR. HIGH SCHOOL	State-Directed Year 6
	WEST MEMPHIS SCHOOL DISTRICT	WEST MEMPHIS HIGH SCHOOL	State-Directed Year 6
SW	AUGUSTA SCHOOL DISTRICT	AUGUSTA ELEMENTARY SCHOOL	State-Directed Year 7
	FORT SMITH SCHOOL DISTRICT	WILLIAM O. DARBY JR. HIGH SCH.	State-Directed Year 7
	FORT SMITH SCHOOL DISTRICT	DORA KIMMONS JR. HIGH SCHOOL	State-Directed Year 7
SW	FORT SMITH SCHOOL DISTRICT	TILLES ELEMENTARY SCHOOL	State-Directed Year 7
SW	HELENA/ W.HELENA SCHOOL DIST.	MILLER JUNIOR HIGH SCHOOL	State-Directed Year 7
SW	HUGHES SCHOOL DISTRICT	MILDRED JACKSON ELEM. SCHOOL	State-Directed Year 7
SW	HUGHES SCHOOL DISTRICT	HUGHES HIGH SCHOOL	State-Directed Year 7
SW	LITTLE ROCK SCHOOL DISTRICT	CLOVERDALE MIDDLE SCHOOL	State-Directed Year 7
SW	MARVELL SCHOOL DISTRICT	MARVELL HIGH SCHOOL	State-Directed Year 7
	PINE BLUFF SCHOOL DISTRICT	JACK ROBEY JR. HIGH SCHOOL	State-Directed Year 7
	PULASKI CO. SPEC. SCHOOL DIST.	SYLVAN HILLS MIDDLE SCHOOL	State-Directed Year 7
	PULASKI CO. SPEC. SCHOOL DIST.	OAK GROVE HIGH SCHOOL	State-Directed Year 7
SW	TURRELL SCHOOL DISTRICT	TURRELL HIGH SCHOOL	State-Directed Year 7

SW	N. LITTLE ROCK SCHOOL DISTRICT	LYNCH DRIVE ELEMENTARY SCHOOL	State-Directed Year 8
SW	N. LITTLE ROCK SCHOOL DISTRICT	ROSE CITY MIDDLE SCHOOL	State-Directed Year 8

From the very beginning, the America's Choice School Improvement Design has been based on research. The consortium, known as CPRE (Consortium for Policy Research in Education) has conducted research on the Design since 1988 and has published studies ranging from in-depth looks at how effective the strategy has been in particular school systems to specific aspects of the program, such a s literacy workshops and teacher coaches. CPRE's mounting evidence suggests that America's Choice can indeed help boost student performance (Education Week, April 21, 2004).

In 2006-07, the state of Arkansas began implementing the America's Choice School Design (ACSD). America's Choice contracted with WestEd to evaluate the 34 elementary, middle and high school performances after implementing the America's Choice Design the first year. WestEd found students in elementary, middle and high had achievement gains on the Arkansas Benchmark Examinations that were more that twice as high as their peers in schools with comparable demographics. African-American and economically disadvantaged students in America's Choice schools performed better on State literacy assessments than their peers incomparable schools. The *Comprehensive School Reform Quality Center* (conducted by the American Institutes for Research) Report on Elementary School Comprehensive School Reform Models (2006) rated America's Choice as one of only seven among the 22 models reviewed that had demonstrated positive overall effects, and the only model among those seven that had demonstrated evidence of both positive effects for diverse student populations and positive effects in all of the subject areas of reading, writing and mathematics. The Center's *Report on Middle and High School Comprehensive School Reform Models* (2007) rated America's Choice at the highest level for overall positive effects given in the report, demonstrating "moderate evidence." America's Choice was one of only five models that "have a solid body of evidence about their effectiveness." The report rated America's Choice as "very strong" in terms of evidence of services and support to schools to enable successful implementation.

The Design

Five Design tasks provide the framework for the America's Choice School Design. Student Performance is the focus of the Design. The implementation expectations set forth in the America's Choice Implementation Rubric are organized around these five tasks:

1. **Standards and Assessments**— In the America's Choice Design, assessment informs instruction. Teachers evaluate student performance by using state assessments, formal examinations, informal classroom assessment, student work/portfolios, and observation. Assessment is integrated with instruction. This creates an environment where assessment serves as a lens to focus teaching and learning. High standards are the cornerstone of the Design.
2. **Aligned instructional systems**— The relationships among standards, assessment, and instruction are central to a standard-based system. All the pieces must be aligned if students are to progress toward meeting standards. Rituals and routines constitute a strategic approach to classroom management. Expectations in every class are clear so that

students can engage in productive learning. Students practice habits of strong readers and writers to enable them to be strong students in science and math, and in all other classes.

3. **High-performance leadership, management, and organization**—Effective change cannot happen without strong leadership. Principals in the America's Choice school serve as the instructional leader as a shared responsibility with a team of school leaders that play a key role in ensuring the components of the America's Choice Design are implemented. This team helps communicate the Design to teachers, students, parents/guardian, and the school community at-large. The Leadership Team uses Planning for Results a system of data-driven decision making to analyze student performance data, set targets, plan for instruction, and produce a school culture where results become the primary focus and overriding consideration in the allocation of resources. The master schedule is designed to provide increased instructional time in literacy, math, includes time for safety nets. The small learning community approach is based upon the concept of dividing large schools into houses and then even smaller configurations of teams so that each team of four teachers (in the core academic classes) work with approximately 100 students.
4. **Professional learning communities**—Implementing the America's Choice takes a collaborative effort. Staff members work together closely to implement the Design, acquire new content knowledge, and devise strategies for improving the instruction of students they have in common. Professional development is delivered through a combination of off-site and on-site professional development learning opportunities. Teacher Meetings and Study Groups are personalized to the needs of the students in each school.
5. **Parent/guardian and community involvement**—The Leadership Team includes a Parent/Community Outreach Coordinator who works with the team to create an environment where parents/guardians are valued as partners. The 25 Book Campaign Standard is in place to engage parents/guardians in their children's learning and environment. Teachers of all subject areas will be engaged in standard-based instruction. They will learn and practice new focused teaching strategies that enhance teaching and learning throughout the school. Designated non-core content teachers will engage in how to use content literacy strategies within their content area. All five Design task components are focused on students with the goal on improving student performance.

The America's Choice Design component and instructional strategies effectively respond to the needs of English Language Learners (ELLs) and special education students. The workshop approach to classroom management not only provides a comfortable, predictable framework, but it increases the opportunities for individual and small-group instruction. Classroom artifacts such as posters, word walls, and accountable talk can provide visual support for ELLs and other students who may learn differently. Genre studies (English and Spanish) are tailored to help teachers scaffold instruction for ELL students and include criteria to help students with special needs. (America's Choice School Design Going Deeper High School Field Guide p. 4-5).

America's Choice includes Tier 2 and Tier 3 Response to Interventions (RtI). Tier 2 interventions are supplementary academic support provided in addition to the core instruction program for students who are struggling to stay on grade level through America's Choice Science, Math and Literacy Navigator (T2). Literacy and Math Ramp Up Tier 3 Interventions are intensive academic acceleration for students who have fallen significantly below grade level. Student scores are entered on a database so teachers can monitor progress. Teachers receive professional learning on how to use the materials as part of the America's Choice Scope of Work.

Design Interventions (RtI)
Literacy Navigator, a Response to Intervention solution—Grades 3-10, is designed to help students whose reading abilities are "at" or "almost at" grade level—students who are not strong in comprehension and who therefore struggle to read information text and have problems on state reading tests. The course design reflects the most current theory and research in reading comprehension (Kintsch 1998; Hirsch 2003). Lessons are embedded in content that students are to comprehend and apply as relevant background knowledge when they move through the lesson sequence. Pre and post test are included to monitor student progress.

Math Navigator, a Response to Intervention solution—Grades 2-10, is based on research that underscores the links among basic skills, problem solving, and conceptual understanding. Students must know how to add, subtract, multiply, and divide, they also need to know why these are other operations work. Every module includes a deep focus on the underlying mathematical concepts that are the foundation for more advanced mathematics and included problem solving and skills practice. Math Navigator focuses on the "misconceptions" that prevent students from making accurate connections that gets them in trouble mathematically. Mathematics Navigator corrects misconceptions that my have originated across multiple years of schooling so that students can succeed on grade-level standards and assessments. Math Navigators includes pre and post test and math screeners to monitor student progress.

Ramp Up to Literacy—a year long replacement curriculum Grades 6 & 9, is designed to "accelerate" learning for students entering middle or high school two or more years behind in literacy. Both Ramp up to Middle-Grade Literacy for middle school students and Ramp-Up to Advanced Literacy for high school students features a year long curriculum tailored to the needs of adolescents who have not experienced academic success. Reading materials and topics are age-appropriate and appeal to middle or high school students. Ramp-Up Literacy gives targeted students explicit instruction in vocabulary, fluency, comprehension, and writing. The class is based on a daily 90-minute four-part ritual and routine. Research findings by Thomas Guskey, Marco Munoz, and Jennifer Aberli revealed strikingly positive effects at all levels from the Ramp-Up program (National Council of Staff Development Fall 2009, vol. 30, No.4 p. 32-29).

Ramp Up to Math—a year long curriculum for 90-minute classes, is tailored to the needs of adolescents who have not experienced academic success. Unlike remedial classes, Ramp-Up to Algebra (Grades 8 or 9) gives students a real opportunity not only to master the basics, but also to leap forward to the college preparation curriculum. Ramp Up to Pre-Algebra (Grades 6 or 7) is designed to accelerate the learning of students entering middle school two or more years behind their peers—and to prepare them to complete Algebra 1 by the end of 8th grade.

Math and Literacy Ramp Up classes include instructional materials, daily lesson plans, homework assignments, and effective ways to explain and illustrate key components. On-going technical assistance and professional development demonstrate and reinforce effective strategies and techniques. Assessment tools that enable teachers to tailor instruction to students' individual profiles and to prepare them for success on state accountability tests are also components of the Ramp-Up classes.

Science Navigator supports the needs of students at the middle school level. It is intended to provide supplementary instruction on key concepts with complex content in which students lack the background knowledge and/or reasoning development required to access the core instructional program in science. It may be used inside the core program, or as an extended school or summer school program. The program is targeted to grades 6, 7, and 8.

Science Navigator focuses on students' naïve conceptions and misconceptions in science. Many of these misconceptions come not from lack of instruction but from the learner's intuitive interpretations of the natural world in everyday life. Specific content areas (e.g., energy) identified in the *2009 NAEP Framework* are addressed in modules that briefly present the science behind the standard and then provide strategies and lessons for identifying and helping students to revise their mental models for the targeted concepts. Development of reasoning skills is organized around the ACT benchmarks for science. The major categories are *Interpretation of Data, Scientific Investigation*, and *Evaluation of Models, Inferences, and Experimental Results*. The overarching theme of the program is energy.

Science Navigator provides support for ELLs through the organization of the lessons and teaching strategies. These incorporate teacher-directed, teacher-assisted, and peer-assisted modes of instruction that will enhance learning for ELLs. Special Education students are often mainstreamed into science classes. Higher functioning students can be very successful in the science classroom that uses visual and hands-on instruction. The strategies embedded in the design of Science Navigator reflect best practices for learners with special needs.

Each Science Navigator Module has a pre-test and a post-test that measure the content of material taught in the unit and three process skills, consistent with those measured by the ACT: Interpretation of Data; Scientific Investigation; and Evaluation of Models, Inferences, and Experimental Results.

Design Support Services

The America's Choice School Design provides a Project Manager to oversee the day-to-day implementation of the Design that works jointly with the LEA and SEA, and provides a cluster leader for each school for on-site technical assistance. America's Choice is currently serving 39 schools (17 districts) with 10 cluster leaders providing technical assistance. The technical assistance we provide in schools is at the heart of our implementation. The weekly school visits provide for consistent monitoring of and support for the leadership team and for classroom teachers. It provides a mechanism for feedback to the school team to improve desired outcomes. At the conclusion of each technical assistance visit, the field staff assigned to support the school writes a report. The report is a reflection of the work done in the school around implementation and specific next steps for improvement. The report is discussed and left with the principal and a copy is sent to the district to assist in monitoring the progress of the school.

Design—Data

Our schools use data displayed by data walls in a number of different ways that are integral to the processes we follow in developing outcomes-based measurement and establishing a data-driven culture. In essence, the presence of the data walls and the staff's ability to talk about it is one measurable outcome. Seeing growth for students in the data itself is a second measurable outcome and the purpose of the data walls. Data walls are collections of information about student achievement that are used to make strategic decisions about instruction.

While data walls may take different forms, ours are organized in three sections:

- One panel provides summative information. Entries here are primarily taken from state test results and from, the states benchmark exam—ACTAAP, Tier 1, Tier 2, Tier 3 Interventions and daily classroom assessments.
- A second panel primarily consists of formative and periodic assessment results. It also includes regularly updated data on attendance and discipline referrals. This is the active section of the data wall, leading to statements that comprise the third panel.
- A third panel consists of conclusions drawn from the data, hypotheses about causes, inferences about potential action plans, and predictions about what needs to be done next to yield greater growth. Specific sections of each panel are assigned to the data monitoring students' development of college ready behaviors.

Leadership teams use these data walls, preferably in the spring and summer for the following academic year. For schools starting later, they are used at the beginning of the school year to begin planning for allocation of resources based on answers to the following:

- What are the areas of greatest needs for the students as a group?
- How will the tiered interventions be configured?
- Which students need programming for which interventions?
- Where are the areas of need for professional development?

These questions take into account students needs both for academic intervention and for support in the areas of development of college ready behavior. The display is organized to help highlight patterns for individuals and groups of students, including patterns that connect students' academic and psychosocial growth and needs. Data can be displayed for the school as a whole or, more likely, by grade or by teacher within grade. This allows for differentiated planning for teachers, much in the same way that differentiated instruction is accomplished for students within a classroom.

As the year progresses, the data are continually refreshed and rethought, as new data become available and new information provides a base for additional action plans. The leadership team data walls become a central source of information for communication among the faculty as a whole working as a professional learning community (containing multiple grade and content-based professional learning communities) whose shared joint goal is to provide the best instructional environment for all students within the school.

Teachers can also make good use of data walls. They typically follow individual students across time, making use of color-coding to provide a visual impact as students change from "at risk" or "below level" categories to " at proficiency " or "on level" or to "exceeds standard" Teachers can also follow any student who is not making adequate progress and identify an early warning signal, adjusting instructional strategies as needed to pay particular attention to alternate strategies designed to help students move along the learning continuum. Teachers share their data walls with others in their professional learning communities, as well as their administrative colleagues, just as they do when they are study student work during study groups and other professional interactions.

The data walls thus go beyond a place for recording information. They serve as an open communication device within the school environment. The aim is to have as many eyes on the progress of students as possible, and get help in meeting as many students' individual needs as possible by keeping good records of student progress, and documenting growth as it occurs.

Design—The Leadership Team
The school's leadership team's role is critical in establishing the school as a data-based community. The development of strong leadership teams is a major focus from the beginning of implementation and one of the intermediate outcomes. In addition to leadership training prior to the first year's implementation, our field staff work deliberately with the team to help them establish the agenda for their weekly leadership team meetings, develop 30-, 60-, and 90-day plans to guide their work, and to identify data sources relevant to the goals that they can use to monitor implementation progress. These data are reviewed at leadership meetings and used to refine strategies as needed.

Design—The Quality Review
Twice yearly, the leadership team participates in a comprehensive Quality Review that is conducted by our field staff, which thoroughly evaluates the effectiveness of the school's implementation. The school's leadership team, together with District staff and other stakeholders as appropriate, conduct a focus walk to observe the school's level of implementation, and go through a guided process of gathering and analyzing evidence of implementation and reflecting on their progress relative to the Key Outcomes. The work of the school is also captured in a portfolio, which demonstrates the level of implementation expected. While the development of the school portfolio is an ongoing process, it is presented twice a year during the Quality Review. This process highlighting the school's patterns of success and challenges and steers a new focus for the leadership team's work. After the review, the leadership team shares the results with the school community and works collectively to develop a plan for action to strengthen expectations or change the focus for implementation as the review findings have indicated. As the school leadership team develops capacity, it takes increasing responsibility for the conduct of the Quality Review, while our field staff transition into a critical observer role. Even after the designated period of implementation of the model, we encourage schools to continue this process and to continue to engage participants who can bring a critical perspective to the process.

Design—Professional Development
Professional development activities are conducted in two locations (Little Rock and Delta locations). See Appendix___ for the list of Professional Development activities current through December 2009 of this contract year. We are regarded as one of the premier professional development providers in the country. Our approach to professional development and school improvement is based on our experience in working to support the development of high quality standards-based instructional environments that produce improvements in student achievement. Our experience includes:

- The groundbreaking work that America's Choice staff undertook to develop the New Standards Performance Standards and associated assessments, and the continuing contribution we have made to the development of standards frameworks and standards-based assessments in specific states and through our association with Achieve.
- Our international benchmarking studies to identify and research the practices of successful educational systems in Asia, Europe and Australia.
- Our long-term research and development effort to develop curriculum materials and instructional practices to support standards-based teaching and learning.
- Our extensive experience in connecting our research and development effort to practice in thousands of schools in diverse settings with which we work closely on implementation of our comprehensive intervention models and instructional solutions, and refining our

professional development designs and practices in response to participant feedback and evidence of impact in the schools.

Premises

Drawing on research and our extensive experience, our approach is based on a series of premises:

- The belief that all students can learn is critical for the success of school improvement efforts. Our approach is designed to help people at all levels of school systems clarify and change their expectations of students.
- The classroom is the locus of improvement in outcomes; the teacher really matters and student engagement really matters. We focus on developing instructional practices that match the belief that all students can learn and practices that focus explicitly on building student engagement in learning so that they have the means and willingness to shoulder their share of responsibility for their achievement.
- Tools and techniques that embody the belief that all students can learn enable teachers to learn as they teach and administrators to learn as they provide supervision and support. We frame our professional development and technical assistance around tools and techniques that scaffold the development of teaching and learning that is based on the belief that all students can learn.

A standards-based foundation

Standards are the very core of ACT and America's Choice. Both organizations currently have an active role in the development of the new common core national standards. Members of our staff have served on state standards development panels, advised states on the revision of their standards, and led the development of standards in Australia. Our instructional system is based on the belief that all students can meet high academic standards providing they are taught a curriculum that is designed to enable them to reach the standards, taught by teachers who have the preparation they need to teach the curriculum effectively to their students, and learn in an environment designed to help them succeed.

While standards serve as the core of our work, leading research on how people learn, adult learning and the value and characteristics of professional learning communities inform the design and conduct of our professional development programs.

Research on how people learn

Over the past thirty years researchers in cognitive psychology have arrived at substantial agreement around three overarching cognitive themes that rest on a solid research base and can be taken to explicate the process of meaning making. These are explained in detail by Bransford, J.D. et al (editors) (2000). How people learn: Brain, mind, experience and school. Washington, DC: National Academy Press. In summary, these themes are as follows.

- People have preconceptions about how the world works. In any learning setting, participants' initial understanding needs to be engaged in order for them to grasp new concepts and information.
- To develop competence in an area of inquiry, people need to develop a deep foundation of facts and knowledge, develop a conceptual framework that connects their knowledge in a coherent way, and organize their knowledge in ways that assist with retrieval and application.

- A metacognitive approaches to instruction helps learners learn to take control of and manage their own learning.

These themes are reflected throughout the design of our professional development: they inform both the content of the professional development and the practices used within the professional development activity. Among the sources of research informing the design and organization of our professional development are the following study and review of research.

> Putnam, R. T. & Borko, H. (1997). Teacher learning: Implications of the new view of cognition. In B. J. Biddle, T. Good & I. F. Goodson (Eds), *International handbook of teachers and teaching*. Dordrecht, Netherlands: Kluwer.
>
> Wilson, S. M. & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education, 24*, 173-209.

Adult learning
While the Bransford et al. report on how people learn draws few distinctions between children and adults as learners, there is much discussion in field about how adult learning needs differ from those of children; the need to pay special attention to the importance of connecting learning with participants' experience, scaffolding learning, and incorporating systematic reflection. Research that does address these factors and which provides a reference for our work is:

> Knowles, M.S. (Ed.). (1984). *Andragogy in action: Applying modern principles of adult education.* San Francisco, CA: Jossey Bass.

Professional learning communities
An associated aspect of adult learning and teacher learning is the concept of the professional learning community. Our professional development is designed to support the growth of collaborative, reflective and generative communities of learners. A source for such design is the research reported in:

> Lord, B. (1994). Teachers' professional development: Critical colleagueship and the role of professional communities. In N. Cobb (Ed.) *The future of education: Perspectives on national standards in education* (pp. 175-204). New York, NY: College Entrance Examination Board.

Elements common to all of our professional development programs
Common to all of our professional development programs are:

- a standards-based approach to curriculum and instruction
- a foundation in relevant research and inclusion of explicit connections to research on best practices; especially research that is at the cutting edge of advances of knowledge about learning
- an emphasis on embedding professional development in ongoing instructional practice
- a focus on instructional practices that we have identified as being critical to improving the quality of students' learning, especially those practices that have proven most difficult to get in place
- analysis of student work to inform instruction
- analysis of videotaped examples of lessons

- scaffolding of participants' learning, inclusion of hands-on experience with content wherever possible and appropriate, and modeling of the practices participants are expected to learn and use
- explicit attention to diverse settings for teaching and learning, both school and community
- an emphasis on the use of assessment to focus teaching and to move students from where they are to where they need to be.

A three-year plan for professional development is set out in the Scopes of Work that has been on-going in the Arkansas schools. These include programs to support teachers and school level coaches implementing each of the curriculum programs:

- The core instructional programs—
  - QualityCore at the high school level (Begins FY'11)
  - ELA, mathematics, and science at the middle school level
  - ELA, mathematics, and science at the elementary level
- Supplementary programs designed to *supplement* the core instructional program (Tier 2) for students' needing assistance in identified areas of the program
  - Literacy Navigator (grades 3-10)
  - Mathematics Navigator (grades 2-10)
  - Science Navigator (grades 6-8)
- Acceleration programs (Tier 3) to provide replacement acceleration programs for students who are two or more years below grade level
  - Ramp-Up to Middle Grades Literacy (grade 6 or 7)
  - Ramp-Up to Advanced Literacy (grade 9)
  - Ramp-Up to Pre-Algebra (grade 6 or 7)
  - Ramp-Up to Algebra (grade 8 or 9)

Offsite professional development is scheduled in collaboration with the District. Typically, this includes a combination of summer institutes with follow-up sessions scheduled during the year. The dates are scheduled and placed on the master calendar.

Just as our field staff provides follow-through support for leadership professional development, the onsite technical support and coaching they provide also ensures follow-though from the professional development to classroom practice for the school-level coaches and teachers who participate in the off-site professional development programs.

An additional source of continuing support for professional development is the Community of Learning, our web-based portal, which includes videos of best practices, presentations from top educators, current research findings, message boards and other resources. The Community of Learning is designed to keep teachers and school and district leaders abreast of developments in our work and the experiences of other schools and districts using our comprehensive intervention models. It also provides them with opportunities to network and gain access to technical assistance when they need it.

To evaluate the quality of professional development sessions, we use professional development evaluation and feedback forms to determine effectiveness. After each session, our trainers and field staff members read the evaluation and feedback forms to determine 1) the clarity of the information delivered, 2) the follow up support needs of the school, and/or 3) any questions participants may still have regarding what was presented. This information becomes the basis for the onsite technical assistance support and is often addressed in a subsequent training session.

All of our professional development programs are evaluated routinely at the end of each program and that feedback is then used to modify, or change both the content and process of the programs. This continuous improvement model has been integral to our approach for the past 15 years.

Design—Professional learning communities as the primary vehicle for job-embedded professional development

The development of high functioning professional learning communities within the school is a Key Outcome area for implementation of our comprehensive intervention models. Our premise is that building professional learning communities in schools—developing strong collaborative relationships among the staff—is central to changing school cultures and improving student performance. Unless the school fosters its own internal collaboration where the faculty routinely discusses data, examines student work, and critiques its practices, external-provided professional development will not take hold and the school will not change.

We foster development of professional learning communities (PLCs) in three key areas:

- The leadership team: the school's first PLC—as the model for other PLC's in the school
  - Ongoing leadership academies provide specific training for the leadership team to learn how to use protocols and strategies to conduct highly effective leadership team meetings, where team members collectively solve issues around teaching and learning, analyze data and student work to inform instruction, and deepen their knowledge through the reading and discussion of current research practices which supports the school vision.
  - The team serves as a model of a strong professional learning community as they facilitate study groups, collaborative planning sessions, teacher meetings, and faculty meetings.
  - The team also evaluates the level of implementation of the school by planning and leading monthly Focus Walks. Focus Walks allow the leadership team to monitor the progress of implementation and make decisions to support staff for improvement.
- Teachers
  - At the elementary level, classroom teachers, with the support of a content specific instructional coach, who is also a member of the leadership team, learn to collectively work in grade level and content teams to improve student performance. Other key staff, such as teachers of special education students and English as Second Language teachers join them in this effort.
    - Teachers engage in bi-monthly study groups, which provide them with onsite professional development focused on deepening their knowledge and improving their practice around specific topics that affect classroom instruction.
    - Teachers also collaboratively study student work and student data in bi-monthly teacher meetings. They learn to use protocols and strategies to aid in these discussions, which assist them with making sound collective instructional decisions.
  - At the secondary level, teams of teachers, if not already in place, are established at grades 6-10 and other small learning communities (e.g., career academies and houses) are established at grades 11-12.

- Each of these teams is scheduled with common planning time available for team members to meet collaboratively regarding the progress and needs of specific students, team goals, assessment procedures, student work, and related matters. Once established, teams and other small learning communities become natural means of holding colleagues accountable and encouraging team members to be responsible to one another collectively. The leadership team should either have a point person from each team serving as a member or have leadership team members assigned to meet with teams by grade level. This process of collaboration needs to be ongoing; it is integral to the creation and continuing development of PLCs.
- As at the elementary level, teachers also attend regular teacher meetings and study groups where they learn new content, reflect on their practice, and go through the cycle of creating and teaching standards-based lessons and analyzing the resulting student work to plan ahead. Because the teams share the same students, the work done in these meetings becomes very focused on individual student's work.

Faculty meetings are not a time for administrative reporting and directives. These meetings are for the principal to share the vision and communicate expectations. It is also the forum through which the distributed process of ongoing job-embedded professional development can be drawn together to ensure shared goal-setting and monitoring. The leadership team facilitates protocols and strategies to serve these purposes, modeling their practice as a professional learning community through the facilitation of protocols and strategies. We support the development of these practices by providing schools with agendas and materials for meetings focused on standards-based instruction and other elements of comprehensive intervention.

Weekly and annual work schedule to provide for intensive professional development
Scheduling is a vital component of successful implementation. The schedule reflects the school's collective efforts to improve student performance. Provision needs to be made for the systematic use of data to inform instructional decisions and the continuing professional development needs of staff need to be taken into account. Devising schedules that allow staff to meet on a consistent basis to discuss individual student progress as part of a school-wide effort creates a culture of success for students and staff alike.

Scheduled times should include

- Common planning time organized so that grade levels or teacher teams, as appropriate, can meet for a full period daily and will serve as a combination of teacher conversations about common students, team-wide expectations and programs, and weekly/monthly team planning; studying student work, lesson study and other opportunities to engage in collaborative work that becomes the most significant and on-going form of professional development for the school.
- Teacher meetings and study groups, in school time or after school as negotiated (in lieu of traditional faculty and/or department meetings) to study student and teacher work and to address important educational issues (e.g., student tracking vs. heterogeneity).
- Monthly faculty meetings to deal with school-wide teaching and learning issues.
- Other times that can be negotiated with the district or school to allow for scheduled professional development (e.g. late start or early release days, Saturdays, time during the summer), substitute coverage to free up certain teachers for professional development, and a

regular schedule of release days. Or, as mentioned above, schools can take advantage of online provision of professional development.

As described above, we provide schools with curricula (agendas and materials) to support content-specific onsite professional development in the form of study groups and teacher meetings to be delivered within an hour during the school day.

In addition to the onsite professional development curriculum we provide, training needs of the faculty will be based in part on self-reporting by faculty, but also by regular feedback and evaluations by faculty after each training session. Data gathered from the leadership team's Focus Walks and data walls also determines topics for these meetings. Again, the purpose of the Focus Walk is to gauge the level of implementation and its impact on improving student performance. Secondly, observations from the principal's daily classroom visits and the implementation issues that arise from in-class coaching become the focus for professional development sessions.

Participants evaluate the sessions for their usefulness and leadership team members look for evidence of implementation. Using the materials we provide, the school is then able to develop its own sessions based on the specific professional development needs of the staff.

The AC field staff assists the school with professional development decisions, design, and facilitation. They model facilitation and co-lead study groups and teacher meetings to support coaches and other members of the leadership as they grow into their roles. They also help the leadership team ensure that the overall professional development is coherent, aligned with the school's goals, and focused strategically on content and practices that will help the school progress.

A differentiated staffing model offers an opportunity to recognize teachers who are performing at a high level and to take advantage of their expertise. Such teachers can become model classroom teachers and mentors for novice teachers. Serving as an instructional coach strengthens the skills and knowledge of good teachers and often turns them into leaders. Building a strong bench for school leadership and the capacity to continue the programs and strategies learned through the models are goals of the project, as well. This serves to retain high quality staff and the means to provide intensive induction and mentoring support for teachers.

Implementation—Elementary

Literacy

The literacy program incorporates a strong focus on the development of oral language in the primary years as the fundamental building block for literacy and a comprehensive standards-based approach to reading and writing that builds consistently from the primary years through to the bridge to middle school, using a readers and writers workshop model. It is geared to a literacy block of time of 2.5 hours per day in primary grades and 2 hours in the upper elementary grades. The primary grades' program includes a dedicated period of time each day for skills development.

Like the middle school program, our reading professional development works with any reading program that a school is using. It focuses on establishing all students as independent readers by no later than third grade; with a comprehensive approach that includes skill development as well as students' development of the habits and behaviors of effective independent readers. This is coupled with close monitoring of student progress using the DRA (recommended for grades K through eight, as noted above) or a similar tool to ensure students are making appropriate progress combined with timely use of interventions as needed by individual students.

The writing program includes author and genre studies designed for grades K through 5, that are aligned with the studies used at middle school. These standards-driven curriculum units guide teachers in providing students with a scaffold sequence of learning experiences in which they study the literary techniques and writing styles of leading authors and learn to write proficiently in selected genres. These studies also provide instructional models from which teachers may develop their own curriculum units. As with the middle school studies, the front-loading of each genre (in order to build and/or activate prior knowledge) and the attention to language development and academic vocabulary is especially beneficial for English language learners, as is the in-depth focus on the essential features of writing genres and text structures. The same explicit use of instructional scaffolds such as graphic organizers, read-aloud/think-aloud, small group and partner work, and intentional use of metacognitive strategies support the needs of mildly or moderately impaired students. Also as with the middle school curriculum units, each study includes pre- and post-tests, rubrics for a scaffold set of tasks and work products throughout, and class profiles for progress monitoring.

The program also includes a Genre Study of Standardized Testing (K-8), which shows teachers how they can help prepare students for standardized tests in a very deliberate and effective manner that helps students understand standardized tests as a text genre and embeds test preparation into daily instruction. At every grade level, our assessment process, and the accompanying matching of text to students' instructional and independent reading levels, provides for differentiated instruction. Checks throughout our programs provide guidance for differentiation of instruction in this area.

Mathematics

Our approach to mathematics at the elementary school level is consistent with the approach we adopt at middle school, as described above. Again, we focus on helping the school implement effective mathematics instruction using their adopted core instructional program at the elementary and middle school levels.

Elementary mathematics classrooms in America's choice schools have the same focus as at middle school: an instructional environment and strategies for providing differentiated instruction in mathematics and establishing a climate of disciplined inquiry through use of effective instructional strategies and evidenced by Accountable Talk. The elementary workshop is geared to a block of at least 60 minutes of mathematics instruction every day and, as described above, is framed by routines and rituals that are consistent with those used other content areas but designed for learning in mathematics.

Also as in the middle grades, grade level Mathematics Navigator screeners, beginning at the end of grade two and continuing through grade five (or six), are used to assess mastery of concepts and skills from the end of the prior grade, to identify Tier 1 needs, and identify students who are in need of additional Tier 2 support.

Science

In grades three through five in elementary school, the America's Choice approach to science is similar to that as described in middle school, with "science as inquiry" as the overarching philosophy behind our instructional strategies and teaching models. Especially in these developmental years, students should "work more like scientists," and teachers should "use inquiry as an instructional strategy." In the elementary classrooms, there is even more of an integration of academic language development and mathematic skill into the core instruction and tasks.

As in the middle schools, the America's Choice science model in elementary classrooms follows a workshop approach balancing whole-class, small-group and individual instruction, and independent work based on a standard 60 minute block of instructional time. During this time, students write about, talk about, draw about, and read about science to gain a deeper understanding and command of science concepts, principles, and inquiry methods.

Instructional environments that support effective learning

We need to ensure that the instructional environment allows teachers to provide instruction in accordance with students' needs: 1) direct instruction to the whole class, 2) small-group instruction targeted to students who are grouped according to need, and 3) individual instruction based on students' assessed needs. In addition, the instructional environment needs to provide opportunities for students to work independently of the teacher, both in small groups and on their own. This allows students to practice in a setting where they can access the teacher's help before they are expected to practice without teacher access, as is normally the case when they do homework. The workshop structures that frame all of the America's Choice instructional solutions and practices provide a means to achieve instructional environments that serve students' needs.

Ensuring responsiveness to the needs of English language learners and students with special needs

We need to ensure that all teachers are familiar with the instructional practices essential to supporting English language learning and incorporate those practices into their instruction with efficacy. These practices are:

- Develop oral language through meaningful conversation and context
- Teach targeted skills through contextualized and explicit instruction
- Build vocabulary through authentic and meaningful experiences with words
- Build and activate background knowledge
- Teach and use meaning-making strategies

Depending on students' levels of English language acquisition, the core instructional program may need to incorporate specialist assistance to support the regular class teacher. Specialists in English language learning and special education might support the class teacher through a "push-in" model to scaffold learning for specific students or they might work with the class teacher in a collaborative team teaching model.

While America's Choice programs and curriculum materials are not designed specifically to support the needs of students with sensory, physical or cognitive disabilities, the instructional supports provided by America's Choice are grounded in the research about principles of Universal Design for Learning, supporting special needs students included in the grade-level classroom and Tier 2 and Tier 3 interventions.

These instructional scaffolds include:

- Focusing instruction on big ideas (focused mini-lesson)
- Building or activating background knowledge
- Use of multiple representations to display concepts
- Use of graphic organizers to display information
- Explicit, targeted instruction
- Opportunities for practice
- Immediate and specific feedback
- Regular progress monitoring

Thus, the grounding of America's Choice programs in effective instruction allows us to support the needs of mildly or moderately impaired students in the general education classroom.

In FY'11 the middle and high feeder schools will move into an additional stage of implementation called the ***ACT AC Rigor and Readiness*** initiative under the not-for-profit organization ACT and America's Choice; the singular mission of preparing all students to be college career ready without the need for remediation. ACT and America's Choice have complementary expertise. ACT has developed a comprehensive examination system that ends with college entrance and career readiness and supports that system with a rigorous aligned curriculum designed to prepare students to succeed on the examinations. America's Choice has concentrated on developing instructional materials aligned to standards, safety net programs to help students who are struggling to get back on track for meeting standards, and professional development programs designed specifically to support implementation of the instructional programs. America's Choice works closely with schools and districts to plan and implement reform. Our two organizations share a commitment to improving student achievement and to the mission that all students should graduate high school ready for college or career preparation without need for remediation. We have formed a partnership to harness our skills, experience and programs in pursuit of that shared mission. Through the partnership, we have integrated our programs into an aligned instructional system, Rigor and Readiness.

The ***ACT AC Rigor and Readiness*** initiative supports and promotes three fundamental goals.

1. Ensure that all students are college and career ready in academic achievement, academic behaviors, and career and educational planning.
2. Create a school environment that is focused on college and career readiness by using a coherent system of high standards and aligned instruction, assessment, safety nets, and professional development.
3. Build and support high-achieving, self-sustaining districts with scalable, replicable systems.

The initiative will increase all students' college and career readiness as measured by lower dropout rates, improved student attendance, improved graduation rates, more students entering and succeeding in postsecondary institutions, and more students entering early career training or jobs.

The goals will be attained by:

1. Ensuring that teachers build the capacity to help all their students by providing professional development tailored to standards, curriculum, and assessments, and incorporating best practices in professional learning.
2. Utilizing longitudinal assessment to diagnose students' strengths and weaknesses, improve school and district practices, and support students' progress toward college and career readiness.

3. Offering differentiated, research-based interventions and support throughout middle and high school for students who need to accelerate their academic readiness.
4. Monitoring student progress K-12 (all feeder patterns). Additional focus on the pivotal transition years (6th grade and 9th grade) to place even greater emphasis on student academics, social, and career development critical to student success in high school and beyond, and promote an academically rigorous core curriculum in middle and high school.

The ***Rigor and Readiness*** initiative provides highly trained school improvement professionals at the building level to determine and act on what existing programs are working and not working (also noted in the Arkansas **SMART Accountability** Plan); to deliver high-quality, research-based professional development and programs that increase the effectiveness of district and school staff, and to assist with data management and analysis that supports monitoring of student progress and improving results.

The "rigor" of core courses in high schools will be improved by (1) specifying the number and kinds of courses that student need to take to graduate from high school ready for college and work, (2) aligning high school course outcomes with state standards that are driven by the requirements of postsecondary education and work, (3) providing teacher support by hiring qualified teachers and providing training and professional development support to improve the quality of the courses they teach, (4) expanding access to high-quality, vertically aligned core courses, and (5) measuring results at the course level. More frequent monitoring is important so that students can learn what they need to learn, that interventions can be made to improve their progress as required, and that the courses themselves can be evaluated and strengthened to ensure that students are being taught essential content with the appropriate degree of rigor. (ACT College Readiness Rigor at Risk: Reaffirming Quality in the High School Core Curriculum Executive Summary).

The cornerstone of Rigor & Readiness is ACT's research-based College Readiness System, which clearly defines the performance levels on the academic standards needed for college and career readiness, as measured by a sequence of assessments (EXPLORE, PLAN and ACT) from grades 7-12. This system allows for systematic monitoring of students' progress, helping educators to provide the kind of differentiated instruction and appropriate interventions that will prepare all students for college and career success.

Tiered Academic Interventions
We have drawn from the concept of RtI (Response to Intervention) to develop a tiered set of interventions to support students' academic growth. Tier 1 of this system is the core instructional program built around the rigorous curriculum provided by ACT's QualityCore in high school and America's Choice professional development and curriculum units of study in middle school. For this system to achieve its goal, it is critical that the Tier 1 core instructional program serves the needs of as many students as possible. Professional development for teachers implementing the curriculum includes a systematic focus on strategies for assisting English language learners and students with special needs. It also helps teachers to make systematic use of assessment information to drive instruction and organize their instruction so that they can differentiate in response to students' assessed needs.

Tiers 2 and 3 are designed for students whose needs cannot be fully served by the core instructional program, as indicated by EXPLORE and PLAN and other sources of assessment information. The America's Choice Navigator programs provide the curriculum for Tier 2 of the academic program — directed at providing supplementary support in addition to the core instructional program. The Navigator programs are linked to the College Readiness Benchmarks, and thus aligned to the system overall. The America's Choice Ramp-Up programs provide the Tier 3 replacement acceleration courses for students who are two or more years behind and need intensive support to get back on track and re-enter the core instructional program.

Tiered Supports for Students' Development of College and Career-ready Behaviors
Going hand in hand with the academic components of the system are supports for students' development of college and career-ready behaviors. These supports attend to the core domains of students' psychosocial development: motivation, social engagement and self-regulatory behavior. They are organized into three tiers of intervention that parallel the tiers established for the academic components of the system.

Like the series of linked assessments that allow us to monitor students' academic growth and progress towards college and career readiness, ACT has developed linked assessments of students' psychosocial development. These assessments focus on behavioral dimensions critical to student success, such as academic discipline and self-management, and can be used to monitor students' development at regular intervals. These, together with other sources of information related to students' personal growth, such as class attendance and homework completion, as well as their academic progress, help determine whether students are making appropriate progress.

Just as the academic program includes tiers of intervention for students whose needs cannot be served by the regular instructional program alone, we offer tiers of intervention for students who need additional supports for their psychosocial development. These provide appropriate levels of assistance for students needing help to address barriers to their engagement in school.

Psychosocial Development Supports Provided through the Guidance and College/Career Program
Research tells us that students' personal development has a major influence on their ability to stay in school and be successful. So, going hand in hand with the academic components of the system is a set of supports for students' personal growth. These supports attend to the core domains of students' psychosocial development: motivation, engagement and self-regulatory behavior. We have organized them into three tiers of intervention that parallel the tiers established for the academic components of the system.

The first tier consists of academic behavioral readiness support designed to complement the regular instructional program. A primary focus here is on instructional routines and rituals built into everyday classroom learning to scaffold students' development as effective learners and members of a productive learning community, that we discussed though the description of the tiered academic program. A second central focus is the development of small learning communities and teacher teaming to build personalization and strong teacher-student relationships. This focus is extended through a targeted, planned curriculum at each grade level, offered through the counseling program, designed to help students develop effective academic behaviors as identified through research, and to engage in age-appropriate career exploration and planning.

Like the series of linked assessments to allow us to monitor students' academic growth and progress towards college and career readiness, ACT has developed linked assessments of students' psychosocial development. Key to these assessments are the Student Readiness Inventory–Middle School (SRI) and the Student Readiness Inventory–High School (SRI) designed for sixth grade and eleventh grade students respectively. The inventories are completed by the students in order to gauge his/her self-perception of factors relating to motivation, social engagement and self-regulation. Supplementing them are Behavioral Monitoring Scales (BMS), completed by the teacher, that focus on behavioral dimensions critical to student success, such as academic discipline and self-management, and can be used to monitor students' development at regular intervals. These, together with other sources of information related to students' personal growth, such as class attendance and homework completion, as well as their academic progress, help determine whether students' are making appropriate progress.

Implementation—High School

ACT's QualityCore program provides the high school curriculum framework for the aligned instructional system. QualityCore sets clear expectations for the rigor required for a standards-based curriculum that aligns with the demands of college and career readiness. Each QualityCore course is based on course objectives that are rigorous, empirically based, and derived from the syllabi of courses offered at high-performing U.S. high schools. The courses, which include a full high school program of English language arts, mathematics and science, as well as U.S. History, include end-of-course exams and formative assessments, all aligned to the College Readiness Benchmarks.

QualityCore's course objectives, course outlines, and test-blueprints for the end-of-course examinations that are integral to the program guide schools and systems in ensuring that their high school courses are standards-based and have the rigor and relevance needed for students to achieve success on the ACT end-of-course assessments. These courses also prepare students for success in Advanced Placement courses, International Baccalaureate and early college programs.

QualityCore includes the following core high school courses:

English Language Arts	Mathematics	Science	Social Science
English 9 English 10 English 11 English 12	Algebra I Geometry Algebra II Precalculus	Biology Chemistry Physics	U.S. History

QualityCore is designed to:

- Provide teachers with research-based resources, including model instructional units, rigorous course objectives, course outlines and syllabi, formative assessment item pools, and end-of-course assessments to help improve the quality, consistency, and rigor of core preparatory courses.
- Provide valid and reliable measures of student achievement using a rich pool of formative items aligned to course objectives and spanning a range of "Depth of Knowledge" levels (after Norman Webb).
- Allow educators to longitudinally monitor student achievement in becoming ready for college and workforce training programs by assessing students' progress on a course-by-course basis with end-of-course assessments that are nationally normed.

- Provide teachers with useful formative feedback about student progress that they can use to guide instructional interventions.
- Provide research-based professional development designed to support data-driven decisions and help teachers use the QualityCore materials effectively.
- Provide a system for evaluating the long-term impact of varying instructional delivery models on student learning and teacher practice.
- Ensure that outcomes of high school core preparatory courses are aligned with college readiness standards.
- Use student achievement data to ensure the quality, consistency, and rigor of high school courses.

Implementation—Middle School
QualityCore also provides a reference point for ensuring curriculum alignment in the middle grades. A critical area for alignment of the middle school curriculum is students' preparation for the rigorous academic reading and writing requirements reflected in the QualityCore course objectives.

English Language Arts
The America's Choice Academic Reading and Writing program is aligned with the ACT College Readiness Benchmarks and has as its goal high levels of student performance in reading, writing, and speaking. It uses a workshop approach to provide a balance of whole-group, small-group and individual instruction, and to scaffold the development of students' academic behaviors to allow them to act as independent and responsible learners.

The literacy workshop strengthens the academic reading and writing skills of middle school students. America's Choice genre studies immerse students into close reading and analyzing examples of critical genres, such as narrative, expository, essay and argument, so that they then can research, organize, and draft their own versions of the genre. They study organizing patterns such as chronology, general/specific, comparison, and cause and effect in the texts that they read and the texts that they write. Students are taught explicitly the relevant tools of cohesion, style and grammar to make their writing effective. Focused attention is also given to academic vocabulary and sophisticated syntax to elevate student's written language. The attention to language development and academic vocabulary is especially beneficial for English language learners, as is the in-depth focus on the essential features of writing genres and text structures. The explicit use of instructional scaffolds such as graphic organizers, collaborative discourse, small group and partner work, and intentional use of metacognition strategies support the needs of mildly or moderately impaired students.

Each study includes pre- and post-tests, rubrics for a scaffold set of tasks and work products throughout, and class profiles for progress monitoring. Additionally, America's Choice recommends using the Developmental Reading Assessment (DRA) at grades K through eight in order to monitor accuracy, fluency and comprehension.

Through the genre studies and a comparable set of author studies, students become better readers as teachers focus compatible close reading strategies to improve comprehension, especially comprehension of complex informational and literary texts. America's Choice reading professional development works with any reading program that a school is using. Model lessons illustrate how to teach students to make ideas in different parts of a text cohere, to paraphrase and summarize texts, and to use visual representations and graphic organizers to enhance comprehension. Another focus of professional development is improving classroom discussions to enhance comprehension of texts.

Mathematics
Our core instructional program in mathematics at the middle school level is designed around the school or district's adopted mathematics texts. The findings of the Trends in International Mathematics and Science Studies (TIMSS) and our own in-depth international benchmarking have focused attention on the need to balance skills, problem solving and conceptual understanding, and establishing a coherent sequence of mathematical study to move students towards higher mathematical proficiency and aligns to the ACT College Readiness Standards.

A further focus is on the design of the instructional environment in mathematics and strategies for providing differentiated instruction and establishing a climate of disciplined inquiry through use of effective instructional strategies and evidenced by Accountable Talk. We adopt a workshop approach with a balance of whole-class, small-group and individual instruction, and independent work. Our program is geared to a block of at least 60 minutes of mathematics instruction every day. The workshop is framed by routines and rituals that are consistent with those used other content areas but designed specifically to establish effective environments for learning in mathematics.

Finally, our grade level Mathematics Navigator screeners, designed for use early in the year in grades three through eight and that assess mastery of concepts and skills from the end of the prior grade, serve as universal screeners to help to identify Tier 1 needs (such as curriculum or knowledge gaps). These screeners also help identify students who are in need of additional Tier 2 support. A second, non-parallel screener, for use mid-year at each of grades three through eight, identifies concepts and skills that should be mastered throughout that particular grade.

Science
The America's Choice approach to science embraces a philosophy of "science as inquiry." Inquiry is the overarching theme of our instructional strategies and teaching models. It is informed by the psychological underpinnings of constructivism and supported by evidence that "hands-on" science fits well with the way people learn and construct knowledge. This approach emphasizes data collection and interpretation rather than memorization of the scientific method. To this end, we use a learning cycle called the "5E model"—Engage, Explore, Explain, Extend, and Evaluate. Both constructivism and the use of the 5E learning cycle are endorsed strongly by a range of professional science education groups and are reflected in the widely accepted National Science Education Standards (NSES) developed under the aegis of the National Research Council (1996). These standards address science teaching, science content, professional development, and science assessment. The NSES identify "Changing Emphases" for each of these areas and stress the importance helping students understand scientific concepts *and* develop inquiry skills. According to the NSES, students should "work more like scientists," and teachers should "use inquiry as an instructional strategy."

The America's Choice Science Model takes a workshop approach that balances of whole-class, small-group and individual instruction, and independent work based on a standard 55-minute class period. The workshop's routines and rituals are consistent with those used in other content areas but the framework of the 5E model establishes an engaging, hands-on environment for learning science. What happens in the workshop varies by the type of scientific investigation and stage of discovery. Students write about, talk about, draw about, and read about science to gain a deeper understanding and command of science concepts, principles, and inquiry methods. The workshop promotes sound classroom management practices as well as lab routines necessary for conducting an inquiry approach to learning.

Realizing the Goal of College and Career Readiness
The alignment between the America's Choice Comprehensive Intervention Model for elementary schools and the Rigor & Readiness Comprehensive Intervention Model for middle and high schools makes it possible to realize the goal of scaffolding students' learning from the early years of schooling through to high school graduation, monitoring their growth regularly with tools that are aligned to goal of college and career readiness, and intervening as needed in a timely way, with targeted interventions to help students whose progress slows in order to help them get back on track to success.

Implementation Strategy
The implementation strategy for elementary and middle schools is to begin with all grades simultaneously. In high schools we begin at the 9th grade only. This serves to jump-start the process of systematically monitoring students' progress at the secondary level and providing targeted interventions. It also ensures that the system is reaching students before the factors that may present barriers to their progress become insurmountable. The plan extends to grade 10 in the second year of implementation and to grades 11 and 12 in the third and fourth years respectively. It includes a period of implementation support after the initial rollout at each grade level, with the level of external support gradually reduced as the schools and the district build capacity to sustain the initiative.

Building Capacity for Sustainability
The implementation plan is one of the strategies designed to support capacity building for sustainability. Key outcome areas for the model include the focused work on establishing the foundations of capacity for sustaining implementation. These include: building a data-led culture of learning and commitment to standards; distributing leadership; ensuring the leadership team includes the school's constituencies, and that subject and pedagogical expertise are recognized and developed; and giving faculty opportunities to emerge as leaders. Elements of the model focused on capacity building include: coaching the principal, building a high performing leadership team, incorporating coaches and coaching practices, developing model classrooms, and embedding professional development in the practice of teaching.

Outcomes-Based Measurement
Schools that adopt the America's Choice or Rigor and Readiness Comprehensive Intervention Models will have a range of measurable indicators of success. These include:

- Long-cycle academic measures, including results on the ISAT, PSAE and/or IAA, and scores on EXPLORE, PLAN and the ACT
- Academic progress-related longitudinal statistics, such as numbers of students requiring Tier 2 and Tier 3 interventions, by grade and longitudinally
- Short cycle academic measures; for example, formative assessments on QualityCore courses, pre-post scores on Tier 2
- District benchmark assessments

- Measures of school climate and culture, including results from the School Readiness Inventory; statistics on attendance and discipline referrals
- Student Attitude Surveys embedded in Tier 3 Ramp-Up courses
- Identification of Model Classrooms to serve as models for future continuing implementation beyond the intervention

To achieve these outcomes, we provide high quality, focused professional development, coaching and onsite technical assistance that builds internal capacity.

Conclusion

The Arkansas Department of Education contracted with America's Choice to begin working with targeted schools during the 2006-07 school year. Since that time America's Choice has worked with a total of 52 schools. During the 2009-10 school year, America's Choice is working with a total of 39 schools in 17 districts. This means that there are 13 schools that have been served by America's Choice at one point in time who are no longer receiving services from America's Choice. The 13 schools that are no longer receiving services from America's Choice fit into the following categories:

- 7 schools met their AMO for two consecutive years
- 3 schools applied for and received a waiver from the Arkansas Department of Education
- 2 schools were consolidated with another America's Choice school
- 1 school was replaced with another school that was in greater need of services from America's Choice

America's Choice has been engaged with Arkansas for the past 3 ½ years. The academic performance of each of these 52 schools was evaluated by looking at the mean scale scores on the ACTAAP Assessments that were administered at each of the schools. The mean scale score for all students in the state was also considered to compare the growth of students in America's Choice schools with students across the state. The performance of these 52 schools compared to the state of Arkansas is listed below:

- 6 of the 52 schools showed more growth than the state of Arkansas for all grades in both math and literacy since the spring of 2006
- 12 of the 52 schools showed growth for all grades in both math and literacy, some of this growth exceeded the growth for the state while some of the growth was less than the state as whole
- 34 of the 52 schools showed mixed results, meaning there was growth in some areas but there was at least one area where the mean scale score was lower in 2009 than it was in 2006
- 0 of the 52 schools showed a decline in the mean scale score for all grades in both math and literacy.

The following tables provide information about the schools that have received services from America's Choice. Most schools have received these services through a contract between the Arkansas Department of Education and America's Choice. A few school districts that have entered into contracts with America's Choice using local funds. These schools are highlighted in blue in the following tables.

Elementary Schools in the America's Choice School Design Year by Year

2006-07	2007-08	2008-09	2009-10
		Anna Strong Elementary	
Augusta K-8	Augusta K-8	Augusta K-8	Augusta K-8
		Blevins Elementary School	
Brady Elementary School	Brady Elementary School	Brady Elementary School	
Cedar Park Elementary School	Cedar Park Elementary School	Cedar Park Elementary School	
			Central Elementary School - Forrest City
Chicot Elementary School			
	East Elementary - Osceola	East Elementary - Osceola	
Gardner-Strong Elementary	Gardner Strong Elementary		
Gibbs Albright Elementary School	Gibbs Albright Elementary School	Gibbs Albright Elementary School	Gibbs Albright Elementary School
Hermitage Elementary School	Hermitage Elementary School		
Lucilla Wood Elementary	Lucilla Wood Elementary	Lucilla Wood Elementary	
Lynch Drive Elementary School	Lynch Drive Elementary School	Lynch Drive Elementary School	Lynch Drive Elementary School
Marked Tree Elementary School	Marked Tree Elementary School	Marked Tree Elementary School	Marked Tree Elementary School
Marvell Elementary School	Marvell Elementary School	Marvell Elementary School	Marvell Elementary School
Mildred Jackson Elementary	Mildred Jackson Elementary	Mildred Jackson Elementary	
			Stewart Elementary School - Forrest City
Tilles Elementary School	Tilles Elementary School		
Turrell Elementary School			
Watson Intermediate School	Watson Intermediate School	Watson Intermediate School	Watson Intermediate School - Little Rock
		Whitten Elementary School	Whitten Elementary School - Lee County
15 Elementary Schools	**14 Elementary Schools**	**14 Elementary Schools**	**9 Elementary Schools**

Middle Schools and Junior Highs in the America's Choice School Design Year by Year

2006-07	2007-08	2008-09	2009-10
		Anna Strong Middle School	Anna Strong Middle School
Cloverdale Middle School	Cloverdale Middle School	Cloverdale Middle School	Cloverdale Middle School
			College Hill Middle School
Eliza Miller Junior High	Eliza Miller Junior High	Eliza Miller Junior High	Eliza Miller Junior High
		Forest Heights Middle School	Forest Heights Middle School
			Forrest City Junior High
	Henderson Middle School	Henderson Middle School	Henderson Middle School
			Lincoln Middle School
	Mabelvale Middle School	Mabelvale Middle School	Mabelvale Middle School
McRae Middle School	McRae Middle School		
			North Heights Junior High
Rose City Middle School	Rose City Middle School	Rose City Middle School	Rose City Middle School
Sylvan Hills Middle School	Sylvan Hills Middle School	Sylvan Hills Middle School	Sylvan Hills Middle School
Wynne Junior High			
6 Middle & Junior High Schools	**7 Middle & Junior High Schools**	**8 Middle & Junior High Schools**	**12 Middle & Junior High Schools**

High Schools in the America's Choice School Design Year by Year

2006-07	2007-08	2008-09	2009-10
			Arkadelphia High School
			Arkansas High School
Brinkley High School	Brinkley High School	Brinkley High School	Brinkley High School
			Central High School - West Helena
		Clarendon High School	Clarendon High School
		Cross County High School	
			Forrest City High School
Hermitage High School	Hermitage High School	Hermitage High School	Hermitage High School
	Hope High School	Hope High School	Hope High School
Hughes High School	Hughes High School	Hughes High School	Hughes K-12 School
	JA Fair High School	JA Fair High School	JA Fair High School
	Jacksonville High School	Jacksonville High School	Jacksonville High School
		Lee High School	Lee High School
Marvell High School	Marvell High School	Marvell High School	Marvell High School
	McClellan High School	McClellan High School	McClellan High School
			North Pulaski High School
Oak Grove High School	Oak Grove High School	Oak Grove High School	Oak Grove High School
Prescott High School			
			Sylvan Hills High School
Turrell High School	Turrell High School	Turrell High School	Turrell High School
7 High Schools	**10 High Schools**	**13 High Schools**	**18 High Schools**
28 Total Schools	**32 Total Schools**	**38 Total Schools**	**39 Total Schools**

Appendix ____America's Choice 2009-2010 Professional Development Activities

Date	Stage	Content Area	Trainer	Number of Participants	Days of Training	Place of Training
July 1[illegible] - 16	Stage II, III, IV	Elementary Literacy	Suzy Page	24	4	Brinkley Convention Center
July 13 - 15	Stage I, II, III, IV	On Grade Level Math	Bill Mullins Janice Holmes	25	3	Brinkley Convention Center
July 1[illegible] - 16	Stage I, II, III, IV	MS/HS On Grade Level Literacy	Leah Hannah	16	4	Brinkley Convention Center
July 14 - 15	Stage I	MS/HS Leadership	Bob Lumsden	26	2	Forrest City HS
July 20 - 23	Stage II, III, IV	Elementary Math Pre K - 2nd	Dorothy Doolittle	[illegible]	4	Brinkley Convention Center
July 20 - 23	Stage II, III, IV	Elementary Literacy	Suzy Page	11	4	Watson ES
July 20 - 23	Stage I, II, III, IV	OGL Math	Bill Mullins	53	4	J A Fair HS
July 20 - 23	Stage I, II, III, IV	RtI & RtI/NEW HIRES	Leah Hannah	19	4	Clarendon HS
July 21- 23	Stage I	MS/HS Leadership	Bob Lumsden	46	3	AC Office
July 27 - 30	Stage II, III, IV	Elementary Math Pre K - 2nd	Dorothy Doolittle	18	4	Watson ES

July 28 - 30	Stage I, II, III, IV	RUL & RUAL NEW HIRES	Leah Hannah	9	3	AC Office
July 28 - 30	Stage II, III, IV	Ramp Up Math	Janie Holmes	10	[illegible]	Brinkley Convention Center
July 29 - 31	Stage II, III, IV	Leadership	Bob Lumsden	41	3	Brinkley Convention Center
July 27 - 28	Stage I	Elementary Literacy	Suzy Page	22	2	Brinkley Convention Center
Aug 3 - 4	Stage II, III, IV	MS/HS Ramp Up Literacy	Leah Hannah	[illegible]	2	Brinkley Convention Center
Aug 3 - 6	Stage II, III, IV	MS/HS OGL Literacy	Suzy Page	74	4	Mabelvale MS
Aug 3 - 6	Stage I, II, III, IV	RUL & RUAL Experience Teachers	[illegible]	[illegible]	4	Brinkley Convention Center
Aug 4 - 5	Stage I	Elementary Math 3-5	Dorothy Doolittle	24	2	Pulaski Tech
Aug 5 - 7	Stage II, III, IV	ES, MS and HS Leadership	Bob Lumsden	65	[illegible]	Brinkley Convention Center
Aug 5 - 7	Stage I, II, III, IV	Ramp Up Math	Janie Holmes	27	3	Mabelvale MS
Aug 5 - 6	Stage I, II, III, IV	MS/HS Ramp Up Literacy	Leah Hannah	21	3	Mabelvale MS
6-Aug	Stage I	Elementary Math	Dorothy Doolittle	[illegible]	[illegible]	Brinkley Convention Center

[illegible]5-Sep	Stage I-IV	Network 1 Elem. Middle High	All Staff	54	1	Brinkley Convention Center
16-Sep	Stage 1-IV	Network 1	All Staff	81	1	South Pulaski Technical College
Sept. 21	Transition Schools	Navigator	Melanie Landrum	33	1	Little Rock AC Office
Sept. 22	Transition	Navigator	Bill Mullins	28	1	Arkadelphia - Dawson Coop
Sept. 23	Transition Schools	Navigator	Melanie Landrum	25	1	Brinkley Convention Center
Sept. 24	Transition Schools	Navigator	Bill Mullins	20	1	Fort Smith
Sept. 25	Stages I-IV	Math Coach Training	Bill Mullins Judee Gunter	31	1	Little Rock
Sept. 28	Stages I-IV	Lit Coach Traiing	Leah Hannah Brenda Bankston	37	1	Little Rock
Sept. 29-30	Stages I-IV	Ramp Up Math	Bill Mullins Judee Gunter	18	2	Little Rock
Oct. 1-2	Stages I-IV	Ramp Up Math	Bill Mullins Ashley McDonald	[illegible]	2	Brinkley Convention Center
Oct. 5	Stages I-IV	Math Nav	Bill Mullins Ashley Judee	[illegible]	1	Brinkley Convention Center
Oct. 6	Stages I-IV	[illegible] Navigator	Leah/Brenda	16	[illegible]	Brinkley Convention Center

Oct. 7	Stages I-IV	Math Navigator	Bill Mullins Ashley	32	1	Little Rock
Oct. 8	Stages I-IV	Lit. Navigator	Brenda/Leah	23	1	Little Rock
Oct. 13	Stages I-IV	Network 2	All Staff	68	1	Forrest City School District
Oct. 14	Stages I-IV	Network 2	All Staff	66	1	South Pulaski Technical College
Oct. 19	Stage II, III, IV	OGL MS/HS Lit	Leah/Brenda	52	1	Little Rock
Oct. 20	Stage II, III, IV	OGL MS/HS Lit	Suzy	[illegible]	1	Brinkley
Oct. 21	Transition Schools	Navigator	Suzy	22	1	Brinkley
Oct. 22	Transition Schools	Navigator	Bill	16	1	Fort Smith
Oct. 23	Transition Schools	Navigator	Brenda	7	1	Arkadelphia - Dawson Coop
Oct. 27	Stages I-IV	Leadership	All Staff	77	1	Brinkley Convention Center
Oct. 28	Stages I-IV	Leadership	All Staff	157	1	Agora Conference Center
Oct. 29	Transition Schools	Navigator	Suzy	27	1	Little Rock
Nov. 5	Stages I-IV	OGL Mathematics HS	Judee/Ashley	8	1	Brinkley High School

Nov. 5	Stages I-IV	OGL Mathematics Grades K-2	Dorothy	16	1	Marked Tree Elementary School
Nov. 5	Stages I-IV	Ramp Up Math (New Teachers)	Bill	5	1	Brinkley High School
Nov. 5 - 6	Stages I-IV	RUL & RUAL New Teachers	Brenda/Leah	43	2	Little Rock AC Office
Nov. 6	Stages I-IV	OGL Mathematics MS	Ashley/Judee	[illegible]	1	Brinkley High School
Nov. 6	Stages I-IV	OGL Mathematics Grades [illegible]	Dorothy	17	1	Marked Tree Elementary School
Nov. 6	Stages I-IV	OGL Literacy Grades 3-5	Suzy	2	1	Little Rock IRC
Nov. 6	Stages I-IV	Network 3	Tom Many	20	1	Hot Springs Convention Center
Nov. 12	Stages I-IV	OGL Mathematics HS	Judee/Ashley	13	1	Little Rock
Nov. 12	Stages I-IV	OGL Mathematics Grades K-2	Dorothy	11	1	Little Rock
Nov. 12	Stages I-IV	Ramp Up Math (New Teachers)	Bill	21	1	Little Rock
Nov. 12	Stages I-IV	OGL Literacy Grades K-2	Suzy	4	1	Brinkley Convention Center

Nov. 12 - 13	Stages I-IV	RUL & RUAL New Teachers	Brenda/Leah	19	2	Brinkley
Nov. 13	Stages I-IV	OGL Mathematics MS	Ashley/Judee	15	1	Little Rock
Nov. 13	Stages I-IV	OGL Mathematics Grades 3 - 5	Dorothy	44	1	Little Rock
Nov. 13	Stages I-IV	OGL Literacy Grades 3-5	Suzy	12	[illegible]	Brinkley Convention Center
January 2010						
Jan. 14	Stages I-IV	OGL Literacy Grades 3-5	Suzy	[illegible]	1	Brinkley Convention Center
Jan. 14	Stages I-IV	OGL Mathematics MS	Ashley/Judee	[illegible]	1	Brinkley Convention Center
Jan. 14	Stages I-IV	OGL Mathematics Grades K-2	Dorothy	[illegible]	[illegible]	Gibbs Albright Elementary Newport
Jan. 14	Stages I-IV	Ramp Up Math (New Teachers)	Bill	[illegible]	[illegible]	Brinkley Convention Center
Jan. 15	Stages I-IV	OGL Literacy Grades 3-5	Brenda		1	Little Rock
Jan. 15	Stages I-IV	Ramp Up Math (New Teachers)	Bill		1	Little Rock

Jan. 15	Stages I-IV	OGL Mathematics HS	Judee/Ashley		1	Little Rock
Jan. 15	Stages I-IV	OGL Mathematics Grades K-2	Dorothy		1	Little Rock
Jan. 19	Stages I-IV	Network 4	All Staff		1	Brinkley Convention Center
Jan. 20	Stages I-IV	Network 4	All Staff		1	Agora Conference Center
Jan. 25	Stage II, III, IV	OGL MS Lit	Brenda		1	Little Rock
Jan. 25	Stage II, III, IV	OGL HS Lit	Leah		1	Little Rock
Jan. 28	Stages I-IV	Math Coach Training	Bill		1	Little Rock
Jan. 29	Stages I-IV	Lit Coach Traiing	Suzy/Brenda		1	Little Rock AC Office
Feb. 15	Stages I-IV	OGL Mathematics Grades 3 - 5	Dorothy		1	Little Rock
Feb. 15	Stages I-IV	OGL Mathematics MS	Ashley/Judee		1	Little Rock
Feb. 15	Stage II, III, IV	OGL MS/HS Lit	Suzy		1	Brinkley Convention Center
Feb. 15 - 16	Stages I-IV	RUL & RUAL New Teachers	Brenda		1	Little Rock

Feb. 16	Stages I-IV	OGL Mathematics Grades 3 - 5	Dorothy			[illegible]-Albright Elementary Newport
Feb. 18-19	Stages I-IV	RUL & RUAL New Teachers	Brenda		2	Brinkley Convention Center
Feb. 22	Stages I-IV	OGL Mathematics MS	Judee/Ashley		1	Brinkley Convention Center
Feb. 23	Stages I-IV	Network 5	All Staff		1	Brinkley Convention Center
Feb. 24	Stages I-IV	Network 5	All Staff		1	Agora Conference Center
Mar. 16	Stages I-IV	Leadership	All Staff	2		Brinkley Convention Center
Mar. 17	Stages I-IV	Leadership	All Staff		1	Little Rock
11-May	Stages I-IV	Celebration Network - Network 6	All Staff		1	Agora Conference Center

**Note: Strategies for Content Literacy for Science and Social Studies & Standards-Based Instruction are conducted on-site throughout the year

Arkansas Leadership Academy
Institute Information

Background and Purpose of the Arkansas Leadership Academy

Established in 1991, the Arkansas Leadership Academy is a nationally recognized statewide partnership of 15 universities; 9 professional associations; 15 educational cooperatives; the Arkansas Departments of Education, High Education, and Workforce Education; the Arkansas Educational Television Network; Tyson Foods, Inc; Wal*Mart Stores, Inc.; 2 superintendent representatives; the Office of the Governor; and the State Board of Education, a total of 49 Partners.

The Academy, through the use of research and best practices, designs creative and innovative approaches to establish learning communities in public schools by developing human resources and by modeling and advocating collaboration, support, shared decision making, team learning, risk taking, and problem solving. Partners commit to changing their organizations to support system improvement.

Superintendent Institute: Advancing Systems Change

The purpose of the Superintendent Institute is to implement systems leadership skills that move effective practices to scale throughout a school system and the state. Participants are also encouraged to conduct research in teams to strengthen achievement based on data.

Master Principal Program

The purpose of the Master Principal Program is to provide training programs and opportunities to expand the knowledge base and leadership skills of public school principals.

Teacher Leadership Institute

The purpose of the Teacher Leadership Institute is to develop Arkansas public school teacher-leaders who are continuous learners and are actively engaged in a statewide, networked learning community which supports the use of diverse teaching and learning practices that will result in high teacher performance and student achievement.

Deep Knowledge Leadership Team Institute

The Team Institute seeks to build the capacity to create learning environments, move the work of the district, school, and organization forward by improving systems within the district, and provide tools and skills to work as a team. The work of the team should significantly move the work of the system.

Facilitator Training

The purpose of Facilitator Training is to build the capacity for individuals to facilitate institutes and other professional development for the Academy and within participants' own schools, districts, and/or organizations.

School Board Professional Development Training

School Board Professional Development Training is intended to involve the local school board in professional development centered on *Key Work of School Boards* published by the National Association of School Boards. The professional development will center on involvement of the community in establishing shared core values, vision, and mission for the school district; developing school district goals; and working with the school administrators and staff in the development of a strategic plan to reach the established school district goals.

Arkansas Leadership Academy
School Support Program
Information

Creation & Purpose:

The School Support Program was created by Act 1229 of 2005 during the Arkansas 85th General Assembly. The Arkansas Leadership Academy was selected by the Southern Regional Education Board (SREB) in 2001 to design a program for low-performing schools. A state-wide design team helped create the Intensive School Support for Low-Performing Schools which eventually became the School Support Program in 2005. Act 22 of 2009 continues the authorization of the School Support Program work in schools in School Improvement.

In this program, the Arkansas Leadership Academy in collaboration with the Arkansas Department of Education (ADE) provides support to applicable schools or school districts in School Improvement for three consecutive school years. Schools/districts in School Improvement may apply for services to be provided by the Arkansas Leadership Academy School Support Program.

Objectives:

- Build the leadership capacity of the school and district personnel
- Train a diverse school leadership team, including, but not limited to, the superintendent/designee, school principal, and teachers
- Provide a cadre of highly-experienced, trained performance coaches to work in the school on a regular basis
- Visit the school at least two days a week to facilitate leadership activities, provide follow-up on professional development implementation, and coordinate all school assistance efforts within the school
- Work with the school, school district staff, school board members, parents, community members, and other stakeholders as necessary to provide a comprehensive support network
- Work with school board regularly to establish goals for the school district and engage in strategic planning to meet district goals
- Engage the community to gather input concerning strengths, weaknesses, opportunities, and barriers within the school/district

Capacity Building Leader - provided for a minimum of 2 days in each school

- To facilitate data analysis in the school/district
- To build and facilitate collaborative team efforts in improving instruction for all students
- To build and facilitate Professional Learning Communities (PLCs) within the school/district
- To facilitate action research in the school/district

Participants:

Superintendent, Principal, Teachers, Teacher Leaders, Leadership Team, School Board, Community

Time Commitment:

*Superintendent Institute - Year-long (7 residential days over 3 sessions, 8 PLC sessions, Job-embedded, 1 webinar)

Master Principal Institute - Year-long Phase I (14 residential days over 4 sessions, Job-embedded)
Year-long Phase II (10 residential days over 3 sessions, Job-embedded)
Year-long Phase III (10 residential days over 3 sessions, Job-embedded)

Teacher Leadership Institute - Year-long (13 days residential over 4 sessions, Job-embedded)

*Deep Knowledge Team Institute - Year 1: Year-long (6 days residential over 2 sessions, Job-embedded)
Year 2: Year-long (3 days residential over 2 sessions, Technological networking)
Year 3: Year-long (3 days residential over 2 sessions, Technological networking)

School Board Training - once every 5-6 weeks

Facilitator Training - Year-long (2 days residential in 1 session, Job-embedded)

Arkansas Leadership Academy
School Support Program
2006-2009

Pilot Highlights

- 91% of grade level groups improved test scores
- Number of subpopulation groups meeting AYP improved
- School board skills improved (see Survey Responses page)
- Teacher leadership and efficacy increased (see Survey Responses page)

Teacher Survey Responses

All teachers in the three pilot schools completed a survey concerning their work in the School Support Program. Listed below are some responses to the survey:

Survey Feature	% Strongly Agree	% Agree	Total %
We read, discussed, and implemented new strategies for effective teaching and learning.	64	36	100
I implemented at least one learning strategy based on best practice to engage unengaged students.	55	43	98
We asked essential questions about why students aren't learning.	65	33	98
We reflected on the impact of our teaching on student achievement.	62	32	94
We have collaboratively developed a strategic action plan that includes shared core beliefs, shared vision, and mission.	65	35	100
We have analyzed our student performance data to determine a focus for improvement.	70	30	100
We set goals for teaching and learning and learning to improve student achievement.	67	31	98

School Board Survey Responses

All school boards in the three pilot schools completed a survey concerning their work in the School Support Program. Listed below are some of their observations based on their survey responses:

- All three boards now strongly feel that they provide resources needed to increase the number of students meeting and exceeding the standards.
- All three boards are positive about their skills in making data-driven decisions.
- All three boards feel strongly about their skill level in establishing policies that support safe, orderly, positive learning environments and setting high expectations for all.

Arkansas Leadership Academy
Pilot School Support Program
2006-2009

Arkansas Benchmark Scores

England Middle School

		Baseline **2005-2006**	Year 1 **2006-2007**	Year 2 **2007-2008**	Year 3 **2008-2009**
6th	Literacy	49	69	53	
	Math	39	59	57	
7th	Literacy	28	42	49	
	Math	26	45	66	
8th	Literacy	32	45	42	
	Math	15	26	42	

*England Middle School was closed for financial reasons after Year 2 of its participation in SSP.

Fordyce Middle School

		Baseline **2005-2006**	Year 1 **2006-2007**	Year 2 **2007-2008**	Year 3 **2008-2009**
5th	Literacy	33	49	49	50
	Math	33	45	43	40
6th	Literacy	48	46	57	57
	Math	44	57	53	59
7th	Literacy	38	49	55	60
	Math	25	43	55	62
8th	Literacy	65	57	59	68
	Math	36	23	31	50

Arkansas Leadership Academy
Pilot School Support Program
2006-2009

Arkansas Benchmark Scores

Gentry Middle School

		Baseline **2005-2006**	Year 1 **2006-2007**	Year 2 **2007-2008**	Year 3 **2008-2009**
6th	Literacy	74	88	78	76
	Math	69	82	79	76
7th	Literacy	61	62	73	82
	Math	54	65	76	79
8th	Literacy	77	79	73	88
	Math	55	57	71	72

Manila Middle School

		Baseline **2005-2006**	Year 1 **2006-2007**	Year 2 **2007-2008**	Year 3 **2008-2009**
5th	Literacy	58	64	57	70
	Math	39	58	68	62
6th	Literacy	68	66	59	62
	Math	50	45	68	70
7th	Literacy	57	65	57	56
	Math	49	62	55	62
8th	Literacy	59	65	65	67
	Math	31	43	46	60

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

England Middle School

Literacy

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	Female	69	89	70	
	Male	36	53	43	
7th	Female	35	43	60	
	Male	21	40	40	
8th	Female	50	54	57	
	Male	16	36	32	

Math

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	Female	55	67	55	
	Male	29	53	61	
7th	Female	29	53	80	
	Male	23	48	53	
8th	Female	20	29	50	
	Male	9	22	37	

Literacy

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	28	67	27	
7th	12	26	33	
8th	24	31	18	

Math

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	20	38	31	
7th	16	26	63	
8th	9	16	23	

Literacy

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	62	71	71	
7th	45	49	61	
8th	44	59	52	

Math

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	50	71	76	
7th	36	53	70	
8th	22	36	50	

Literacy

Low SES	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	36	69	37	
7th	16	32	57	
8th	26	33	31	

Math

Low SES	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	32	49	50	
7th	18	36	67	
8th	16	20	45	

*England Middle School was closed for financial reasons after Year 2 of its participation in SSP.

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Fordyce Middle School

Literacy

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	Female	32	61	54	49
	Male	32	33	44	51
6th	Female	57	50	70	60
	Male	41	42	42	53
7th	Female	38	52	61	82
	Male	38	46	49	35
8th	Female	77	64	77	75
	Male	53	47	40	60

Math

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	Female	21	57	53	47
	Male	44	40	35	21
6th	Female	46	53	59	54
	Male	41	81	45	64
7th	Female	21	43	52	71
	Male	29	51	57	53
8th	Female	43	24	31	48
	Male	29	21	31	52

Literacy

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	19	17	30	30
6th	25	31	25	38
7th	27	28	43	30
8th	47	46	39	53

Math

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	13	20	21	21
6th	65	45	22	43
7th	36	17	40	36
8th	14	9	6	31

Literacy

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	43	72	75	71
6th	67	58	83	80
7th	51	63	63	83
8th	78	69	73	79

Math

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	50	63	75	61
6th	58	66	77	80
7th	39	58	65	84
8th	55	38	50	64

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Literacy

	Baseline	Year 1	Year 2	Year 3
Low SES	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	16	29	41	39
6th	28	31	40	51
7th	26	24	51	43
8th	54	45	42	58

Math

	Baseline	Year 1	Year 2	Year 3
Low SES	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	35	31	32	28
6th	22	38	34	52
7th	41	20	43	48
8th	17	12	18	33

Literacy

	Baseline	Year 1	Year 2	Year 3
IEP	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	37	52	50	0
6th	54	51	53	0
7th	46	55	59	0
8th	73	66	66	0

Math

	Baseline	Year 1	Year 2	Year 3
IEP	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	35	48	43	0
6th	48	62	58	0
7th	30	47	59	0
8th	40	27	35	0

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Gentry Middle School

Literacy

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	Female	85	91	74	84
	Male	64	84	71	69
7th	Female	62	78	87	88
	Male	64	44	62	78
8th	Female	87	81	83	90
	Male	70	77	61	84

Math

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	Female	77	83	79	77
	Male	58	79	77	77
7th	Female	60	69	83	84
	Male	52	61	71	74
8th	Female	53	52	71	70
	Male	58	63	69	75

Literacy

Asian/Pacific Islander	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	73	78	80	71
7th	55	80	67	75
8th	69	90	90	86

Math

Asian/Pacific Islander	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	73	78	100	57
7th	55	70	67	100
8th	59	60	80	86

Literacy

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	76	89	79	71
7th	66	58	75	82
8th	83	83	70	89

Math

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	65	84	80	77
7th	57	64	78	79
8th	60	62	70	75

Literacy

Low SES	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	71	80	71	73
7th	60	66	62	76
8th	72	69	74	80

Math

Low SES	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	62	73	69	74
7th	49	65	70	73
8th	48	64	69	62

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Literacy

IEP	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	78	89	85	0
7th	69	69	76	0
8th	84	84	78	0

Math

IEP	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
6th	71	83	86	0
7th	62	70	80	0
8th	60	60	77	0

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Manila Middle School

Literacy

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	Female	81	70	56	77
	Male	35	56	57	60
6th	Female	63	87	59	70
	Male	53	43	58	54
7th	Female	66	73	76	65
	Male	46	58	43	45
8th	Female	61	76	72	83
	Male	49	59	59	52

Math

	Gender	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	Female	52	60	70	57
	Male	26	52	66	54
6th	Female	47	59	71	76
	Male	52	30	63	66
7th	Female	55	67	86	60
	Male	43	58	29	52
8th	Female	32	46	38	84
	Male	30	38	53	47

Literacy

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th				
6th				
7th				
8th				

Math

African American	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th				
6th				
7th				
8th				

Literacy

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	58	65	59	71
6th	71	66	61	63
7th	62	65	58	56
8th	64	64	64	66

Math

Caucasian	Baseline 2005-2006	Year 1 2006-2007	Year 2 2007-2008	Year 3 2008-2009
5th	38	59	52	61
6th	52	43	70	72
7th	51	62	53	51
8th	33	44	47	56

Arkansas Leadership Academy
Pilot School Support Program
2006-2009
Arkansas Benchmark Scores

Literacy

	Baseline	Year 1	Year 2	Year 3
Low SES	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	42	57	45	65
6th	64	53	41	56
7th	44	55	43	38
8th	47	45	55	56

Math

	Baseline	Year 1	Year 2	Year 3
Low SES	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	32	52	60	55
6th	45	27	54	67
7th	36	53	41	36
8th	23	25	40	51

Literacy

	Baseline	Year 1	Year 2	Year 3
IEP	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	0	8	18	0
6th	25	0	7	0
7th	0	8	0	0
8th	6	11	8	0

Math

	Baseline	Year 1	Year 2	Year 3
IEP	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
5th	0	17	30	0
6th	8	0	0	0
7th	0	23	0	0
8th	0	5	8	0

ELBOW-2-ELBOW
EDUCATIONAL CONSULTING

The demands on today's classroom teacher and administrator can be overwhelming. No Child Left Behind and state accountability measures are requiring school districts to find new resources to help identify learning gaps and support educators as they strive to create the academic gains required each day.

At E2E Educational Consulting, we work side by side with teachers and administrators to deliver innovative and research-based practices that deliver improved teacher effectiveness and student achievement. We know that professional development, coupled with focused and aligned resources, is a critical factor in the success of every classroom. These are the tools that will create continuous academic growth required in today's school environment.

Beginning in 2007, E2E partnered with the Walton Family Foundation and Southern Bancorp to provide intensive services to the schools in St. Francis and Phillips Counties. Additional districts E2E has partnered with include the West Memphis School District, Clarendon School District, South Mississippi County at Luxora, and the Watson Chapel School District.

E2E Consultants are matched with the schools, based on the needs of the schools, and provide job embedded professional development to the school leadership and staff. Activities conducted include training for school leadership and leadership teams, instructing school staff in implementing standards based instruction, modeling and providing demonstration lessons that increase student engagement, using data to inform instruction, and providing feedback to teachers on lesson design and delivery. Our ultimate goal is build capacity and to help classroom teachers and administrators become efficient and self-sufficient leaders in the art of academic improvement.

Benchmark and End of Course Exams: West Memphis School District

West Memphis School District	% Prof/ Adv 2009	% Prof/ Adv 2008	% Prof/ Adv 2007	% Prof/ Adv 2006
Bragg Elementary				
3rd grade math	98	94	94	65
3rd grade literacy	57	80	75	52
4th grade math	91	94	71	79
4th grade literacy	74	88	63	67
5th grade math	89	82	75	74
5th grade literacy	85	67	78	60
6th grade math	92	84	76	90
6th grade literacy	63	73	79	92
Maddux Elementary				
3rd grade math	71	82	68	63
3rd grade literacy	33	64	55	36
4th grade math	77	79	68	44
4th grade literacy	74	72	67	64
5th grade math	54	72	38	31
5th grade literacy	41	62	34	38
6th grade math	78	60	66	51
6th grade literacy	53	46	44	40
Jackson Elementary				
3rd grade math	55	70	43	37
3rd grade literacy	43	51	41	12
4th grade math	91	68	39	25
4th grade literacy	60	44	32	21
5th grade math	58	56	18	28
5th grade literacy	55	42	24	39

6th grade math	72	57	49	37
6th grade literacy	55	30	45	33
Richland Elementary				
3rd grade math	97	96	87	83
3rd grade literacy	91	92	87	65
4th grade math	98	92	86	80
4th grade literacy	95	88	87	82
5th grade math	94	90	77	74
5th grade literacy	84	85	79	84
6th grade math	87	87	91	86
6th grade literacy	79	85	87	75
Wonder Elementary				
3rd grade math	79	73	82	71
3rd grade literacy	69	49	78	39
4th grade math	84	92	73	53
4th grade literacy	75	71	55	41
5th grade math	89	36	73	37
5th grade literacy	62	36	33	35
6th grade math	73	55	78	46
6th grade literacy	73	49	55	58
Weaver Elementary				
3rd grade math	87	87	56	36
3rd grade literacy	71	28	58	20
4th grade math	86	74	53	44
4th grade literacy	30	41	23	26
5th grade math	90	42	54	26
5th grade literacy	52	29	37	18
6th grade math	81	73	62	62
6th grade literacy	52	48	64	73

Faulk Elementary				
3rd grade math	71	85	56	48
3rd grade literacy	55	65	47	35
4th grade math	88	70	65	48
4th grade literacy	63	49	41	34
5th grade math	59	66	42	44
5th grade literacy	41	49	48	61
6th grade math	73	59	60	52
6th grade literacy	52	53	62	39
Wedlock Elementary				
3rd grade math	81	80	70	77
3rd grade literacy	38	45	54	54
4th grade math	95	73	60	41
4th grade literacy	39	64	70	53
5th grade math	70	90	67	47
5th grade literacy	30	68	73	63
6th grade math	87	100	82	50
6th grade literacy	73	47	82	69
West Jr. High				
7th grade math	82	74	66	43
7th grade literacy	80	64	63	51
8th grade math	70	72	50	44
8TH grade literacy	83	66	65	70
Algebra	87	99	98	95
Wonder Jr. High				
7th grade math	35	26	23	27
7th grade literacy	28	27	33	29

8th grade math	24	25	25	16
8th grade literacy	36	40	44	34
Algebra	41	64	61	64
East Jr. High School				
7th grade math	40	38	27	23
7th grade literacy	41	34	42	36
8th grade math	34	25	19	9
8th grade literacy	53	48	54	42
Algebra	31	87	51	48
West Memphis High School				
Algebra	24	19	11	16
Geometry	68	65	53	57
11th grade literacy	33	33	38	28

Benchmark and End of Course Exams: Phillips County E2E Schools

Helena-West Helena School District	% Proficient/ Advanced 2009	% Gain/Loss from 2008 to 2009	% Proficient/ Advanced 2008	% Gain/Loss from 2007 to 2008	E2E % Gain/Loss from 2007 to 2009	State Gain/Loss from 2007 to 2009
Beech Crest						
3rd grade math	67	-16	83	+23	+7	+6
3rd grade literacy	60	+6	54	+10	+16	+6
4th grade math	75	+17	58	+26	+43	+11
4th grade literacy	55	+3	52	+10	+13	+11
5th grade math	46	-12	58	+19	+7	+8
5th grade literacy	49	-12	61	+9	-3	+8
6th grade math	68	-14	82	+28	+14	+9
6th grade literacy	49	+6	43	-13	-7	+6
***Central High School**						
11th grade Literacy	27	+6	21	n/a	n/a	n/a
Algebra I	29	+5	24	n/a	n/a	n/a
Geometry	22	+7	15	n/a	n/a	n/a

* E2E consultants were not in Central High school in the 2007-2008 school year. Central High gains met or exceeded state gains for 2008 to 2009 as state gains were +6 in Geometry, +4 in Algebra I, and +6 in 11th grade Literacy.

Marvell School District	% Proficient/ Advanced 2009	% Gain/Loss from 2008 to 2009	% Proficient/ Advanced 2008	% Gain/Loss from 2007 to 2008	E2E Gain/Loss from 2007 to 2009	State Gain/Loss from 2007 to 2009
Lucilia Wood						
3rd grade math	88	+40	48	-5	+35	+7
3rd grade literacy	56	+38	18	-10	+28	+8
Marvell Primary						
3rd grade math	86	-7	93	+50	+43	+6
3rd grade literacy	62	-1	61	+23	+22	+6
4th grade math	72	+25	47	+29	+54	+11
4th grade literacy	32	-12	44	+15	+3	+11
5th grade math	42	+4	38	+19	+23	+8
5th grade literacy	30	-6	32	+8	+3	+8
6th grade math	60	+12	48	+32	+44	+9
6th grade literacy	33	-15	48	+19	+4	+6
Marvell High School						
7th grade math	36	+21	15	-6	+15	+9
7th grade literacy	32	+15	17	-11	+4	+5
8th grade math	17	-10	27	+10	-0-	+12
8TH grade literacy	42	+9	33	-8	+1	+7
11th grade literacy	32	+13	19	-11	+2	+4
Algebra I	51	+19	32	-2	+17	+8
Geometry	47	+16	31	-3	+13	+7

Barton School District	% Proficient/ Advanced 2009	% Gain/Loss from 2008 to 2009	% Proficient/ Advanced 2008	% Gain/Loss from 2007 to 2008	E2E Gain/Loss from 2007 to 2009	State Gain/Loss from 2007 to 2009
Elementary						
3rd grade math	81	-5	86	-1	-6	+6
3rd grade literacy	79	+12	67	-15	-3	+6
4th grade math	69	+1	68	-3	-2	+11
4th grade literacy	57	-7	64	-8	-15	+11
5th grade math	65	-6	71	+13	+7	+8
5th grade literacy	63	-7	70	+12	+5	+8
6th grade math	85	-0-	85	+9	+9	+9
6th grade literacy	74	+14	60	+9	+23	+6
High School						
7th grade math	64	+12	52	+1	+13	+9
7th grade literacy	61	+4	57	-4	-0-	+5
8th grade math	42	-5	47	+21	+16	+12
8th grade literacy	55	-12	67	-1	-13	+7
11th grade literacy	51	-3	54	+14	+11	+4
Algebra I	47	-15	62	+20	+5	+8
Geometry	49	-12	61	+8	-4	+7

Benchmark and End of Course Exams

St. Francis County Proficient/Advanced 2008
Gain or loss from Proficient/Advanced 2007

Forrest City	% Proficient / Advanced 2008	Gain/ Loss from 2007	State Gain / Loss	% Proficient/ Advanced 2009	Gain/ Loss from 2008	State Gain / Loss
Stewart Elementary						
3rd grade math	68	+21	+5	68	0	+2
3rd grade literacy	40	+5	+5	39	-1	+3
4th grade math	56	+3	+9	63	+7	+4
4th grade literacy	43	+9	+8	41	-2	+3
Central Elementary						
3rd grade math	63	+9	+5	53	-10	+2
3rd grade literacy	44	-4	+5	37	-7	+3
4th grade math	55	+4	+9	71	+16	+4
4th grade literacy	49	+16	+8	54	+5	+3
Lincoln Middle School						
5th grade math	45	-9	+6	43	-2	+3
5th grade literacy	33	-6	+5	39	+6	+4
6th grade math	52	+10	+4	57	+5	+7
6th grade literacy	41	+9	+3	36	-5	+4

Forrest City Jr. High						
7th grade math	31	-7	+3	44	+13	+6
7th grade literacy	27	-3	-0-	34	+7	+7
8th grade math	21	-1	+8	25	+4	+5
8th grade literacy	40	-9	+4	38	-2	+5
Algebra I	87	-2	No data	94	+7	No data
Forrest City High School						
11th grade End of Course Literacy	24	+3	-0-	40	+16	+6
Algebra I End of Course	22	-11	+5	40	+18	+4
Geometry End of Course	30	-1	+1	27	-3	+6

Palestine Wheatley	**% Proficient / Advanced 2008**	**Gain/ Loss from 2007**	**Sate Gain / Loss**	**% Proficient/ Advanced 2009**	**Gain/ Loss from 2008**	**Sate Gain / Loss**
Elementary						
3rd grade math	62	-12	+5	67	+5	+2
3rd grade literacy	40	+14	+5	53	+13	+3
4th grade math	62	+13	+9	76	+14	+4
4th grade literacy	51	+7	+8	52	+1	+3

Middle School						
5th grade math	39	+5	+6	53	+14	+3
5th grade literacy	45	-4	+5	51	+6	+4
6th grade math	53	+14	+4	67	+14	+7
6th grade literacy	43	-13	+3	40	-3	+4
High School						
7th grade math	55	+7	+3	No scores	No scores	+6
7th grade literacy	64	+25	-0-	No scores	No scores	+7
8th grade math	50	+32	+8	55	+5	+5
8th grade literacy	66	+26	+4	78	+12	+5
11th grade End of Course Literacy	14	-18	-0-	34	+20	+6
Algebra I End of Course	38	+9	+5	64	+26	+4
Geometry End of Course	24	-14	+1	41	+17	+6

	%	Gain/	Sate Gain	%	Gain/	Sate Gain /

Hughes	Proficient / Advanced 2008	Loss from 2007	/ Loss	Proficient/ Advanced 2009	Loss from 2007	Loss
Elementary						
3rd grade math	40	-11	+5	76	+36	+2
3rd grade literacy	15	-19	+5	56	+41	+3
4th grade math	44	+8	+9	55	+11	+4
4th grade literacy	52	+13	+8	29	-23	+3
5th grade math	38	+9	+6	24	-14	+3
5th grade literacy	48	+16	+5	49	+1	+4
6th grade math	40	+16	+4	60	+20	+7
6th grade literacy	40	+2	+3	55	+15	+4
High School						
7th grade math	18	-12	+3	29	+11	+6
7th grade literacy	26	+6	-0-	49	+23	+7
8th grade math	17	+3	+8	14	+3	+5
8th grade literacy	42	+9	+4	29	-3	+5
11th grade End of Course Literacy	9	-16	-0-	14	+5	+6
Algebra I End of Course	18	-43	+5	9	-9	+4
Geometry End of Course	41	+18	+1	10	-31	+6

Clarendon Trend Data (E2E only worked 7-12)

Grade/Subject	2007	2008	2009
3rd Math	57	61	73
3rd Literacy	61	55	55
4th Math	44	61	48
4th Literacy	57	53	48
5th Math	51	64	41
5th Literacy	51	64	33
6th Math	44	58	55
6th Literacy	56	45	40
7th Math	16	29	41
7th Literacy	29	44	44
8th Math	12	16	29
8th Literacy	44	50	66
Algebra (HS)	41	46	35
Geometry	22	33	44
Literacy (HS)	30	25	36

Luxora Elementary (South Mississippi County) Trend Data

Grade/Subject	2007	2008	2009
3rd Math	38	43	81
3rd Literacy	23	36	62
4th Math	50	43	55
4th Literacy	46	43	41
5th Math	52	59	Less than 10 tested
5th Literacy	24	41	Less than 10 tested
6th Math	61	74	Less than 10 tested
6th Literacy	52	26	Less than 10 tested

Watson Chapel Trend Data

Grade/Subject	2009	2008	2007
4th Math	67	64	52
4th Literacy	63	51	55
5th Math	56	62	45
5th Literacy	54	54	47
6th Math	76	62	56
6th Literacy	49	57	53
7th Math	53	48	48
7th Literacy	53	46	51
8th Math	37	41	29
8th Literacy	61	52	48
Algebra (HS)	19	24	10
Geometry	69	48	58
Literacy (HS)	43	41	45

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A PROCESS AND PARTNER FOR POSITIVE CHANGE

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With implementation of the process, staff begin to apply proven instructional and classroom management strategies, and they see students respond. Seeing the difference that these practices can make allows students, teachers, and principals to experience success. The pattern of making excuses and blaming students for poor performance is replaced by a process that teaches new instructional and leadership behaviors.

HOW DO SCHOOLS CONTINUALLY IMPROVE?

Schools improve by continually monitoring and strengthening their adoption of the Essential Practices that have a single focus: student success. JBHM Education Group's rubrics serve as a roadmap, defining a common set of standards by which the practices of the school board, district leaders, principals and teachers are measured.

Rubrics are used to chart the policies and professional actions that are critical to becoming a high-performing school and district. Ratings of Insufficient, Minimal, Fundamental, or Best Practice are assigned according to where schools and staff are on the scale. As a result, improvement efforts—from setting new policies to supplying additional classroom resources to scheduling training—can be targeted to the specific standards that are lacking. Whether working directly with school and district staff or "training the trainers," JBHM Education Group provides coaching to support advancement along the scale.

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The Five Essential Practices

PROVIDING A SCHOOL CULTURE AND CLIMATE CONDUCIVE TO LEARNING

The climate of the school system, including school and classroom, reflects high expectations for student behavior. Facilities are clean and orderly with safe, secure environments that are conducive to learning.

MAXIMIZING ACADEMIC LEARNING TIME

Classroom instruction is marked by protected and effective use of instructional time, high expectations for all students, positive teacher-student interactions, student engagement in meaningful learning activities, and an understanding of individual student learning needs and differences.

GUARANTEEING AN ESSENTIAL CURRICULUM

The board-approved curriculum is aligned with the state and national standards. District and school policies, procedures, and practices ensure that all students are provided the opportunity for success on state and national assessments.

MONITORING STUDENT ACHIEVEMENT

Student progress is monitored frequently, using assessment strategies that reflect the rigor of state and national assessment standards. Assessments and questioning techniques are used to strengthen students' higher-level thinking skills and problem-solving abilities.

PROMOTING PROFESSIONAL PRACTICE

The school system's policies, practices, and procedures require and support all personnel in participating in development opportunities to improve and implement current educational best practices.

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Shifting the focus to student success

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JBHM Education Group coaches employ extensive modeling of leadership and instructional practices that promote a student-centered school environment. We guide staff and administrators in moving from mere compliance with the strategies we model inside classrooms and schools to understanding their impact and significance. Transformation of the school climate and culture is complete as professionals move from understanding the practices to owning them and incorporating them in their planning and every interaction with students.

Transforming Professional Practice

SCHOOL BOARDS MOVE

from micromanagement or limited focus on student performance → to active support of improved student performance through review of data and establishment or revision of policies and resource allocation

SUPERINTENDENTS SHIFT

from preoccupation with system management, politics, and personnel issues → to leadership as CEOs of learning, guiding the board, district, principals, and teachers in increasing student performance

DISTRICT LEADERS EXPAND

from an isolated focus on their individual roles as managers of budgets, materials, and programs → to involvement as team members who support principals and teachers in improving instruction for all students

SCHOOL LEADERS CHANGE

from managing programs, discipline, and building and facilities issues → to leading instructional improvements by ensuring the professional practices that fuel student achievement

TEACHERS EVOLVE

from dispensing information, managing discipline, and implementing programs → to creating learning opportunities for students at all levels based on use of research-based best practices

SUPPORT STAFF MOVES

from being disconnected from the business of student performance → to understanding and actively encouraging student performance through modeling, taking interest, and supporting the instructional focus

PARENTS / COMMUNITY GROUPS SHIFT

from being disconnected or misunderstanding their schools → to being informed, involved, and appropriately supportive of their schools

Lakeside School District - Lake Village, AR

Lakeside Middle School

- 2005-2006 Year I
  - 6th math +27%
  - 6th Lit. +1%;
  - 7th math -2%
  - 7th Lit. -4%;
  - 8th math +13%
  - 8th Lit. +21%

- 2006-2007 Year II*
  - 6th math -5%
  - 6th Lit. -7%;
  - 7th math +7%
  - 7th Lit. +8%:
  - 8th math -6%
  - 8th Lit. -22%

- 2007-2008 Year III
  - 6th math +9%
  - 6th Lit. +2%;
  - 7th math +3%
  - 7th Lit. +4%.
  - 8th math +18%
  - 8th Lit. +10%

- 2008-2009 Year IV
  - 6th math +4%
  - 6th Lit. +17%;
  - 7th math +19%
  - th Lit. +11%;
  - 8th math +3%
  - 8th Lit. +7%

* This year the State of Arkansas annexed Eudora School District to Lakeside.

Results for Eudora Elem.

2006-2007 Year I	3rd math +60%	3rd Lit. +37%
2007-2008 Year II	3rd math +17%	3rd Lit. +44%
2008-2009 Year III	3rd math +7%	3rd Lit. -29%

Blytheville School District - Blytheville, AR

Blytheville High School

2007-2008 Year 1 Alg. I +13% Geometry +7% 11th Grade Literacy -6%
2008-2009 Year 2 Alg. I +10% Geometry +17% 11th Grade Literacy +22%

Pine Bluff School District - Pine Bluff, AR

Pine Bluff High School

2008-2009 Year 1 Algebra +11% Geometry +8% Literacy +3%

Jack Robey Jr. High School

2008-2009 Algebra I +12%; 8th grade math +12%; 8th grade literacy +16%

Harrisburg School District - Harrisburg, AR

Harrisburg High School

2008-09 Algebra I +10% Geometry +1% 11th grade Literacy +28%

North Little Rock School District- North Little Rock, AR

Lakewood Middle School

2008-2009 7th math +11% 7th Lit. +15%; 8th math +6% 8th Lit. +14%;

Helena/W.Helena School District- Helena, AR

Wahl Elementary School

- 2007-2008 Year I
    - 3rd Math +14%
    - 3rd Lit. +15%
    - 4th Math +8%
    - 4th Lit. +13%
    - 5th Math +10%
    - 5th Lit. +3%
    - 6th Math +5%
    - 6th Lit. -12%

- 2008-2009 Year 2
    - 3th Math +16%
    - 3rd Lit. +12%
    - 4th Math +9%
    - 4th Lit. +6%
    - 5th Math -4%
    - 5th Lit. -7%
    - 6th Math +3%
    - 6th Lit. +15%

Crossett School District - Crossett, AR

Crossett Elementary

2005-2006 Year 1	3rd Math +16%	3rd Lit. +21%	4th Math +14%	4th Lit. +17%
2006-2007 Year 2	3rd Math +12%	3rd Lit. -5%	4th Math +13%	4th Lit. +5%
2007-2008 Year 3	3rd Math +2%	3rd Lit. +8%	4th Math +17%	4th Lit. +8%
2008-2009 Year 4	3rd Math -2%	3rd Lit. -4%	4th Math +4%	4th Lit. -7%

Daniel Intermediate

2005-2006 Year 1	5th Math +2%	5th Lit. +5%	6th Math +5%	6th Lit. +15%
2006-2007 Year 2	5th Math +14%	5th Lit. -1%	6th Math +17%	6th Lit. -9%
2007-2008 Year 3	5th Math +8%	5th Lit. +7%	6th Math +10%	6th Lit. +1%
2008-2009 Year 4	5th Math +20%	5th Lit. +8%	6th Math +14%	6th Lit. +3%

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Appendix F

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Smart Course to Success: Arkansas's Race to the Top

ARKANSAS DEPARTMENT OF EDUCATION
RULES GOVERNING DISTANCE LEARNING
July 11, 2005

1.00 REGULATORY AUTHORITY

1.01 These rules shall be known as Arkansas Department of Education Rules Governing Distance Learning.

1.02 These rules are enacted pursuant to the State Board of Education's authority under *Arkansas Code Annotated §§ 6-47-201, 6-47-302,* and Act 2325 of 2005.

2.00 PURPOSE

It is the purpose of these rules to set reasonable guidelines for the implementation of the Arkansas Distance Learning Development Program, the Public School District and Charter School Distance Learning Program and the operation of distance learning in the public schools of Arkansas. These rules shall replace any existing rules regarding distance learning. These rules do not apply to professional development activities.

3.00 DEFINITIONS

For the purpose of these rules:

3.01 "Adult Facilitator" is the person responsible for supervising and assisting the students at the receiving site. The adult facilitator must be an adult approved by the school district.

3.02 "Asynchronous" is a distance-learning technology where the student is not receiving live or real time instruction from a teacher and typically utilizes the Internet.

3.03 "Appropriately Licensed or Approved Instructor" is a teacher either licensed to teach the content of the required course in a public school in Arkansas or approved by the Commissioner of the Arkansas_Department of Education to teach the content through distance learning-technology. The intent of the approval process is to provide flexibility for the approval of teachers of programs originating from outside Arkansas, exceptionally qualified individuals within the state who may not meet licensure requirements, or teachers of courses that do not have an appropriate licensure requirement.

3.04 "Course Curriculum" is the course design including the instructional content, methods, and student assessments.

3.05 "Distance Learning" is the technology and educational process used to provide instruction when the student and primary instructor are not physically present at the same time and/or place.

3.06 "Distance-Learning Course" is a course that is made available by using distance-learning technology.

3.07 "Offering Institution" is the school or organization providing the distance-learning course.

3.08 "Primary Instructor" is an individual_responsible for the course design, instruction, or student assessments.

3.09 "Receiving Site" is the local site where the students are receiving distance learning.

3.10 "Supplemental Instruction" is instruction used to reinforce or enrich a course or to provide the student an educational opportunity outside of the normal course structure.

3.11 "Synchronous" is a distance learning-technology where the student is receiving live or real-time instruction from a teacher and typically utilizes compressed interactive video.

3.12 "Technology" is the means (usually electronic or by telecommunications) used for providing the student with materials, instruction, assistance, and a way to interact with the teacher(s) and other students.

4.00 COURSE REQUIREMENTS

4.01 The Department of Education must approve all distance learning courses prior to the courses being offered or taught by a public school district or charter school .

4.02 All distance-learning courses shall have an appropriately licensed or approved primary instructor.

4.03 All distance-learning courses shall have an adult facilitator to supervise any instructional activity where students meet as a group.

4.04 All distance-learning courses except concurrent credit courses that are used as a required course shall use a curriculum designed to comply with the Arkansas Curriculum Frameworks and Arkansas Course Content Standards.

4.05 An adult facilitator must be present when student achievement assessments used to determine a student's final grade are administered in a distance-learning course. The student achievement assessments shall be designed to assess the degree to which the students have mastered existing Arkansas Course Content Standards.

4.05.1 Documentation of student achievement assessments shall be maintained at the receiving site school for a minimum of five years after the final grade for the student has been issued. Documentation shall include the assessment questions, student responses, and the grade for each student assessment and grading period.

4.05.2 Student achievement assessment documentation shall be available for review by the Department of Education. In the event that the Department review indicates insufficient student achievement or inadequate curriculum alignment with the curriculum frameworks or course content standards, the course may be disapproved by the Department for use beginning the following school year.

5.00 SUPPLEMENTAL INSTRUCTION

All distance-learning supplemental instruction shall be considered an enhancement to the teacher's regular instruction and shall not be subject to the restrictive provisions of these regulations.

6.00 CLASS SIZE

6.01 The combined number of students at the receiving and sending site(s) shall determine class size.

6.02 Class size for synchronous distance-learning courses shall be the same as for courses not taught by distance learning as specified in the Arkansas Standards for Accreditation. Class size requirements do not apply to asynchronous distance-learning instruction.

6.03 Student interaction with the primary instructor or an appropriately licensed teacher(s) shall be available at a ratio of no more than 30 students per class and 150 students each day for both synchronous and asynchronous courses.

7.00 ADULT SUPERVISION

These rules provide minimum distance-learning educational supervision requirements only and are not designed to replace legal or other student supervision responsibilities schools have to properly protect and supervise students.

8.00 PILOT PROGRAMS

In an effort to facilitate distance learning opportunities for students and teachers, the Arkansas Department of Education may approve on a pilot basis distance learning courses for a maximum of two consecutive years. Continuation of the distance learning course after the pilot phase will be dependent on the course meeting all of the regulations governing distance learning courses.

9.00 ARKANSAS DISTANCE LEARNING DEVELOPMENT PROGRAM

In order to improve course offerings available to students throughout the state and to demonstrate the efficiency of using distance learning to enhance elementary and secondary education, there is hereby established the Arkansas Distance Learning Development Program.

9.01 The program shall have four (4) focus areas:

9.01.1 To help alleviate the increasing shortage of available qualified teachers;

9.01.2 To provide additional course scheduling opportunities of students currently forced to choose between courses that are scheduled infrequently or concurrently;

9.01.3 To provide an opportunity for students to access an enriched curriculum and additional courses beyond those mandated by the Standards for Accreditation of Arkansas Public Schools; and

9.01.4 To develop and make available online professional development and instructional resources for all teachers and administrators.

9.02 The funding necessary to carry out the provisions of this subchapter may be derived from donations, grants, or legislative appropriation.

9.02.1 The project shall receive from the Public School Fund an amount equal to one-sixth (1/6) of the previous year's foundation aid_per student for each student enrolled in a course at the secondary level or each subject at the elementary level on July 15 for the current summer or October 1 for the current_upcoming school year. The funds shall be transferred from the Public School Fund to the designated distance-learning fund and appropriation based upon student enrollment.

9.02.2 The commissioner may solicit and receive donations and grants for the purpose of administering the program.

9.02.3 Fund balances may be carried over from one year to the next to continue the project.

9.02.4 The department may enter into contracts or provide grants to local education agencies, education service cooperatives, or other entities for personnel, facilities, and services necessary to implement this program.

9.03 Students taking courses through this program shall be considered entitled to any public education credits and grades assigned through this program and those credits and grades shall be accepted by all public schools in Arkansas.

9.04 The commissioner shall review the implementation of this program annually and make recommendations to the board to ensure that the purpose of the program is achieved.

9.05 Courses offered or taught through the Arkansas Distance Learning Development Program may be offered or taught to public school students, private school students, and home school students in the State of Arkansas. Public school students will be given priority when scheduling courses.

9.06 A home school student or a private school student enrolled in a distance-learning course shall not be entitled to any rights, privileges, courses, activities, or services available to a public school student or open-enrollment charter school student other than receiving appropriate credit for a completed distance learning course.

10.00 PUBLIC SCHOOL DISTRICT AND CHARTER SCHOOL DISTANCE LEARNING PROGRAM.

10.01 A public school district or open-enrollment charter school may offer and teach distance-learning courses to students enrolled in a private school or a home school under the following conditions:

10.01.1 The student resides in the public school district where the public school or open-enrollment charter school is located;

10.01.2 The student agrees to physically attend the public school or open-enrollment charter school for purposes of taking a distance-learning course taught or offered through the public school or charter school; and

10.01.3 The public school or open-enrollment charter school teaches or offers a distance-learning course that has been approved by and otherwise complies with Department of Education rules and standards governing distance learning courses; or

10.01.4 The Commissioner of the Department of Education waives the requirements under 10.01.1 and 10.01.2 of this section on an individual basis for a student who submits sufficient documentation to the Department that they are unable to attend due to conditions that prevent the child from physically attending a public school or an open-enrollment charter school.

10.02 A public school district or open-enrollment charter school that teaches or offers a distance-learning course to one (1) or more home school or private school students who meet the conditions 10.01 shall be entitled to an amount equal to one-sixth (1/6) of the state foundation funding amount for each private school student or home school student. The funding is based on a one-unit course and will be adjusted proportionally for courses producing less credit.

10.03 Under no circumstances shall a public school district or open-enrollment charter school be entitled to more than the equivalent of state foundation funding for one (1.0) average daily membership per student regardless of the number of distance-learning courses received by a particular home school or private school student.

10.04 A home school student or a private school student enrolled in a distance-learning course shall not be entitled to any rights, privileges, courses, activities, or services available to a public school student or open-enrollment charter school student other than receiving appropriate credit for a completed distance learning course.

10.05 A home school student or private school student shall not be entitled to participate in, enroll in, or attend any other courses, activities, or services provided by a public school district or an open-enrollment charter school.

10.06 Any public school district or charter school seeking to offer or teach distance-learning courses to public school students, home school students, or private school students must first have those course offerings approved by the Department of Education Distance Learning Program.

10.07 No public school district or open-enrollment charter school shall establish or provide a virtual school or distance-learning course except as allowed by this section.