Appendix Table of Contents

Section A

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A(1)-I The State's standard Participating LEA MOU

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A(2)

A(2)-I: P-20 Achievement Strategic Direction Action Plan

Goal	Action Items		Timeline
Entry to Education: Year one-- OPI will participate in the School Readiness Initiative and work with the Department of Health and Human Services and other early childhood stakeholders to promote high quality pre-school experiences and to support ready schools.	1	Coordinate ECE (K-3) efforts with the DPHHS 0 to 8 years initiative and "Best Beginnings". Share Early Learning Guidelines and School Readiness work with K-12 schools.	December 2009-April 2010
	2	Gather Early Learning "readiness" and Kindergarten entry through an ECE-K team. Align school structure.	December 2009-Spring 2010
High school & higher education: Year one – OPI will collaborate with the Office of the Commissioner of Higher Education and other education and workforce partners to promote seamless transitions to all post-secondary opportunities.	3	Participate in Montana longitudinal data grant proposal. Through comprehensive data collection and analysis, improved decision-making will become a reality.	November 2009-Present
	4	Update high school initiative plan for Montana. Improved clarity of high school outcomes across the state.	November 2009-December 2009
	5	Collaborate OPI contributions to the Montana College!Now initiative with the Office of the Commissioner of Higher	September 2009-Present

		Education to ensure a smooth transition for Grade 12 to first year of post-secondary options. Collaborate with higher education and Department of Labor and Industry to improve the transition for Montana students.	
	6	Align high school outcomes with college and career readiness expectations to facilitate the transition from high school to college. Aligned K-12 exit with college entrance for lay understanding.	December 2009-Present

A(2)-II: Analyzing and Using Data Strategic Direction Leadership Elements

Element	Description	Goals
Leadership	A data governance board needs to include senior leadership at OPI, a data quality manager, data stewards, and a data steward coordinator. The data stewards from each division need to have data analysis skills and understand the business rules of their programs and work units	• To ensure that OPI has an active, robust Data Governance structure with policies and procedures in place to support the agency's data management functions • To develop a data management plan that establishes priorities for information technology projects • To build support for and understanding of the integrated data system among OPI staff • To advocate for agency, state and/or federal resources to support the development of an integrated P20 education data system
Data quality management	The data quality function includes policies and procedures to assure data quality, including validation rules and checking for completeness.	• To develop a user-friendly Data Collection and Reporting calendar for use by OPI staff and school personnel that indicates data collection windows, due dates, and information releases • To provide IT training to OPI staff that is compatible with the individual's responsibilities for collecting, managing, reporting and analyzing data
Controlled	Data should be housed in a	• To create an enterprise-wide data

analysis and reporting	central data warehouse. There must be clear and available documentation of the agency's data model and related processes. Metadata includes a data dictionary, business rules, standard reports, calendars, database schemas, and source code.	architecture to map the future for Montana's educational data systems
Security and confidentiality	Data security requires infrastructure components like authentication, access controls or role-based security, firewalls, antivirus, anti-spyware, and intrusion detection. The agency security officer needs to coordinate the agency's security plan. All employees should follow the agency's policy for protection of confidential information, including the release of individual student information and data from which an individual's identity could be traced or inferred.	• To provide security guidelines and access within IT training to OPI staff that is compatible with the individual's responsibilities for collecting, managing, reporting and analyzing data
Resource management	Governance of data resources includes hardware, software, institutional knowledge and personnel. The data governance board needs to collaborate with others to decide how to adapt to unforeseen needs or unanticipated complications.	• To establish levels of IT competencies for OPI staff positions that are necessary for good job performance
Data use and accessibility	The data governance plan needs to balance data use/access and timely and secure data distribution processes. The data users need to understand the appropriate uses and value of the data.	• To implement business intelligence tools to make data accessible to many different users • To ensure that end-users are represented in the planning and implementation of OPI IT systems • To develop tools for soliciting staff input and assessing customer satisfaction • To communicate to OPI staff,

		policymakers, and the public the agency's goals relative to the use and analysis of data • To advocate for and allocate resources to emphasize research and analysis

A(2)-III: Turnaround Schools Strategic Direction Action Plan

Action Items		Timeline
1	Plan and implement community meetings for Supt. Juneau. Community pressure for turning around low performing schools.	August 2009-April 2010
2	Track the development of the current statewide system of support. Expansion of current system to more comprehensive approach	November 2009-Present
3	Engage in internal program development for the turnaround initiative.	Summer 2009-Winter 2009/10
4	Seek alliances with stakeholder organizations. Increasing the impact of the turnaround work	Fall 2009-Spring 2010
5	Develop individualized turnaround plans for each school district. Jumpstarting turnaround work	Fall 2009-Summer 2010

A(2)-IV: Letters of support

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Section B

B(1)

B(1)-I: Common Core Standards MOA

Addendum B(1)-I

B(1)-II: Common Core State Standards: Mathematics

Addendum B(1)-II

B(1)-III: Common Core State Standards: English and Language Arts

Addendum B(1)-III

B(1)-IV: Evidence of international benchmarking of the Common Core Standards

Addendum B(1)-IV

The Common Core State Standards (CCSS) are designed to be college- and career-ready and internationally benchmarked. To that end, the development process included the review and consideration of many sources, including research studies, existing standards from the U.S and abroad, and the professional judgment of teachers, content area experts, and college faculty. This paper will briefly describe how international benchmarking was used to develop the CCSS. What documents were used to ensure that the CCSS were internationally benchmarked?

To ensure that the standards prepare students to be globally competitive, the development team used a number of sources, including: the frameworks for PISA and TIMSS; the International Baccalaureate syllabi; the American Institutes for Research report , Informing Grades 1-6 Mathematics Standards Development: What Can Be Learned From High-Performing Hong Kong, Korea, and Singapore and; the A+ Composite found in A Coherent Curriculum: The Case for Mathematics by Bill Schmidt, Richard Houang, and Leland Cogan.

In addition, the development team looked to the standards of a number of individual countries and provinces to inform the content, structure, and language of the CCSS. In mathematics, twelve sets of standards were selected to help guide the writing of the standards: Belgium, Canada [Alberta], China, Chinese Taipei, England, Finland, Hong Kong, India, Ireland, Japan, Korea, and Singapore. In English language arts, the writing team looked closely at eleven sets of standards from Australia (New South Wales and Victoria), Canada (Alberta, British Columbia, and Ontario), England, Finland, Hong Kong, Ireland, and Singapore.

The goal of the international benchmarking in the common core state standards development process was to ensure that the CCSS are as rigorous as comparable standards in the high performing and other countries. However, the use of international benchmarks as evidence is no easy feat; it is not simply a matter of identifying the "best" source and copying it, or of aggregating all viable sources to find some set of shared expectations. Rather, international benchmarks were used to guide critical decisions in the following areas:

- Whether particular content should be included: One of the principal ways international standards were used in this development process was as a guide when making tough decisions about whether content should be included or excluded.
- When content should be introduced and how that content should progress: The progression of topics in the international mathematics standards helped the development team make decisions about when to introduce topics in the CCSS as well as when to stop focusing on them.
- Ensuring focus and coherence: Standards from other countries tend to be very focused, including only what is absolutely necessary.

- Organizing and formatting the standards: Certain organizational aspects or characteristics of international standards that promoted clarity and ease of reading and use served as a model for the CCSS.
- Determining emphasis on particular topics in standards: Where emphasis on particular topics was found repeatedly in international standard, this was instructive in determining their importance for inclusion in the CCSS.

B(1)-V: Montana BPE Development of Common State Curriculum Standards to Date

6/7/2001	Title 10, Chapter 54, Part 80;, 10.54.2503, 10.55.602, 603, 1001, 1101, 1201, 1301, 1401, 1501, 1601, 1701, 1801, and 1901	Continued work on content and performance standards; updated assessment language and responsibilities of OPI, BPE, and districts; conformed program delivery standards with new content and performance standards.
5/25/2007	ARM 10.55.602, 10.55.701, 10.55.705, 10.55.907	Amended rules to align standards with current research and best practices on distance, online, and technology education; defined terms used in distance learning; clarified facilitator requirements; required trustees to adopt a policy regarding distance learning; amended requirement for part-time administrators in small schools.
11/23/2007	Title 10, Chapter 54, Part 50	Amended and adopted rules relating to science content standards and performance descriptors.
11/23/2007	Title 10, Chapter 54, Parts 65 and 66	Amended and adopted rules relating to information literacy/library media content standards and performance descriptors.
11/23/2007	Title 10, chapter 54, Parts 75 and 76	Amended and adopted rules relating to technology content standards and performance descriptors.
9/25/2009	Title 10, Chapter 54, Parts 40 and 41	Amended and adopted rules relating to math content standards and performance descriptors.
1/29/2010	Title 10, Chapter 54, Parts 36 and 37	Amended and adopted rules relating to

		communication arts content standards and performance descriptors.

B(1)-VI: Montana Adoption of the National Common Core Standards

May 2010	Conduct alignment study
June 2010	Conduct regional meetings to share the national Common Core standards with Montana educators and citizens
July 2010	Recommendation to the BPE
July 2010 – September 2010	Continue public outreach program
November 2010	BPE approves Notice of Public Hearing including information required under ARM 1.3.309
November 2010	Proposed Notice to Secretary of State in Montana Administrative Register (MAR)
December 2010	Hearing date set no sooner than 20 days after publication per ARM 1.3.307(4)
December 2010	Final public input deadline set a minimum of 28 days after publication per ARM 1.3.307(4)
January 2011	Draft adoption notice
January 2011	Final rule changes to the Secretary of State for Notice in the MAR
January 2011	MAR publication available 10 days after filing of the adoption notice; must be within 6 months of the publication of the proposal per ARM 1.3.309(2) and ARM 1.3.312(6)
January 2011	Effective Date of Rules dependent upon Legislative Fiscal Division (LFD) cost analysis

B(2)

B(2)-I: ARM 10.55.603 Curriculum and Assessment

(1) Local school districts shall incorporate all content and performance standards into their curriculum, implementing them sequentially and developmentally. School districts shall assess the progress of all students toward achieving content and performance standards in all program areas. Assessment of all students shall be used to examine the educational program and measure its effectiveness based on the content and performance standards.

(a) The examination of program effectiveness using assessment results shall be supplemented with information about graduates and other students no longer in attendance.
(b) The information obtained shall be considered in curriculum and assessment development.

(2) For content and performance standards in all program areas in accordance with ARM 10.55.602(8), school districts shall:
(a) establish curriculum and assessment development processes as a cooperative effort of personnel certified and endorsed in the program area and trustees, administrators, other teachers, students, specialists, parents, community and, when appropriate, tribal representatives and state resource people;
(b) review curricula at intervals not exceeding five years and modify as needed to meet educational goals of the five-year comprehensive education plan in accordance with ARM 10.55.601;
(c) at least every five years, review and select materials and resources necessary for implementation of the curriculum and assessment that are consistent with the goals of the five-year comprehensive education plan; and
(d) review curricula to ensure the inclusion of the distinct and unique cultural heritage of the American Indians.

(3) School district assessment plans shall be included in the comprehensive education plan.
(a) School districts shall use effective and appropriate multiple measures and methods to assess student progress in achieving content and performance standards in all program areas.
(b) Utilizing input from representatives of accredited schools, the Office of Public Instruction shall develop criteria and procedures for the selection of effective and appropriate multiple measures and methods to be used to assess student progress in reading and mathematics in grades 4, 8 and 11.
(c) The Office of Public Instruction shall provide technical assistance to districts to meet the criteria and procedures in (3)(b).
(d) Not later than the school year immediately following the completion of written sequential curricula aligned with the content and performance standards in a program area in accordance with ARM 10.55.601(6), the school district shall begin the development of a student assessment process for that program area. The assessment process must be in place two years following the development of written curriculum.

(4) In addition to the school-by-school reporting of norm-referenced testing results in accordance with ARM 10.56.101, districts shall annually report to the Office of Public Instruction the school level results of measures for the standards that are not adequately assessed by the norm-referenced tests in reading and mathematics at grades 4, 8 and 11.

(a) Utilizing input from representatives of accredited schools, the Office of Public Instruction will identify the additional standards in reading and mathematics that are to be assessed with other measures.

(b) The measures used to report to the Office of Public Instruction shall be included within the district assessment plan in accordance with ARM 10.55.601.

(c) The criteria and procedures set forth in (3)(b) shall be used by the Office of Public Instruction in an approval process to assure the quality of the other measures that will be used to assess and report progress in reading and mathematics at grades 4, 8 and 11.

B(2)-II: Memorandum of Understanding

Addendum B(2)-I

B(2)-III: SMARTER Balanced Consortium Member States

State	Date	Member/Governing State
Colorado	May 12	Member
Connecticut	April 13	Member
Delaware	April 14	Member
Georgia	April 28	Member
Hawaii	April 15	Member
Idaho	April 15	Governing
Illinois	April 15	Member
Iowa	April 14	Member
Kansas	April 15	Governing
Kentucky	April 15	Member
Maine	April 14	Governing
Michigan	April 16	Governing
Minnesota	April 27	Governing
Missouri	April 14	Governing
Montana	April 14	Member
Nebraska	April 13	Member
Nevada	April 19	Member

New Hampshire	April 19	Member
New Jersey	April 15	Member
New Mexico	April 13	Member
North Carolina	April 15	Governing
North Dakota	April 15	Member
Ohio	April 20	Member
Oregon	April 15	Governing
Pennsylvania	April 27	Member
South Carolina	April 20	Member
South Dakota	April 15	Member
Utah	April 14	Governing
Vermont	April 15	Governing
Washington	April 14	Governing
West Virginia	April 13	Governing
Wisconsin	April 14	Governing
Wyoming	April 14	Member
Total		Member 33 Governing 13

B(3)

B(3)-I: Montana Constitution: Article X, Section 1

ARTICLE X
EDUCATION AND PUBLIC LANDS
Section
1. Educational goals and duties.
2. Public school fund.
3. Public school fund inviolate.
4. Board of land commissioners.
5. Public school fund revenue.
6. Aid prohibited to sectarian schools.
7. Nondiscrimination in education.
8. School district trustees.
9. Boards of education.
10. State university funds.
11. Public land trust, disposition.

Section 1. Educational goals and duties. (1) It is the goal of the people to establish a system of education which will develop the full educational potential of each person. Equality of educational opportunity is guaranteed to each person of the state.
(2) The state recognizes the distinct and unique cultural heritage of the American Indians and is committed in its educational goals to the preservation of their cultural integrity.
(3) The legislature shall provide a basic system of free quality public elementary and secondary schools. The legislature may provide such other educational institutions, public libraries, and educational programs as it deems desirable. It shall fund and distribute in an equitable manner to the school districts the state's share of the cost of the basic elementary and secondary school system.

B(3)-II: MCA 20-1-501 Recognition of American Indian cultural heritage -- legislative intent.

(1) It is the constitutionally declared policy of this state to recognize the distinct and unique cultural heritage of American Indians and to be committed in its educational goals to the preservation of their cultural heritage.

(2) It is the intent of the legislature that in accordance with Article X, section 1(2), of the Montana constitution:

(a) every Montanan, whether Indian or non-Indian, be encouraged to learn about the distinct and unique heritage of American Indians in a culturally responsive manner; and

(b) every educational agency and all educational personnel will work cooperatively with Montana tribes or those tribes that are in close proximity, when providing instruction or when implementing an educational goal or adopting a rule related to the education of each Montana citizen, to include information specific to the cultural heritage and contemporary contributions of American Indians, with particular emphasis on Montana Indian tribal groups and governments.

(3) It is also the intent of this part, predicated on the belief that all school personnel should have an understanding and awareness of Indian tribes to help them relate effectively with Indian students and parents, that educational personnel provide means by which school personnel will gain an understanding of and appreciation for the American Indian people.

B(3)-III: Rollout for Common Core Standards

Phase	Activities
2010-2011 Alignment and Analysis	• Complete adoption of the of the final Common Core Standards. • Analyze alignment study to identify Montana standards not present in the final Common Core Standards. • Develop and adopt Montana standards that are not included in the Common Core standards up to 15% to ensure rigor for Montana students is not diminished.
2011-2012 Design and Development	• Develop and implement system to assess Montana standards not included in the final Common Core Standards • Align Montana University System entrance requirements and Montana K12 content standards • Involve educators and stakeholders utilizing the processes defined in RTI to transition to Common Core Standards through established communication plan housed at the Montana OPI website o Develop facilitator guide to be used by the OPI staff and regional service area providers o Develop individual study guide for self-guided activities o Develop and regularly update FAQs o Develop communications strategies

	▪ Online presentations that provide key information and training linked to facilitator guide, individual study guide and FAQs ▪ Website that links to presentation, facilitator guide, individual study guide and FAQs ▪ Onsite presentations • Review Montana Essential Learning Expectations (ELE) based on the alignment and analyze and develop model curriculum for use in the classroom
2012-2014 Implementation	• Provide professional development (PD) • Disseminate instructional materials • Implement and evaluate new assessment tools within Response to Intervention (RTI) framework

B(3)-IV: PD Model: Roles and Responsibilities

Responsible party	Activities
PCDC Team	• Oversee nest practices for educator's use of the model curricula • Share and evaluate new formative assessment strategies • Implement techniques for interim and formative assessments in purpose-driven classroom applications. • Develop skills for mentoring and facilitating effective learning strategies
RTI Team Leaders	• Participate in summer institute that provides training on the delivery of the model at the local level • Use Professional Learning Community (PLC) to maintain highly qualified knowledge and skills for implementation of the model • Be available to Regional Service Areas to provide training opportunities
Regional Service Areas	• Manage PD model ensuring all educators in the region are provided ongoing opportunities o Initial concentration of education leaders for professional development and dissemination • Implement data collection process to analyze impact of PD on

	student achievement as detailed in Section C of this grant application. • Provide data to PCDC team to refine PD model

B(3)-V: Training levels for new Common Core rollout

Level	Goal	Activities
1	PD at this level is designed to provide the basic introduction and orientation to the new Common Core standards as aligned with current Montana Content Standards and Performance Descriptors.	• Build capacity within the RSAs through a pool of trained facilitators who would then provide workshops to LEAs • Select and train six facilitators in a 6-hour workshop
2	PD at this level provides high-quality, job-embedded training in strategies for developing, implementing, and evaluating learning experiences that are standards-based, integrate Indian Education for All (as mandated by the Montana Constitution) and exemplify best instructional practice.	• PD based on a needs assessment of the educators and LEAs within each RSA • Analysis of needs assessment results to tailor PD within each region to meet needs of single or small groups of schools. • OPI content area and Indian Education for All specialists assist in designing modules to be used in PD opportunities to be delivered as a

		result of the needs assessment analysis. • "Trained-Trainer" model is developed with the six facilitators. • Roll-out schedule is developed by region. • Delivery of training begins and follow-up schedule is developed as the initial training is delivered.
3	PD at this level seeks to create and sustain a network of experienced Montana educators who advocate and disseminate the ideas and methods that exemplify best instructional practices.	• Professional Learning Communities (PLC) will be developed with regions and across regions by east and west portions of the state. These PLCs will used to establish educator networks. • Educator networks will be lead by facilitators to develop regular communications and best practice sharing as the school year moves forward. • Communications and best practice sharing will be captured and produced for use by other educators around the state not part of these networks and new educators to Montana LEAs.

Section C

C(1)

C(1)-I: ARM 10.55.905 Graduation requirements

(1) As a minimum, a school district's requirements for graduation shall include a total of 20 units of study that enable all students to meet the content and performance standards.

(2) In order to meet the content and performance standards, the following 13 units shall be part of the 20 units required for all students to graduate:

(a) 4 units of English language arts;

(b) 2 units of mathematics;

(c) 2 units of social studies;

(d) 2 units of science;

(e) 1 unit of health enhancement, with 1/2 unit each year for two years;

(f) 1 unit of arts;

(g) 1 unit of vocational/technical education.

(3) Units of credit earned in any Montana high school accredited by the Board of Public Education shall be accepted by all Montana high schools.

(4) In accordance with the policies of the local board of trustees, students may be graduated from high school with less than four years enrollment.

History: Sec. 20-2-114, MCA; IMP, Sec. 20-2-121, 20-3-106, 20-7-101, MCA; NEW, 1989 MAR p. 342, Eff. 7/1/89; AMD, 1998 MAR p. 2707, Eff. 10/9/98; AMD, 2000 MAR p. 3340, Eff. 12/8/00.

http://www.mtrules.org/gateway/RuleNo.asp?RN=10.55.905

C(2)-II: Assurance Indicators and Descriptors for Montana

Addendum C(2)-I

Section D

D(1)

D(1)-I: ARM 10.57.201General provisions to issue licenses

(1) Teacher, specialist, or administrator licenses may be issued by the Superintendent of Public Instruction to applicants who submit acceptable evidence of successful completion of an accredited professional educator preparation program.

(2) Applicants for initial licensure who qualify under subchapter 4 and meet the following qualifications to practice may be licensed Class 1, 2, 3, or 6 as appropriate:

(a) individuals who have a current professional - not provisional or alternative - teacher, specialist, or administrator license from another state in an area that can be licensed in Montana. This section applies only to individuals who have completed an applicable accredited professional educator preparation program in an area that can be licensed in Montana and have satisfied minimal educator licensure requirements as defined in ARM 10.57.102;

(b) individuals who have graduated within the last five years from an accredited teacher, specialist, or administrator professional educator preparation program in an area that can be licensed in Montana and have satisfied minimal educator licensure requirements as defined in ARM 10.57.102;

(c) individuals who hold a current license from the national board for professional teaching standards in an area that can be licensed in Montana and have satisfied minimal educator licensure requirements as defined in ARM 10.57.102; or

(d) individuals who currently hold a Class 5 alternative license who meet one or more of the above three qualifications and have satisfied minimal educator licensure requirements as defined in ARM 10.57.102;

(3) Applicants for initial Class 1 or 2 licensure must verify completion of a supervised teaching experience either as part of an accredited professional educator preparation program or successfully complete one year of supervised internship in a state accredited elementary and/or secondary school or school district either in Montana or elsewhere.

(4) Applicants for initial Class 1, 2, or 3 licensure whose degree is more than five years old and who do not have current out-of-state licensure must have earned six semester credits within the five-year period preceding the effective date of the license.

(5) Applicants for initial Class 6 licensure who meet relevant sections of ARM 10.57.433, 10.57.434, and 10.57.435 may be licensed as appropriate. Those whose degree is more than five years old and who do not have current out-of-state licensure must have earned six graduate semester credits within the five-year period preceding the effective date of the license.

(6) Applicants for initial Class 4 licensure who have a current career and technical license from another state in an area that can be endorsed in Montana shall be licensed as Class 4A, 4B, or 4C depending on the level of education and extent of training as required under ARM 10.57.420 and 10.57.421.

(7) Applicants for initial Class 5 alternative licensure who meet the requirements of ARM 10.57.424 and the relevant section(s) of ARM 10.57.425 through 10.57.432 may be licensed as appropriate.

(8) Applicants for initial Class 7 Native American language and culture licensure who meet the requirements of ARM 10.57.436 may be licensed as appropriate.

(9) Applicants for initial Class 8 dual credit-only postsecondary faculty licensure shall meet requirements of ARM 10.57.437 and 10.57.438.

(10) Applicants must meet all other nonacademic requirements for licensure in Montana.

D(1)-II: ARM 10.57.424 Class 5 Alternative License

(1) A Class 5 alternative license is valid for a term of three years, is not renewable and may not be reinstated.

(2) An applicant for a Class 5 alternative license must sign and file with the Superintendent of Public Instruction a plan of professional intent leading to the Class 1, 2, 3, or 6 license within three years of the date of the alternative license.

(3) A Class 5 alternative license is available with any endorsement normally allowed for Class 1, 2, 3, or 6 licenses.

(4) A Class 5 alternative licensee is not eligible for a Board of Public Education approved internship program in the same endorsement area subsequent to the Class 5 licensure expiration date.

(5) When the endorsement-specific requirement in ARM 10.57.425 through 10.57.432 requires a master's degree, master's degrees which do not meet the specific requirement may be accepted with university approval.

History: 20-4-102, MCA; IMP, 20-4-106, 20-4-108, MCA; NEW, 2002 MAR p. 3309, Eff. 11/28/02; AMD, 2009 MAR p. 345, Eff. 3/27/09.

D(1)-III: ARM 10.55.702 Licensure and duties of district administrator – district superintendent

(1) The district superintendent shall be:

(a) licensed in accordance with state statutes and Board of Public Education rules;

(b) considered appropriately assigned if the superintendent is enrolled in a Board of Public Education approved administrator/district superintendent internship program as defined below:

(i) the intern must be enrolled in an approved administrator/district superintendent training program with the state of Montana;

(ii) the intern must have completed the principal endorsement requirements or be simultaneously enrolled in an administrator/principal internship program;

(iii) the intern must file an application with the Board of Public Education prior to placement within the local school districts in the state of Montana; and

(iv) at each assigned school district, the intern must annually receive an on-site visit by an appointed faculty member of the approved internship program.

(2) In cases where the intern is the only administrator hired by the district, the district shall contract with a properly licensed and endorsed administrator for annual and periodic supervision of the practice of the intern throughout the school year. Such supervision shall include participation in, review of, and written concurrence in all performance evaluations of licensed staff completed by the intern.

(3) The district superintendent shall perform administrative duties in accordance with 20-4-402 , MCA.

D(1)-IV: ARM 10.55.703 Licensure and duties of school principal

(1) The school principal shall:

(a) be licensed in accordance with state statutes and Board of Public Education rules;

(b) be considered appropriately assigned if the principal is enrolled in a Board of Public Education approved administrator/principal internship program as defined below:

(i) the intern must be enrolled in an approved administrator/principal training program within the state of Montana;

(ii) the intern must file an application with the Board of Public Education prior to placement within a school district in the state of Montana;

(iii) at each assigned school, the intern must annually receive an on-site visit by an appointed faculty member of the approved internship program;

(iv) at each assigned school, the intern shall receive an appropriate level of supervision by a properly licensed and endorsed administrator hired by the district. Such supervision shall include participation in, review of, and written concurrence in all performance evaluations of licensed staff completed by the intern. In cases where the intern is the only administrator hired by the district, the district shall contract with a properly licensed and endorsed administrator for annual and periodic supervision of the practice of the intern throughout the school year.

(c) have a license endorsed at the level assigned as a principal, except where one individual serves as the single administrator for the entire district under ARM 10.55.705(1) (a) or (b) , where the superintendent may hold either a high school or elementary principal endorsement. No individual may be assigned a total of more than 100% full-time equivalent (FTE) ;

(d) consider ways to:

(i) provide instructional leadership;

(ii) exercise vision in defining and accomplishing the school's mission;

(iii) encourage teachers to have high expectations for student achievement;

(iv) stress the importance of parents' and students' roles in academic success;

(e) involve staff and others in decision making and in setting, accomplishing, and assessing educational goals;

(f) carry out the district's policies and procedures;

(g) be responsible for the effective day-to-day operation of the school, including the management of finances, materials, and human resources.

D(1)-V: Elements of Montana Alternative Routes to Certification

Element	Montana Status	Explanation
Can be provided by various types of qualified providers, including both institutions of higher education and other providers operating	Yes	ARM 10.57.201 states that teacher, specialist or administrator licenses may be issued by the Superintendent of Public Instruction to applicants who submit acceptable evidence of successful

independently from institutions of higher education.		completion of an accredited professional educator preparation program. Montana law leaves this discretion to the OPI, and does not limit providers to institutions of higher education.
Are selective in hiring candidates.	Yes	Entrance requirements are designed to demonstrate the educational and professional experience necessary to complete the alternative program. The candidate must hold a degree in a teachable subject area and be able to meet the Montana Accreditation Standards for licensure at the conclusion of this program.
Provides supervised, school-based experiences and ongoing support such as effective mentoring and coaching.	Yes	Candidates are placed into a year-long paid internship upon completion of three introductory classes.
Significantly limits the amount of coursework required to have options to test out of courses.	Yes	In the NPTT, the coursework can be completed over the course of two years with the second being a paid internship experience. The course requirement is 75% of the normal required course work in the field of education. The NBC process is extremely rigorous, and completion of the year-long process is recognition of that teacher's achievement of an advanced level of professional certification.
Upon completion, award the same level of certification that traditional preparation programs award upon completion.	Yes	Candidates completing the initial three classes are given an alternative license by the state education agency. Upon completion of the program, the candidate can apply for regular Montana teacher certification.

D(1)-VI: MCA: 20-4-502 through 506 Critical Teacher Shortages

20-4-502. Definitions. For purposes of this part, unless the context requires otherwise, the following definitions apply:

(1) "Education cooperative" means a cooperative of Montana public schools as described in 20-7-451.

(2) "Educational loans" means all loans made pursuant to a federal loan program, except federal parent loans for undergraduate students (PLUS) loans, as provided in 20 U.S.C. 1078-2.

(3) "Federal loan program" means educational loans authorized by 20 U.S.C. 1071, et seq., 20 U.S.C. 1087a, et seq., and 20 U.S.C. 1087aa, et seq.

(4) (a) "Quality educator" means a full-time equivalent educator, as reported to the superintendent of public instruction for accreditation purposes in the current school year, who:

(i) holds a valid certificate under the provisions of 20-4-106 and is employed by an entity listed in subsection (4)(b) in a position that requires an educator license in accordance with administrative rules adopted by the board of public education; or

(ii) is a licensed professional under 37-8-405, 37-8-415, 37-11-301, 37-15-301, 37-17-302, 37-22-301, 37-23-201, 37-24-301, or 37-25-302 and is employed by an entity listed in subsection (4)(b) of this section to provide services to students.

(b) For purposes of subsection (4)(a), an entity means:

(i) a school district;

(ii) an education cooperative;

(iii) the Montana school for the deaf and blind, as described in 20-8-101;

(iv) the Montana youth challenge program; and

(v) a state youth correctional facility, as defined in 41-5-103.

(5) "School district" means a public school district, as provided in 20-6-101 and 20-6-701.

20-4-503. Critical quality educator shortages.

(1) The board of public education, in consultation with the office of public instruction, shall identify:

(a) specific schools that are impacted by critical quality educator shortages; and

(b) within the schools identified in subsection (1)(a), the specific quality educator licensure or endorsement areas that are impacted by critical quality educator shortages.

(2) The board of public education shall publish an annual report listing the schools and the licensure or endorsement areas identified as impacted by critical quality educator shortages,

explaining the reasons that specific schools and licensure or endorsement areas have been identified and providing information regarding any success in retention.

(3) Quality educators working at schools identified in subsection (1) are eligible for repayment of all or part of the quality educator's outstanding educational loans existing at the time of application in accordance with the eligibility and award criteria established under this part.

20-4-504. Loan repayment assistance. Loan repayment assistance may be provided on behalf of a quality educator who:

(1) is employed in an identified school described in 20-4-503(1); and

(2) has an educational loan that is not in default and that has a minimum unpaid current balance of at least $1,000 at the time of application.

20-4-505. Loan repayment assistance documentation.

(1) A quality educator shall submit an application for loan repayment assistance to the board of regents in accordance with policies and procedures adopted by the board of regents. The application must include official verification or proof of the applicant's total unpaid accumulated educational loan debt and other documentation required by the board of regents that is necessary for verification of the applicant's eligibility.

(2) A quality educator is eligible for loan repayment assistance for up to a maximum of 4 years. The total annual loan repayment assistance for an eligible quality educator may not exceed $3,000. The board of regents may require an eligible quality educator to provide documentation that the quality educator has exhausted repayment assistance from other federal, state, or local loan forgiveness, discharge, or repayment incentive programs.

(3) The board of regents may remit payment of the loan on behalf of the quality educator in accordance with the requirements of this part and policies and procedures adopted by the board of regents.

20-4-506. Funding -- priorities.

(1) If the funding for this part in any year is less than the total amount for which Montana quality educators qualify, the board of regents shall provide preference in the award of loan repayment assistance to quality educators working in the specific schools that are most impacted by quality educator shortages identified as provided in 20-4-503.

(2) This part may not be construed to require the provision of loan repayment assistance without an express appropriation for that purpose. This part may not be construed to require loan repayment assistance for school years prior to July 1, 2007.

D(1)-VII: Scoring indicators for schools impacted by critical teacher shortages

Factor	Classification	Score
Rural Isolation	Locale Code 13 - Small City	0
	Locale Code 22 - Suburb, Mid-Size	0
	Locale Code 23 - Suburb, Small	0
	Locale Code 31 - Town, Fringe	0
	Locale Code 33 - Town, Remote	0
	Locale Code 41 - Rural, Fringe	0
	Locale Code 42 - Rural, Distant	4
	Locale Code 43 - Rural, Remote	8
Economic Disadvantage	Free/Reduced % >=10%	1
	Free/Reduced % >=20%	2
	Free/Reduced % >=30%	3
	Free/Reduced % >=40%	4
	Free/Reduced % >=50%	5
	Free/Reduced % >=60%	6
	Free/Reduced % >=70%	7
	Free/Reduced % >=80%	8
Improvement Status	School Improvement Year 1	1
	School Improvement Year 2	2
	School Improvement Year 3 or more	3
	Corrective Year 1	4
	Restructuring Year 1	5

	Restructuring Year 2	6
	Restructuring Year 3	7
	Restructuring Year 4 or more	8

D(1)-VIII: MCA 20-4-111. Emergency authorization of employment.

(1) A district may request from the superintendent of public instruction an emergency authorization of employment for a person who is not the holder of a valid teacher or specialist certificate as an instructor of pupils when the district cannot secure the services of a person holding a valid certificate. The person must have previously held a valid teacher or specialist certificate or shall meet the standards of preparation prescribed by the policies of the board of public education for and during an emergency. Emergency authorization of employment must indicate:

(a) the district to which the authorization is issued;

(b) the person whom the district is authorized to employ;

(c) the endorsement for elementary or secondary instruction and the specific subject fields for which authorization to employ the person is given; and

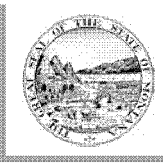
(d) the school fiscal year for which the emergency authorization of employment is given.

(2) Emergency authorization of employment of a person is valid for the school fiscal year identified on the authorization and may be renewed in accordance with the board of public education policies. A fee not to exceed $6 and, if no teacher or specialist certificate or emergency authorization of employment has ever been issued for the person, a filing fee of $6 must be paid for the issuance of an emergency authorization of employment. The superintendent of public instruction shall deposit the fees with the state treasurer to the credit of the general fund.

(3) Emergency authorization of employment of a person may be revoked for good cause in accordance with the provisions of 20-4-110.

D(1)-IX: Education fields impacted by Critical Quality Educator Shortages in AY 08-09

Rank	Education Field	Vacancies	% Difficult or Very Hard to Fill
1	Career and Technical	74	81%
2	Music	63	78%
3	Special Education	92	50%
4	Mathematics	63	62%
5	Speech/Language Pathologist	41	93%
6	Science	51	53%
7	World Languages	30	90%



8	School Counseling	52	44%
9	Library Media	23	65%
10	Art	30	43%

D(1)-X: Emergency Authorizations Issued since 2004

Endorsement	2004	2005	2006	2007	2008	2009	6 Yr Total
Agriculture				2			2
Art K-12			1	1			2
Biology		1	1				2
Broadfield Science					3		3
Broadfield Social Studies		1					1
Business Education		1	1				2
Computer Science K-12		2					2
Drama		1					1
Elementary	1				1		2
English	1				1	1	3
Family & Consumer Sciences		3	2			1	6
History							0
Industrial Arts							0
Mathematics 5-12	1	6	1			2	10
Music K- 12	3	3	4				10
PE/Health K-12 0							0
Principal K-12							0
School Counseling K-12	2	5	3	1	2	1	14

Special Education P-12		1	1				2
Technology Education					1	1	2
Trade & Industry - Health Occupations							0
Trade and Industry-Automotive			1				1
World Language-French K-12	1	1					2
World Language-Japanese K-12	1	1	1				3
World Language-Latin K-12		1	2			1	4
World Language-Spanish K-12	1	2	1			1	5
Total	11	29	19	4	8	8	79

D(2)

D(2)-I: ARM 10.55.701(5) Board of trustees

(1) The board of trustees shall ensure that the school district complies with all local, state, and federal laws and regulations.

(2) The board of trustees shall provide in each school building at least one copy of the accreditation standards for staff and public review.

(3) Each school district shall have in writing and available to the staff and public:

(a) a comprehensive philosophy of education;

(b) goals that reflect the district's philosophy of education;

(c) sequential curricula for each program area that aligns to the content and performance standards and the district's educational goals;

(d) policies establishing student assessment procedures that ensure evaluation of the school's curricula and student learning. These procedures shall specify how and when data are to be collected, analyzed, and reported;

(e) policies that delineate the responsibilities of the board, superintendent, and personnel employed by the school district. The trustees shall review these policies on a regular basis and make them available to employees and the public;
(f) a policy on student, parent, and school employee due process rights;
(g) a policy that is designed to address bullying, intimidation, and harassment of students and school personnel;
(h) an equity policy;
(i) a transfer policy for determining the appropriate placement of incoming students;
(j) an academic freedom policy;
(k) a materials selection policy, including a challenge procedure, for all curricular and support materials;
(l) a copyright policy;
(m) a policy that defines the use of school facilities and resources;
(n) a parent involvement policy that encourages:
(i) regular, two-way and meaningful communication between home and school;
(ii) promotion and support of parenting skills;
(iii) that parents play an integral role in assisting student learning;
(iv) that parents are welcome in the school, and that their support and assistance are sought;
(v) parents as full partners in the decisions that affect children and families; and
(vi) community resources be used to strengthen schools, families, and student learning;
(o) a policy that incorporates the distinct and unique cultural heritage of American Indians and that is aligned with district educational goals; and
(p) a policy addressing distance, online, and technology delivered learning as defined in ARM 10.55.602.

(4) The board of trustees shall have valid, written contracts with all regularly employed certified administrative, supervisory, and teaching personnel.

(5) The board of trustees shall have written policies and procedures for regular and periodic evaluation of all regularly employed certified administrative, supervisory, and teaching personnel. The individual evaluated shall have a written copy of the evaluation, the opportunity to respond in writing to the evaluation, and access to his/her files. Personnel files shall be confidential.

(6) The board of trustees shall establish conditions that contribute to a positive school climate and morale by encouraging cooperative and harmonious relationships among the staff members, students, parents, and community.

(7) To enhance a positive learning environment, the board of trustees shall:

(a) establish a system to keep parents/guardians up to date on students' progress; and

(b) use technology and equipment to facilitate management and instruction.

(8) To ensure continuous education improvement, the district shall engage in a continuous school improvement process.

D(2)-II: Chapter 55 Joint Task Force

Patty Myers, Co-Chair	BPE - Chairperson	Great Falls
Dennis Parman, Co-Chair	OPI Deputy Superintendent	Helena
Sharon Applegate	CSPAC Team Member	Kalispell
Holly Bailey	Elementary Principal	Colstrip
Sue Brown	High School Teacher	Kalispell
Nancy Coopersmith	OPI Asst. Superintendent, Education Services	Helena
Bob Currie	MT Digital Academy, Executive Director	Missoula
John Edwards	BPE - Member	Billings
Marco Ferro	MEA-MFT Public Policy Director	Helena
Mary Ellen Fitzgerald	Gallatin County Superintendent of Schools	Bozeman
Jim Germann	Superintendent of Schools	Glendive
Orville Getz	Superintendent of Schools	Victor
Dee Hensley-Maclean	Montana PTA	Hamilton
Callie Langohr	High School Principal	Kalispell
Erin Lipkind	Elementary Teacher	Missoula
Bill McCaw	MT Council of Deans Rep.	Missoula
Lance Melton	MT School Boards Assn., Executive Director	Helena
Claudette Morton	MT Small Schools Alliance, Executive Director	Helena
Dave Puyear	MT Rural Education Assn., Executive Director	Helena
Joe Rapkoch	Elementary Principal	Shelby

ChrisTina Rehbein	Elementary Teacher	Lambert
Linda Reksten	Superintendent of Schools	Butte
Mike Reynolds	Superintendent of Schools	Absarokee
Mary Ruby	School Trustee	Kalispell
Darrell Rud	School Administrators of MT, Executive Director	Helena
Corri Smith	MT Indian Education Assn.	Great Falls
Lorrie Tatsey	High School Teacher	Browning
Ruth Uecker	Asst. Superintendent	Great Falls
Tena Versland	Middle School Principal	Livingston
Leslie Weldon	School Trustee	Billings

Chapter 55 Joint Task Force Staff

Pete Donovan	BPE CSPAC Administrative Officer	Helena
Kelly Glass	OPI Accreditation Accountability Specialist	Helena
Colleen Hamer	OPI Accreditation Unit Program Officer	Helena
Elizabeth Keller	OPI Program Manager, Educator Licensure	Helena
Al Mc Milin	OPI Accreditation Unit Manager	Helena
Steve Meloy	BPE Executive Secretary	Helena
Linda Peterson	OPI Division Administrator, Accreditation	Helena
Donna Waters	OPI Administrative Specialist	Helena
Carol Will	BPE Administrative Specialist	Helena

D(3)

D(3)-I: Core Academic Classes Taught by Teachers Who Are Highly Qualified

This section collects data on "highly qualified" teachers as the term is defined in Section 9101(23) of the *ESEA*.

School Type	Number of Core	Number of Core	Percentage of Core	Number of Core	Percentage of Core

	Academic Classes (Total)	Academic Classes Taught by Teachers Who Are Highly Qualified	Academic Classes Taught by Teachers Who Are Highly Qualified	Academic Classes Taught by Teachers Who Are NOT Highly Qualified	Academic Classes Taught by Teachers Who Are NOT Highly Qualified
All classes	20,933	20,652	98.7	281	1.3
All elementary classes	7,902	7,863	99.5	39	0.5
All secondary classes	13,031	12,789	98.1	242	1.9
Montana defines grades K-8 as elementary and grades 9-12 as secondary. The paper survey conducted in the spring 2008 was inconclusive. The data collection process has been revised to insure accuracy for school year 2009-10.					

D(3)-II. Poverty Quartiles

School Type	Number of Core Academic Classes (Total)	Number of Core Academic Classes Taught by Teachers Who Are Highly Qualified	Percentage of Core Academic Classes Taught by Teachers Who Are Highly Qualified
Elementary Schools			
High-poverty elementary schools	1,798	1,785	99.3
Low-poverty elementary schools	1,039	1,036	99.7
Secondary Schools			
High-poverty secondary schools	1,753	1,667	95.1
Low-poverty Secondary schools	4,942	4,921	99.6

D(3)-III. Definitions

Equitable teacher distribution: teachers are distributed throughout Montana such that high-poverty, minority or special needs or English language learners are just as likely to be taught by an experienced, highly qualified teacher working in their field as are students who do not fall into those categories.

Experienced teacher: a teacher with one or more years of successfully teaching in a core academic subject in which the teacher is endorsed..

D(3)-IV: High-minority and low-minority schools

High-minority school: is defined by the State in a manner consistent with its Teacher Equity Plan. The State should provide, in its Race to the Top application, the definition used.

Low-minority school: is defined by the State in a manner consistent with its Teacher Equity Plan. The State should provide, in its Race to the Top application, the definition used.

D(4)

D(4)-I: ARM 10.55.603 Curriculum and assessment

(1) Local school districts shall incorporate all content and performance standards into their curriculum, implementing them sequentially and developmentally. School districts shall assess the progress of all students toward achieving content and performance standards in all program areas. Assessment of all students shall be used to examine the educational program and measure its effectiveness based on the content and performance standards.

(a) The examination of program effectiveness using assessment results shall be supplemented with information about graduates and other students no longer in attendance.

(b) The information obtained shall be considered in curriculum and assessment development.

(2) For content and performance standards in all program areas in accordance with ARM 10.55.602(8), school districts shall:

(a) establish curriculum and assessment development processes as a cooperative effort of personnel certified and endorsed in the program area and trustees, administrators, other teachers, students, specialists, parents, community and, when appropriate, tribal representatives and state resource people;

(b) review curricula at intervals not exceeding five years and modify as needed to meet educational goals of the five-year comprehensive education plan in accordance with ARM 10.55.601;
(c) at least every five years, review and select materials and resources necessary for implementation of the curriculum and assessment that are consistent with the goals of the five-year comprehensive education plan; and
(d) review curricula to ensure the inclusion of the distinct and unique cultural heritage of the American Indians.

(3) School district assessment plans shall be included in the comprehensive education plan.
(a) School districts shall use effective and appropriate multiple measures and methods to assess student progress in achieving content and performance standards in all program areas.
(b) Utilizing input from representatives of accredited schools, the Office of Public Instruction shall develop criteria and procedures for the selection of effective and appropriate multiple measures and methods to be used to assess student progress in reading and mathematics in grades 4, 8 and 11.
(c) The Office of Public Instruction shall provide technical assistance to districts to meet the criteria and procedures in (3)(b).
(d) Not later than the school year immediately following the completion of written sequential curricula aligned with the content and performance standards in a program area in accordance with ARM 10.55.601(6), the school district shall begin the development of a student assessment process for that program area. The assessment process must be in place two years following the development of written curriculum.

(4) In addition to the school-by-school reporting of norm-referenced testing results in accordance with ARM 10.56.101, districts shall annually report to the Office of Public Instruction the school level results of measures for the standards that are not adequately assessed by the norm-referenced tests in reading and mathematics at grades 4, 8 and 11.
(a) Utilizing input from representatives of accredited schools, the Office of Public Instruction will identify the additional standards in reading and mathematics that are to be assessed with other measures.
(b) The measures used to report to the Office of Public Instruction shall be included within the district assessment plan in accordance with ARM 10.55.601.
(c) The criteria and procedures set forth in (3)(b) shall be used by the Office of Public Instruction in an approval process to assure the quality of the other measures that will be used to assess and report progress in reading and mathematics at grades 4, 8 and 11.

D(5)

D(5)-I: RTI Training Matrix

RTI Leadership Team Training: Phase ONE

WHAT	WHO	WHEN	WHERE	OUTCOMES
RTI Initial Leadership Training	Site Teams (INCLUDING Building Principal) who have completed application forms	2 Days in Fall	Regional Sites	Initial Team Training Modules
RTI Leadership Training: Session II	Site Teams (INCLUDING ADMINISTRATOR)	2 Days in Winter	Regional Sites	Training will be specific to the needs of participating sites
MBI Team Training: Session II	Site Teams (INCLUDING ADMINISTRATOR)	2 Days in Spring	Regional Sites	Training will be specific to the needs of participating sites
Administrator Training	Site Administrators (Building Principal)	2-3 hours built into 1st day of each Leadership Team Training	Regional Sites	Awareness of role and importance of administrative support
Site Visits	RTI Consultants	Quarterly Fall and Spring- Conduct an Implementation Status Checklist	Participating Sites	Support, Consultation, Relationship Development, Skill Building, Professional Development
Data Gathering	RTI Leadership Teams, Administrator, Selected Data Person, Consultant	Throughout School Year	Participating Sites	-DIBELS or AIMSweb (fall, winter, spring) -Ongoing diagnostic and progress monitoring

				-Overall RTI Framework Evaluation -RTI Implementation Survey

Summer Institutes (Encouraged)	Participating Sites	MBI- June	Bozeman	Ongoing Professional Development
	Encouraged for Participating Sites	MBI-August	Varied	Ongoing Professional Development

RTI Leadership Team Training: Phase TWO

WHAT	WHO	WHEN	WHERE	OUTCOMES
Ongoing RTI Leadership Training Session I	Site Teams (INCLUDING Building Principal) who have completed application forms	2 Days in Fall	Regional Sites	Initial Team Training Modules
RTI Leadership Training: Session II	Site Teams (INCLUDING ADMINISTRATOR)	1 Day in Winter	Regional Sites	Training will be specific to the needs of participating sites
MBI Team Training: Session III	Site Teams (INCLUDING ADMINISTRATOR)	1 Day in Spring	Regional Sites	Training will be specific to the needs of participating sites
Administrator Training	Site Administrators (Building Principal)	2-3 hours built into 1st day of each Leadership Team Training	Regional Sites	Awareness of role and importance of administrative support

Site Visits	RTI Consultants	Quarterly Fall and Spring- Conduct an Implementation Status Checklist	Participating Sites	Support, Consultation, Relationship Development, Skill Building, Professional Development
Data Gathering	RTI Leadership Teams, Administrator, Selected Data Person, Consultant	Throughout School Year	Participating Sites	-DIBELS or AIMSweb (fall, winter, spring) -Ongoing diagnostic and progress monitoring -Overall RTI Framework Evaluation

Summer Institutes (Encouraged)	Participating Sites (Especially New Staff)	MBI- June	Bozeman	Ongoing Professional Development
	Participating Sites (Especially New Staff)	MRI-August	Varied	Ongoing Professional Development

RTI Leadership Team Training: Phase THREE

WHAT	WHO	WHEN	WHERE	OUTCOMES
Ongoing RTI Leadership Training Session I	Site Teams (INCLUDING Building Principal) who have completed application forms	2 Days in Fall	Regional Sites	Initial Team Training Modules
RTI Leadership Training: Session II	Site Teams (INCLUDING ADMINISTRATOR)	1 Day in Winter	Regional Sites	Training will be specific to the needs of participating sites
MBI Team Training:	Site Teams (INCLUDING ADMINISTRATOR)	1 Day in Spring	Regional Sites	Training will be specific to the needs of participating sites

Session III				
Administrator Training	Site Administrators (Building Principal)	2-3 hours built into 1st day of each Leadership Team Training	Regional Sites	Awareness of role and importance of administrative support
Site Visits	RTI Consultants	As Requested	Participating Sites	Support, Consultation, Skill Building, Professional Development
Data Gathering	RTI Leadership Teams, Administrator, Selected Data Person, Consultant	Throughout School Year	Participating Sites	-DIBELS or AIMSweb (fall, winter, spring) -Ongoing diagnostic and progress monitoring -Overall RTI Framework Evaluation

Summer Institutes (Encouraged)	Participating Sites (Especially New Staff)	MBI- June	Bozeman	Ongoing Professional Development
	Participating Sites (Especially New Staff)	MRI-August	Varied	Ongoing Professional Development

D(5)-II: RTI Implementation Status Survey Tool

This checklist is designed to assist the RTI Consultants and the MT Office of Public Instruction in determining team training needs for sites implementing an RTI Framework.

Essential Components	SITE: PERSON COMPLETING SURVEY:	In Place	Partially in Place	Not in Place
Ongoing Training and PD	RTI Team has completed RTI Leadership Team Training			
	Site staff members attend MBI or MRI Summer Institute as professional development			
	Site has a plan in place for continually assessing the training needs of staff			
Strong Leadership	Site currently has an RTI Leadership Team			
	Current administrator supports and is actively involved with the RTI Team			
	RTI Team currently has regularly scheduled meetings and effective operating procedures			
	RTI Team has a plan in place to evaluate the overall RTI Framework at regularly scheduled intervals			
Ongoing Student Assessment	School-wide research-based screening for reading is scheduled for the fall, winter, spring. (eg: DIBELS, AIMSweb)			
	Diagnostic assessment protocol are in place for students who are identified as "at-risk" in reading through universal screening			
	Students who are strategic and intensive in reading are being regularly progress monitored			

	Assessment results are collected and shared among staff in a timely manner			
	Processes are in place to check the integrity of the assessment procedures (random checks, observation)			
Evidence-based Curriculum and Instruction	Core Reading Program is in place and used with fidelity by all staff			
	Site has developed a universal teaching matrix containing clearly defined methods of delivery of instruction to ensure full student engagement			
	Classroom Teachers provide a combination of whole group instruction and smaller flexible group differentiated instruction to meet all students needs			
	Personnel are in place to provide effective tiered instruction for all students			
	Necessary time has been allocated to provide instruction (core instruction and interventions)			
	Guidelines and expected behaviors are directly taught/reviewed throughout the school year in all classrooms and all settings			
Community and Family Involvement	RTI Leadership team actively promotes community awareness regarding the schools RTI Framework			
Collaborative Teaming and Data-based Decision Making	A data collection and management system is in place and is being used by data teams to facilitate data-based decision making			
	Data Teams (grade level teams) develop written data-based goals and action plans that utilize research-based strategies			
	RTI data teams are established (eg. grade level teams, reading teams, behavior team, etc..)			
Fidelity of Implementation	Scheduled and random fidelity checks occur frequently (principal walk-throughs)			

Section E

E(1)

E(1)-I: MCA 20-3-106 Supervision of schools -- powers and duties

The superintendent of public instruction has the general supervision of the public schools and districts of the state and shall perform the following duties or acts in implementing and enforcing the provisions of this title:

(1) resolve any controversy resulting from the proration of costs by a joint board of trustees under the provisions of 20-3-362;

(2) issue, renew, or deny teacher certification and emergency authorizations of employment;

(3) negotiate reciprocal tuition agreements with other states in accordance with the provisions of 20-5-314;

(4) approve or disapprove the opening or reopening of a school in accordance with the provisions of 20-6-502, 20-6-503, 20-6-504, or 20-6-505;

(5) approve or disapprove school isolation within the limitations prescribed by 20-9-302;

(6) generally supervise the school budgeting procedures prescribed by law in accordance with the provisions of 20-9-102 and prescribe the school budget format in accordance with the provisions of 20-9-103 and 20-9-506;

(7) establish a system of communication for calculating joint district revenue in accordance with the provisions of 20-9-151;

(8) approve or disapprove the adoption of a district's budget amendment resolution under the conditions prescribed in 20-9-163 and adopt rules for an application for additional direct state aid for a budget amendment in accordance with the approval and disbursement provisions of 20-9-166;

(9) generally supervise the school financial administration provisions as prescribed by 20-9-201(2);

(10) prescribe and furnish the annual report forms to enable the districts to report to the county superintendent in accordance with the provisions of 20-9-213(6) and the annual report forms to enable the county superintendents to report to the superintendent of public instruction in accordance with the provisions of 20-3-209;

(11) approve, disapprove, or adjust an increase of the average number belonging (ANB) in accordance with the provisions of 20-9-313 and 20-9-314;

(12) distribute BASE aid and special education allowable cost payments in support of the BASE funding program in accordance with the provisions of 20-9-331, 20-9-333, 20-9-342, 20-9-346, 20-9-347, and 20-9-366 through 20-9-369;

(13) provide for the uniform and equal provision of transportation by performing the duties prescribed by the provisions of 20-10-112;

(14) request, accept, deposit, and expend federal money in accordance with the provisions of 20-9-603;

(15) authorize the use of federal money for the support of an interlocal cooperative agreement in accordance with the provisions of 20-9-703 and 20-9-704;

(16) prescribe the form and contents of and approve or disapprove interstate contracts in accordance with the provisions of 20-9-705;

(17) recommend standards of accreditation for all schools to the board of public education and evaluate compliance with the standards and recommend accreditation status of every school to the board of public education in accordance with the provisions of 20-7-101 and 20-7-102;

(18) collect and maintain a file of curriculum guides and assist schools with instructional programs in accordance with the provisions of 20-7-113 and 20-7-114;

(19) establish and maintain a library of visual, aural, and other educational media in accordance with the provisions of 20-7-201;

(20) license textbook dealers and initiate prosecution of textbook dealers violating the law in accordance with the provisions of the textbooks part of this title;

(21) as the governing agent and executive officer of the state of Montana for K-12 career and

vocational/technical education, adopt the policies prescribed by and in accordance with the provisions of 20-7-301;

(22) supervise and coordinate the conduct of special education in the state in accordance with the provisions of 20-7-403;

(23) administer the traffic education program in accordance with the provisions of 20-7-502;

(24) administer the school food services program in accordance with the provisions of 20-10-201 through 20-10-203;

(25) review school building plans and specifications in accordance with the provisions of 20-6-622;

(26) provide schools with information and technical assistance for compliance with the student assessment rules provided for in 20-2-121 and collect and summarize the results of the student assessment for the board of public education and the legislature;

(27) upon request and in compliance with confidentiality requirements of state and federal law, disclose to interested parties all school district student assessment data for a test required by the board of public education;

(28) administer the distribution of guaranteed tax base aid in accordance with 20-9-366 through 20-9-369; and

(29) perform any other duty prescribed from time to time by this title, any other act of the legislature, or the policies of the board of public education.

E(1)-II: ARM 10.55.601 Accreditation Standards: Procedures

(1) The Board of Public Education adopts standards of accreditation upon the recommendation of the state Superintendent of Public Instruction.

(2) The board and the Office of Public Instruction establish procedures and schedules for reviewing the accreditation status of each school.

(3) To ensure continuous education improvement, the school district shall develop, implement, evaluate, and revise a five-year comprehensive education plan.

(a) This plan shall include:

(i) a school district level education profile as described in guidance provided periodically by the Office of Public Instruction;

(ii) the school district's educational goals in accordance with ARM 10.55.701;

(iii) a description of planned progress toward implementing all content, performance, and program area standards, in accordance with the schedule in ARM 10.55.603;

(iv) a description of strategies for assessing student progress toward meeting all content and performance standards, in accordance with ARM 10.55.603; and

(v) a professional development component, in accordance with ARM 10.55.714.

(b) By May 1, 2003, the district trustees shall file their adopted five-year comprehensive education plan with the Office of Public Instruction and make their plan available to employees and the public.

(c) The Office of Public Instruction shall develop and implement procedures necessary to monitor and evaluate the effectiveness of each school district's comprehensive education plan.

(4) To ensure continuous educational improvement and to meet the identified needs of students in every school, every school in the district shall develop and have on file in the district office a comprehensive education plan.

(5) To ensure continuous educational improvement, the Office of Public Instruction shall provide guidance, resources, and evaluation to assist in the implementation of district and school plans to improve teaching and learning for all students.

(6) School districts are required to maintain present programs that meet current standards until such standards are superseded. The content and performance standards will supersede model learner goals according to the following schedule:

(a) Reading -- November 1998;

(b) Mathematics -- November 1998;

(c) Science -- October 1999;

(d) Technology -- October 1999;

(e) Health enhancement -- October 1999;

(f) Communication arts aligned to the reading content and performance standards -- October 1999;

(g) World languages -- October 1999;

(h) Social studies -- October 2000;

(i) Arts -- October 2000;

(j) Library media -- October 2000;
(k) Workplace competencies -- October 2000;
(l) Vocational/technical education -- October 2001.
(7) On or before July 1, 2004, a school district shall align its curriculum to the state content and performance standards and program area standards as adopted by the Board of Public Education. A school district shall maintain programs to align with the state's schedule for revising standards.

E(2)

E(2)-I: Steps used to determine Montana lowest performing schools.

Step 1:	Montana determined all relevant definitions. The definition of "secondary school" is any high school serving grades 9 through 12. The definition of "number of years" for purposes of determining whether a high school has a graduation rate less than 60 percent is three years. The definition of a "number of years" for purposes of determining "lack of progress" on the state's assessments is three years.
Step 2:	Montana determined the number of schools that make up five percent or five schools (whichever is greater) in each of the relevant sets of schools (Title I schools in improvement, corrective action, or restructuring) as the count of seven which is five percent of the total number in the set. Montana determined there are no secondary schools that are eligible for, but do not receive Title I funds.
Step 3:	Montana determined the method for calculating combined English/language arts and mathematics proficiency rates for each school. The Single Percentage Method was used as defined in the U.S. Department of Education guidance.
Step 4:	Montana determined the method for determining "lack of progress" by the "all students" group on the state's assessments. The Lowest Achieving Over Multiple Years standard was used as defined in Example 1 on page 27 of the U.S. Department of Education guidance. Using this method, Montana repeated the Single Percentage Method in Step 3 for two previous years for each school, and then selected the five percent of schools with the lowest combined percent proficient based on three years of data to define the persistently lowest-achieving schools in the state.

Step 5: Montana determined that no weights would be assigned to academic achievement of the "all students" group or to lack of progress on the state's assessments.

Step 6: Montana determined that no weights would be assigned to elementary schools or secondary schools.

Step 7: Using the process identified in Step 3, Montana ranked the Title I schools in improvement, corrective actions, or restructuring from highest to lowest based on the academic achievement of the "all students" group.

Step 8: Using the process identified in Step 4, Montana applied the second factor—lack of progress—to the list identified in Step 7.

Step 9: After applying lack of progress, Montana started with the school at the bottom of the list and counted up to the number seven as determined in Step 2 to obtain the list of the lowest-achieving five percent Title I schools in improvement, corrective action, or restructuring.

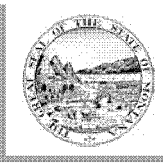
Step 10: Montana examined the Title I high schools in improvement, corrective action, or restructuring to determine if any had a graduation rate of less than 60 percent over a number of years (as defined in Step 1) that were not captured in the list of schools identified in Step 9. The only Title I high school in improvement, corrective action, or restructuring that has consistently had a graduation rate of less than 60percent was already identified in Step 9.

Step 11: There were no high schools identified in Step 10 to add to the list of schools identified in Step 9.

Steps 12 - 15: There are no secondary schools in Montana that are eligible for, but do not receive, Title I funds. The list of schools resulting from Step 11 will constitute the Tier I schools and there are no schools resulting from Steps 12 – 15 to constitute the Tier II schools for purposes of using school improvement funds under section 1003(g) of the Elementary and Secondary Education Act (ESEA). All Title I participating schools in improvement, corrective action, or restructuring that are not on the list resulting from Step 11 will constitute Tier III schools for purposes of using school improvement funds under section 1003(g) of the ESEA.

E(2)-II. School Improvement Plan and Timeline

Phase	Timeline	Description
I: Collect and Analyze Data		
Review existing data and reports	April 22 - 2010	Develop three-page overview for each school
Conduct on-site needs assessment	April - May, 2010	Develop list of current programs and services
	August - December, 2010	Gather evidence of program effectiveness
School assessments	May-2010	Implement internal assessments
	Summer - Fall 2010	Conduct community survey and student assessment
II: Personnel Planning, Recruitment & Training		
OPI on-site SIG Staff	April – July 2010	Hire 1 FTE Manager, 2 FTE advocates, and 1 FTE administrative assistant
OPI off-site SIG Staff	April - August 2010	Develop job descriptions for: Turnaround Leader, Instructional Leader, Community Liaison, and Youth and Community Coordinator positions
OPI Contract Services support	April - August 2010	OPI develops contract profiles for Community Facilitators, School Board Coaches, School teamwork workshops, and MEA-MFT Professional Development analysis and planning
Personnel recruitment	April-June 2010	Tap existing networks to increase candidate pool for personnel
	April 8-10, 2010	Outreach at MIEA Conference
	June, 2010	Circulate job descriptions to Master teachers
	June, 2010	Place job descriptions on Facebook, Craig's list, national and regional professional development list serves
	June, 2010	Circulate job descriptions to MSU/ILEAD and Deans of Higher Education
	June, 2010	Place job descriptions in communication outlets with high American Indian Audience
	June, 2010	Circulate job descriptions with MEA-MFT



III: School Improvement Boot Camp: Personnel Training		
	July, 2010	OPI convene OPI SIG-related three-day training
IV: "Best Practices" Research		
	April - July 2010	Research best practices in the following areas: RTI, Teacher and Staff Evaluation, Instructional Supports, Digital Academy, High School Dropout and Attendance Strategies, Discipline Strategies, Navigation 101, Early Education/Head Start, IEFA, Vo AG/Vo Tech, Trauma-informed schools, Para-professional training, adult education and GED, after school programming, and professional development
V: School Improvement Planning		
Partnership Agreement Development	June 2, 2010	Participating SIG Schools sign MOU & IA
Preparation for Plan Development	April 29 - May 1, 2010	Schools of Promise "Kick off" with two-day training and planning
	June 9 - 11, 2010	Schools of Promise Training and planning retreat. All SIG schools attending
	August, 2010	Schools of Promise Pre-new school year kick off. All SIG schools work for one week prior to opening on key areas of professional development
	Jan, 2011	Mid-year check in and training. All SIG schools attending
Training and Support for Plan Development	2010 – 2011 School Year	School coaches, new staff, and key OPI staff work with districts on their plans
Ongoing work on plan	June 2011	Deeper training, team building, and planning specific components of the plan
VI: Community Involvement		

Community as a Vessel for Vision and Change	May – June, 2010	Establish a shared community vision kick-off. Begin work on youth involvement and building community working groups
Family/community involvement in education	June-July, 2010	Hire community liaisons for each SIG community to develop a plan of implementation on family/community involvement strategies
VII: Agency collaboration		
State level collaborations	ongoing	OPI meetings with the Governor's American Indian Nations Council, IHS and other agency collaborators
Local collaborations	ongoing	See section VI: Community Involvement
VIII: School Improvement Implementation		
Professional Development	Fall, 2010	Attend to teachers and staff with job-embedded supports
Schools are Human Places	Summer, 2010	Work with IERS, NCBI, and other supports to promote energy and motivation to make substantive changes
School calendar and schedule	Fall, 2010	Increase amount of instruction and time for teacher planning, collaboration, and data analysis. Plan kick-off in each school for community engagement
IX: Communication Plan		
Popular Media	June 2010	Conduct media blitz when all SIG schools have signed on to plans
	Fall 2010	Earn media on opening of new school year for SIG schools
Website	Summer 2010	Create website to post materials, notices, photos, and other resources
List development	ongoing	Continue to build data base of community members to facilitate direct communication with community

Internal Coordination	ongoing	Use InSight communications tool to allow OPI to coordinate its communications and work with each SIG district
X: Assessment and Adjustment		
Reviews	January 2011	Collect Semi-Annual Reviews of work from OPI, LEA and local teachers union and evaluate work with respect to plan

Section F

F(1)

F(1)-I: Breakdown of general fund expenditures

	General Fund	
	FY 2008	FY 2009
Beginning Balance	543,541,869	437,677,514
GF Receipts	1,953,539,835	1,807,967,633
Residual Equity Transfers	-	-
GF Disbursements	(2,069,045,295)	(1,859,974,473)
PY Revenue Adj	8,756,428	7,552,015
PY Exp Adj	827,392	(1,746,556)
Other Adj	57,286	488,903
	437,677,515	391,965,036
General Fund Expenditures	2,069,045	1,859,974
K-12 Schools	685,537	655,166
Higher Education	177,775	192,404
	863,312	847,570
	33.1%	35.2%
	8.6%	10.3%
	41.7%	45.6%

F(1)-II: MCA 20-9-309(3) Basic system of free quality public elementary and secondary schools defined -- identifying educationally relevant factors -- establishment of funding formula and budgetary structure -- legislative review.

(1) Pursuant to Article X, section 1, of the Montana constitution, the legislature is required to provide a basic system of free quality public elementary and secondary schools throughout the state of Montana that will guarantee equality of educational opportunity to all.
(2) As used in this section, a "basic system of free quality public elementary and secondary

schools" means:

(a) the educational program specified by the accreditation standards provided for in 20-7-111, which represent the minimum standards upon which a basic system of free quality public elementary and secondary schools is built;

(b) educational programs to provide for students with special needs, such as:

(i) a child with a disability, as defined in 20-7-401;

(ii) an at-risk student;

(iii) a student with limited English proficiency;

(iv) a child who is qualified for services under 29 U.S.C. 794; and

(v) gifted and talented children, as defined in 20-7-901;

(c) educational programs to implement the provisions of Article X, section 1(2), of the Montana constitution and Title 20, chapter 1, part 5, through development of curricula designed to integrate the distinct and unique cultural heritage of American Indians into the curricula, with particular emphasis on Montana Indians;

(d) qualified and effective teachers or administrators and qualified staff to implement the programs in subsections (2)(a) through (2)(c);

(e) facilities and distance learning technologies associated with meeting the accreditation standards;

(f) transportation of students pursuant to Title 20, chapter 10;

(g) a procedure to assess and track student achievement in the programs established pursuant to subsections (2)(a) through (2)(c); and

(h) preservation of local control of schools in each district vested in a board of trustees pursuant to Article X, section 8, of the Montana constitution.

(3) In developing a mechanism to fund the basic system of free quality public elementary and secondary schools and in making adjustments to the funding formula, the legislature shall, at a minimum, consider the following educationally relevant factors:

(a) the number of students in a district;

(b) the needs of isolated schools with low population density;

(c) the needs of urban schools with high population density;

(d) the needs of students with special needs, such as a child with a disability, an at-risk student, a student with limited English proficiency, a child who is qualified for services under 29 U.S.C. 794, and gifted and talented children;

(e) the needs of American Indian students; and

(f) the ability of school districts to attract and retain qualified educators and other personnel.

(4) By July 1, 2007, the legislature shall:

(a) determine the costs of providing the basic system of free quality public elementary and secondary schools;

(b) establish a funding formula that:

(i) is based on the definition of a basic system of free quality public elementary and secondary schools and reflects the costs associated with providing that system as determined in subsection (4)(a);

(ii) allows the legislature to adjust the funding formula based on the educationally relevant factors identified in this section;

(iii) is self-executing and includes a mechanism for annual inflationary adjustments;

(iv) is based on state laws;

(v) is based on federal education laws consistent with Montana's constitution and laws; and

(vi) distributes to school districts in an equitable manner the state's share of the costs of the basic system of free quality public elementary and secondary schools; and

(c) consolidate the budgetary fund structure to create the number and types of funds necessary to provide school districts with the greatest budgetary flexibility while ensuring accountability and efficiency.

(5) At least every 10 years following April 7, 2005, the legislature shall:

(a) authorize a study to reassess the educational needs and costs related to the basic system of free quality public elementary and secondary schools; and

(b) if necessary, incorporate the results of those assessments into the state's funding formula.

F(1)-III: MCA 20-9-311. Calculation of average number belonging (ANB) -- three-year averaging.

(1) Average number belonging (ANB) must be computed for each budget unit as follows:

(a) compute an average enrollment by adding a count of regularly enrolled full-time pupils who were enrolled as of the first Monday in October of the prior school fiscal year to a count of regularly enrolled pupils on February 1 of the prior school fiscal year, or the next school day if those dates do not fall on a school day, and divide the sum by two; and

(b) multiply the average enrollment calculated in subsection (1)(a) by the sum of 180 and the approved pupil-instruction-related days for the current school fiscal year and divide by 180.

(2) For the purpose of calculating ANB under subsection (1), up to 7 approved pupil-instruction-related days may be included in the calculation.

(3) When a school district has approval to operate less than the minimum aggregate hours under 20-9-806, the total ANB must be calculated in accordance with the provisions of 20-9-805.

(4) (a) For the purpose of calculating ANB, enrollment in an education program:

(i) from 180 to 359 aggregate hours of pupil instruction per school year is counted as one-quarter-time enrollment;

(ii) from 360 to 539 aggregate hours of pupil instruction per school year is counted as half-time enrollment;

(iii) from 540 to 719 aggregate hours of pupil instruction per school year is counted as three-quarter-time enrollment; and

(iv) 720 or more aggregate hours of pupil instruction per school year is counted as full-time enrollment.

(b) Enrollment in a program intended to provide fewer than 180 aggregate hours of pupil instruction per school year may not be included for purposes of ANB.

(c) Enrollment in a self-paced program or course may be converted to an hourly equivalent based on the hours necessary and appropriate to provide the course within a regular classroom schedule.

(d) A pupil in kindergarten through grade 12 who is concurrently enrolled in more than one public school, program, or district may not be counted as more than one full-time pupil for ANB purposes.

(5) For a district that is transitioning from a half-time to a full-time kindergarten program, the state superintendent shall count kindergarten enrollment in the previous year as full-time enrollment for the purpose of calculating ANB for the elementary programs offering full-time kindergarten in the current year. For the purposes of calculating the 3-year ANB, the superintendent of public instruction shall count the kindergarten enrollment as one-half enrollment and then add the additional kindergarten ANB to the 3-year average ANB for districts offering full-time kindergarten.

(6) When a pupil has been absent, with or without excuse, for more than 10 consecutive school days, the pupil may not be included in the enrollment count used in the calculation of the ANB unless the pupil resumes attendance prior to the day of the enrollment count.

(7) The enrollment of preschool pupils, as provided in 20-7-117, may not be included in the ANB calculations.

(8) The average number belonging of the regularly enrolled, full-time pupils for the public schools of a district must be based on the aggregate of all the regularly enrolled, full-time pupils attending the schools of the district, except that the ANB is calculated as a separate budget unit when:

(a)

(i) a school of the district is located more than 20 miles beyond the incorporated limits of a city or town located in the district and at least 20 miles from any other school of the district, the number of regularly enrolled, full-time pupils of the school must be calculated as a separate budget unit for ANB purposes and the district must receive a basic entitlement for the school calculated separately from the other schools of the district;

(ii) a school of the district is located more than 20 miles from any other school of the district and incorporated territory is not involved in the district, the number of regularly enrolled, full-time pupils of the school must be calculated separately for ANB purposes and the district must receive a basic entitlement for the school calculated separately from the other schools of the district;

(iii) the superintendent of public instruction approves an application not to aggregate when conditions exist affecting transportation, such as poor roads, mountains, rivers, or other obstacles to travel, or when any other condition exists that would result in an unusual hardship to the pupils of the school if they were transported to another school, the number of regularly enrolled, full-time pupils of the school must be calculated separately for ANB purposes and the district must receive a basic entitlement for the school calculated separately from the other schools of the district; or

(iv) two or more districts consolidate or annex under the provisions of 20-6-422 or 20-6-423, the ANB and the basic entitlements of the component districts must be calculated separately for a period of 3 years following the consolidation or annexation. Each district shall retain a percentage of its basic entitlement for 3 additional years as follows:

(A) 75% of the basic entitlement for the fourth year;

(B) 50% of the basic entitlement for the fifth year; and

(C) 25% of the basic entitlement for the sixth year.

(b) a junior high school has been approved and accredited as a junior high school, all of the regularly enrolled, full-time pupils of the junior high school must be considered as high school district pupils for ANB purposes;

(c) a middle school has been approved and accredited, all pupils below the 7th grade must be considered elementary school pupils for ANB purposes and the 7th and 8th grade

pupils must be considered high school pupils for ANB purposes; or
(d) a school has not been accredited by the board of public education, the regularly enrolled, full-time pupils attending the non-accredited school are not eligible for average number belonging calculation purposes, nor will an average number belonging for the non-accredited school be used in determining the BASE funding program for the district.

(9) The district shall provide the superintendent of public instruction with semiannual reports of school attendance, absence, and enrollment for regularly enrolled students, using a format determined by the superintendent.

(10) (a) Except as provided in subsections (10)(b) and (10)(c), enrollment in a basic education program provided by the district through any combination of onsite or offsite instruction may be included for ANB purposes only if the pupil is offered access to the complete range of educational services for the basic education program required by the accreditation standards adopted by the board of public education.
(b) Access to school programs and services for a student placed by the trustees in a private program for special education may be limited to the programs and services specified in an approved individual education plan supervised by the district.
(c) Access to school programs and services for a student who is incarcerated in a facility, other than a youth detention center, may be limited to the programs and services provided by the district at district expense under an agreement with the incarcerating facility.
(d) This subsection (10) may not be construed to require a school district to offer access to activities governed by an organization having jurisdiction over interscholastic activities, contests, and tournaments to a pupil who is not otherwise eligible under the rules of the organization.

(11) A district may include only, for ANB purposes, an enrolled pupil who is otherwise eligible under this title and who is:
(a) a resident of the district or a nonresident student admitted by trustees under a student attendance agreement and who is attending a school of the district;
(b) unable to attend school due to a medical reason certified by a medical doctor and receiving individualized educational services supervised by the district, at district expense, at a home or facility that does not offer an educational program;
(c) unable to attend school due to the student's incarceration in a facility, other than a youth detention center, and who is receiving individualized educational services supervised by the district, at district expense, at a home or facility that does not offer an educational program;
(d) receiving special education and related services, other than day treatment, under a

placement by the trustees at a private nonsectarian school or private program if the pupil's services are provided at the district's expense under an approved individual education plan supervised by the district;

(e) participating in the running start program at district expense under 20-9-706;

(f) receiving educational services, provided by the district, using appropriately licensed district staff at a private residential program or private residential facility licensed by the department of public health and human services;

(g) enrolled in an educational program or course provided at district expense using electronic or offsite delivery methods, including but not limited to tutoring, distance learning programs, online programs, and technology delivered learning programs, while attending a school of the district or any other nonsectarian offsite instructional setting with the approval of the trustees of the district. The pupil shall:

(i) meet the residency requirements for that district as provided in 1-1-215;

(ii) live in the district and must be eligible for educational services under the Individuals With Disabilities Education Act or under 29 U.S.C. 794; or

(iii) attend school in the district under a mandatory attendance agreement as provided in 20-5-321.

(h) a resident of the district attending the Montana youth challenge program or a Montana job corps program under an interlocal agreement with the district under 20-9-707.

(12) A district shall, for ANB purposes, calculate the enrollment of an eligible Montana youth challenge program participant as half-time enrollment.

(13) (a) For an elementary or high school district that has been in existence for 3 years or more, the district's maximum general fund budget and BASE budget for the ensuing school fiscal year must be calculated using the current year ANB for all budget units or the 3-year average ANB for all budget units, whichever generates the greatest maximum general fund budget.

(b) For a K-12 district that has been in existence for 3 years or more, the district's maximum general fund budget and BASE budget for the ensuing school fiscal year must be calculated separately for the elementary and high school programs pursuant to subsection (13)(a) and then combined.

(14) The term "3-year ANB" means an average ANB over the most recent 3-year period, calculated by:

(a) adding the ANB for the budget unit for the ensuing school fiscal year to the ANB for each of the previous 2 school fiscal years; and

(b) dividing the sum calculated under subsection (14)(a) by three.

F(1)-IV: MCA 20-9-329. Indian education for all payment.

(1) The state shall provide an Indian education for all payment to public school districts, as defined in 20-6-101 and 20-6-701, to implement the provisions of Article X, section 1(2), of the Montana constitution and Title 20, chapter 1, part 5.

(2) The Indian education for all payment is calculated as provided in 20-9-306 and is a component of the BASE budget of the district.

(3) The district shall deposit the payment in the general fund of the district.

(4) A public school district that receives an Indian education for all payment may not divert the funds to any purpose other than curriculum development, providing curriculum and materials to students, and providing training to teachers about the curriculum and materials. A public school district shall file an annual report with the office of public instruction, in a form prescribed by the superintendent of public instruction, that specifies how the Indian education for all funds were expended.

F(1)-V: MCA 20-9-327. Quality educator payment.

(1) (a) The state shall provide a quality educator payment to:
(i) public school districts, as defined in 20-6-101 and 20-6-701;
(ii) special education cooperatives, as described in 20-7-451;
(iii) the Montana school for the deaf and blind, as described in 20-8-101;
(iv) state youth correctional facilities, as defined in 41-5-103; and
(v) the Montana youth challenge program.
(b) A special education cooperative that has not met the requirements of 20-7-454 may not be funded under the provisions of this section except by approval of the superintendent of public instruction.

(2) (a) The quality educator payment for special education cooperatives must be distributed directly to those entities by the superintendent of public instruction.
(b) The quality educator payment for the Montana school for the deaf and blind must be distributed to the Montana school for the deaf and blind.
(c) The quality educator payment for Pine Hills and Riverside youth correctional facilities must be distributed to those facilities by the department of corrections.

(d) The quality educator payment for the Montana youth challenge program must be distributed to that program by the department of military affairs.

(3) The quality educator payment is calculated as provided in 20-9-306, using the number of full-time equivalent educators, as reported to the superintendent of public instruction for accreditation purposes in the previous school year, each of whom:

(a) holds a valid certificate under the provisions of 20-4-106 and is employed by an entity listed in subsection (1) of this section in a position that requires an educator license in accordance with the administrative rules adopted by the board of public education; or

(b) (i) is a licensed professional under 37-8-405, 37-8-415, 37-11-301, 37-15-301, 37-17-302, 37-22-301, 37-23-201, 37-24-301, or 37-25-302; and

(ii) is employed by an entity listed in subsection (1) to provide services to students.

F(1)-VI: MCA 20-9-328. At-risk student payment.

(1) The state shall provide an at-risk student payment to public school districts, as defined in 20-6-101 and 20-6-701, for at-risk students, as defined in 20-1-101 and referred to in 20-9-309.

(2) The at-risk student payment must be distributed to public school districts by the office of public instruction in the same manner that the office of public instruction allocates the funds received under 20 U.S.C. 6332, et seq. The office of public instruction shall prorate payments to districts based upon the available appropriation.

(3) On or before September 15, 2010, the office of public instruction shall report to the governor and the legislature on the change in status of standardized test scores, graduation rates, and drop-out rates of at-risk students using fiscal year 2006 data as a baseline.

F(1)-VII: MCA 20-9-330. American Indian achievement gap payment.

(1) The state shall provide an American Indian achievement gap payment to public school districts, as defined in 20-6-101 and 20-6-701, for the purpose of closing the educational achievement gap that exists between American Indian students and non-Indian students.

(2) (a) The American Indian achievement gap payment is calculated as provided in 20-9-306, using the number of American Indian students enrolled in the district based on the count of regularly enrolled students on the first Monday in October of the prior school year as reported to the office of public instruction.

(b) A school district may not require a student to disclose the student's race.

(3) The district shall deposit the payment in the general fund of the district.

(4) On or before September 15, 2010, the office of public instruction shall report to the governor and the legislature on the change in status of standardized test scores, graduation rates, and drop-out rates of American Indian students using fiscal year 2006 data as a baseline.

F(2)

F(2)-I: ARM 10.55.604 Variances to standards

(1) A school district may apply to the Board of Public Education through the Superintendent of Public Instruction to implement an alternative to a standard or a section of standards, excluding standards stating statutory criteria, standards pertaining to teacher licensure or endorsement, and content and performance standards as defined by the Board of Public Education and provided in guidance from the Superintendent of Public Instruction.

(a) In its application, the school district shall provide evidence establishing that its alternative is workable and educationally sound in comparison to the intent of the standard(s) that would be waived, and shall establish that the goals of the alternative will meet or exceed the results under the current standard(s).

(b) In its application, the school district shall submit a statement of mission and objectives, and identify formative and summative measures to be used to evaluate the effectiveness of the alternative.

(c) Upon appropriate application, the Board of Public Education shall approve or deny the proposed alternative.

(d) If the board denies the proposed alternative, it shall state in writing why it has done so.

(e) If the board approves the proposed alternative, its initial approval shall be for two years.

(f) During the second year of the initial approval, the Board of Public Education, through the Office of Public Instruction, shall direct an on-site evaluation of the alternative.

(g) If the board finds the alternative is workable and educationally sound in comparison to how the waived standard(s) previously worked in the district, the board shall renew the alternative for five years.

(h) Subject to on-site evaluations every five years, the board may continue to renew the alternative.

(i) A school district may discontinue an approved alternative at any time. If it does so, it shall promptly notify the Board of Public Education in writing.

(2) A school district may apply to the Board of Public Education through the Superintendent of Public Instruction to create a charter school.

(a) A charter school must provide an education that meets or exceeds the requirements of the Montana Constitution, state law, and school accreditation standards.

(b) The Board of Public Education may only grant charters to publicly funded schools or programs under the supervision and control of a locally elected board of trustees in an existing school district.

(c) The procedure by which a school district may apply to create a charter school and by which the Board of Public Education may approve, deny, evaluate, and renew a charter school shall be identical to that outlined in ARM 10.55.604.

(d) To be proposed by a school district and approved by the Board of Public Education, a charter school shall, at a minimum, guarantee the following:

(i) school district governance and control;

(ii) unrestricted, open student access;

(iii) compliance with all health and safety laws;

(iv) teacher licensure and endorsement to the same extent as required or provided by state law or accreditation standards;

(v) employee collective bargaining to the same extent as required or provided by state law; and

(vi) a plan for consideration of input by community members and staff as to formation and implementation issues. Consideration of input may be identified by formation of advisory committees involving staff and/or community members, conduct of a properly noticed public meeting for purposes of comment on the formation or operation of the charter school, or any other reasonable means that result in an opportunity for input by staff and community members prior to a decision of significant interest to the public regarding the formation or operation of the charter school.

(e) A school district may discontinue an approved charter school at any time. If it does so, it shall promptly notify the Board of Public Education in writing.

F(2)-II: ARM 10.55.606 Performance-based accreditation

(1) Performance-based accreditation gives a school district the option of obtaining, for one or more of its schools, accreditation through a process that involves self-evaluation, peer-review and on-site visitations. This method allows a school to meet accreditation standards by showing through its students' work that it provides a quality education. The school improvement plan

serves as a basis for assessment of school effectiveness and an impetus for mobilizing improvement efforts.

(2) After engaging in a sustained school improvement effort, a school district, on behalf of one or more of its schools, may apply to the Superintendent of Public Instruction for performance-based accreditation. The Board of Public Education makes the final decision on whether a school is accredited through the performance-based accreditation process. The school improvement process shall incorporate the following six steps or their equivalent:

(a) development of a student/community profile;

(b) development of a school mission and goals that reflect a locally derived philosophy of education;

(c) identification of desired learner results based on the content and performance standards;

(d) analysis of instructional and organizational effectiveness;

(e) development and implementation of a school improvement plan; and

(f) monitoring through self-assessment and visits by peers or teams.

(3) To be granted performance-based accreditation, a school must:

(a) engage in a continuous schoolwide improvement process;

(b) host at least two visitations, chaired by a person trained or experienced in the process to seek feedback and validate the school improvement process;

(c) notify the Superintendent of Public Instruction of the visitation dates and team members. A member of the staff of the Office of Public Instruction shall be invited to be a member of the visitation team;

(d) submit reports of the visitation to the Superintendent of Public Instruction; and

(e) apply to the Superintendent of Public Instruction for performance-based accreditation by providing documentation of school improvement, including, but not limited to:

(i) visitation reports;

(ii) a school improvement plan;

(iii) evidence of attainment or significant progress toward attainment of the school improvement plan goals; and

(iv) a recommendation from the visitation team that the Board of Public Education grant performance-based accreditation.

(4) After a review in which the school demonstrates successful attainment or significant progress toward achieving the desired learner results, the school may be granted performance-based accreditation for up to six years. The school is subject to peer or team reviews at least every three years. The review shall establish that:

(a) the integrity of the school improvement process is maintained;
(b) the school is making informed, data-driven decisions;
(c) the process is school-based;
(d) all steps of the school improvement process are connected and inform one another;
(e) committees work collaboratively within and among one another;
(f) the school implements each step appropriately; and
(g) student learning is central to the entire process, with improvement demonstrated in desired learner results, based on content and performance standards.

(5) A school district, on behalf of one or more of its accredited schools electing this process, may petition the Superintendent of Public Instruction to recommend that the Board of Public Education waive existing standards that interfere with the school improvement plan, excluding standards stating a statutory requirement, standards pertaining to teacher certification and content and performance standards as defined by the Board of Public Education.

F(3)

F(3)-I: Accreditation Standards - Procedures

(1) The Board of Public Education adopts standards of accreditation upon the recommendation of the state Superintendent of Public Instruction.

(2) The board and the Office of Public Instruction establish procedures and schedules for reviewing the accreditation status of each school.

(3) To ensure continuous education improvement, the school district shall develop, implement, evaluate, and revise a five-year comprehensive education plan.

(a) This plan shall include:

(i) a school district level education profile as described in guidance provided periodically by the Office of Public Instruction;
(ii) the school district's educational goals in accordance with ARM 10.55.701;
(iii) a description of planned progress toward implementing all content, performance, and program area standards, in accordance with the schedule in ARM 10.55.603;
(iv) a description of strategies for assessing student progress toward meeting all content and performance standards, in accordance with ARM 10.55.603; and
(v) a professional development component, in accordance with ARM 10.55.714.

(b) By May 1, 2003, the district trustees shall file their adopted five-year comprehensive education plan with the Office of Public Instruction and make their plan available to employees and the public.
(c) The Office of Public Instruction shall develop and implement procedures necessary to monitor and evaluate the effectiveness of each school district's comprehensive education plan.

(4) To ensure continuous educational improvement and to meet the identified needs of students in every school, every school in the district shall develop and have on file in the district office a comprehensive education plan.

(5) To ensure continuous educational improvement, the Office of Public Instruction shall provide guidance, resources, and evaluation to assist in the implementation of district and school plans to improve teaching and learning for all students.

(6) School districts are required to maintain present programs that meet current standards until such standards are superseded. The content and performance standards will supersede model learner goals according to the following schedule:
(a) Reading -- November 1998;
(b) Mathematics -- November 1998;
(c) Science -- October 1999;
(d) Technology -- October 1999;
(e) Health enhancement -- October 1999;
(f) Communication arts aligned to the reading content and performance standards -- October 1999;
(g) World languages -- October 1999;
(h) Social studies -- October 2000;
(i) Arts -- October 2000;
(j) Library media -- October 2000;
(k) Workplace competencies -- October 2000;
(l) Vocational/technical education -- October 2001.

(7) On or before July 1, 2004, a school district shall align its curriculum to the state content and performance standards and program area standards as adopted by the Board of Public Education. A school district shall maintain programs to align with the state's schedule for revising standards.

F(3)-II: Best Beginnings Information

Three-quarters of the nation's children between the ages of 3 and 5, and more than half of children aged 2 and under, spend time in some form of non-parental care.[1] High quality early education has been shown to improve low-income children's school readiness and other long-term developmental outcomes. The Best Beginnings STARS to Quality Program is the quality rating improvement System (QRIS) for early childhood care and education settings in Montana. The program was created by early childhood stakeholders through their collaborative vision for quality in early childhood education in Montana.

Quality Rating Improvement Systems (QRIS) are essential for improving child care quality and later educational outcomes for all children. Quality Rating Systems (QRS) are tools that measure, collect, and disseminate information about the quality of early childhood care and education settings, including those based in centers, homes, preschools, and elementary schools.[1] The Montana Best Beginnings STARS to Quality Program uses the quality rating systems to create quality improvement plans, provide coaching support, and offers financial incentives to reward programs for continual quality improvement and to support quality improvement initiatives within the individual programs.

Montana's Best Beginnings STARS to Quality program is a voluntary 5 star quality rating improvement system, which uses a research based matrix to drive quality improvement in the early childhood care and education settings in Montana. The Matrix is composed of four research based categories which have been shown to improve and maintain quality in early childhood care and education settings. These four categories are; Education qualifications and training, Staff/Caregiver to child ratio and group size, Family/Community partnerships, Leadership and program management, and Environments for care and learning.

The proposed quality system for Montana has several arms:

1) Workforce Development - Workforce support will be provided through the Montana Early Care and Education career path, encouraging professional development along a continuum of training.
2) Quality Rating Improvement System - Improvements will be determined by use of Environmental Rating Scales, Program and Business Administration Scales, and Center on Social & Emotional Foundations for Early Learning (CSEFEL) TPOT and TPITOS
3) Infrastructure to administer the program – The infrastructure is designed to provide training and technical assistance, and to validate the stars system. Resources, Help, and Support will be provided to providers to move them through the Levels. Infrastructure will be provided by Child Care Resource & Referral Agencies, the Early Childhood Project, and other state determined resources.

F(3)-III: College!Now

Addendum F(3)-I

OFFICE OF THE GOVERNOR
STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR

JOHN BOHLINGER
LT. GOVERNOR

Memorandum of Understanding between the State of Montana and Participating Local Education Association ("LEA")

This Memorandum of Understanding ("MOU") is between the State of Montana by and through the Montana Board of Public Education, Office of Public Instruction, and Office of the Governor ("State") and _____ ("Participating LEA"). The purpose of this MOU is to establish a framework of collaboration between the State and Montana LEAs to satisfy the requirements of the Race to the Top application and to articulate specific roles and responsibilities of the State and the LEAS that support the State's application and the implementation of an approved Race to the Top grant project.

I. SCOPE OF WORK

Exhibit I, the Preliminary Scope of Work, indicates which portions of the State's proposed innovation and reform plans ("State Plan") contained in the State's Race to the Top application the Participating LEA is agreeing to implement as part of this MOU.

II. PROJECT ADMINISTRATION

A. PARTICIPATING LEA RESPONSIBILITIES

In assisting the State in implementing the innovation and reform plans described in Montana's Race to the Top application (the State Plan), the Participating LEA will:

1) Implement the Preliminary Scope of Work, as identified in Exhibit I of this MOU, through the adoption of a Final Scope of Work and an LEA Plan, as further described below in III.3, Assurances;
2) Endeavor to participate in, to the maximum extent practicable, all relevant meetings or other practice-sharing events that are organized or sponsored by the State or the U.S. Department of Education ("ED");
3) Post to a website, in a timely manner, all non-proprietary products and lessons learned or developed using Montana Race to the Top grant funds, as required by the grantor and implemented by the State or the ED;
4) Participate, as requested, in any evaluations of the grant required by the grantor and conducted by the State or the ED;
5) Be responsive to State or ED requests for information including requests as to the status of the project, project implementation, outcomes, and any problems anticipated or encountered;
6) Participate in meetings and telephone conferences with the State to discuss (a) progress of the project, (b) potential dissemination of resulting non-proprietary products and lessons learned, (c) plans for subsequent years following the Race to the Top grant period, and (d) other matters related to the Race to the Top grant and associated plans.

B. STATE RESPONSIBILITIES

In assisting the Participating LEA in implementing its tasks and activities described in Montana's Race to the Top application, the State will:

1) Work collaboratively with, and support the Participating LEA in implementing the Preliminary Scope of Work, as identified in Exhibit I of this MOU, through its adoption of a Final Scope of Work and an LEA Plan, as further described below in III.3, Assurances;
2) 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;
3) Provide feedback on the LEA's status updates, annual reports, any interim reports, and project plans and products; and
4) Identify sources of technical assistance for the project.

C. JOINT RESPONSIBILITIES

1) The State and the Participating LEA will each maintain a key contact person for the Race to the Top grant. For the purposes of the State's initial point of contact with a Participating LEA, all contacts should be submitted in writing to racetothetop@mt.gov. For the purposes of the Participating LEA, the State shall contact the LEA Authorized Representative.
2) These key contacts from the State and the Participating LEA will maintain frequent communication to facilitate cooperation and assist in fulfilling their respective responsibilities under this MOU.
3) State and Participating LEA will require any grant personnel to work together to determine appropriate timelines for project updates and status reports throughout the grant period.
4) State and Participating LEA will require any grant personnel to negotiate in good faith to continue to achieve the overall goals of Montana's Race to the Top grant.

D. STATE RECOURSE FOR LEA NON-PERFORMANCE

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

III. ASSURANCES

The Participating LEA hereby certifies and represents that it:

1) Has all requisite power and authority to execute this MOU;
2) Is generally familiar with the State's Race to the Top grant application and is committed to working on all or significant portions of the State Plan, including provisions related to turning around the lowest-achieving schools;
3) Agrees to be a Participating LEA; will implement those portions of the State Plan indicated in Exhibit I, Preliminary Scope of Work; will provide a Final Scope of Work no later than 90 days after the grant is awarded to the State; and will describe the LEA's specific goals, activities, timelines,

budgets, key personnel, and annual targets for key performance measures ("LEA Plan") in a manner that is consistent with the Preliminary Scope of Work and the State Plan;
5) Will comply with all of the terms of the grant, the State's subgrant to the LEA, and all applicable Federal and State laws and regulations, including laws and regulations applicable to the program, and the applicable provisions of the Education Department General Administrative Regulations ("EDGAR"), 34 CFR Parts 75, 77, 79, 80, 82, 84, 85, 86, 97, 98 and 99).

IV. MODIFICATIONS

This MOU may be amended only by written agreement signed by each signatory to the MOU, and in consultation with the ED.

V. DURATION/TERMINATION

This Memorandum of Understanding shall be effective beginning with the date of the last signature hereon and, if a grant is received, ending upon the expiration of the grant project period.

VI. SIGNATURES

LEA Superintendent (or equivalent authorized representative) – (required)**:**

_____
Signature/Date

_____
Print Name/Title

LEA Board of Trustees Chairperson: (required)**:**

_____
Signature/Date

_____
Print Name/Title

LEA Teachers' Union Leader (required, if applicable)**:**

_____
Signature/Date

_____
Print Name/Title

Authorized Representative: Office of the Governor – (required)**:**
By signature below, the State hereby accepts the LEA as a Participating LEA.

_____
Signature/Date

Dan Villa, Education Policy Advisor
Print Name/Title

Authorized Representative: Office of Public Instruction – (required):

_____
Signature/Date

Dennis Parman, Deputy Superintendent
Print Name/Title

EXHIBIT I – PRELIMINARY SCOPE OF WORK

LEA hereby agrees to participate in implementing the State Plan in each of the areas identified below:

Elements of State Innovation and Reform Plans	LEA Participation (Y/N)	Comments from LEA (optional)
1.Standards and Assessments		
Support the transition to enhanced standards and high-quality assessments through alignment to accreditation standards.		
2. Data Systems to Support Instruction – use data to improve instruction		
Use local data driven instructional improvement processes		
Provide professional development on use of data to improve instruction		
3. Great Teachers and Leaders – improving teacher and principal effectiveness based on performance		
Implement evaluation systems that are aligned with state standards		
Conduct regular evaluations		
4. Great Teachers and Leaders - providing effective support to teachers and principals		
Provide quality and purposeful professional development		
Measure effectiveness of professional development		

Please return via email to racetothetop@mt.gov by 5:00pm Wednesday, May 19, 2010.

Detailed Table for A(1) - Addendum A(1)-II

Participating LEAs	Number of Schools	Total Students	Total Free & Reduced Meal Status	Superintendent (or equivalent) Signature	Board of Trustees Chair-person	Teachers' Union Leader (if applicable)	(B)(1) Support the transition to enhanced standards and high-quality assessments through alignment to accreditation standards.	(C)(3) Use local data driven instructional improvement processes	(C)(3) Provide professional development on use of data to improve instruction	(D)(2)(ii) Implement evaluation systems that are aligned with state standards	(D)(2)(iii) Conduct regular evaluations	(D)(5) Provide quality and purposeful professional development	(D)(5) Measure effectiveness of professional development	Participating (if column D, E, and F are 'Y' and columns G-M are either 'Y' or 'N' that this column is 'Y' Otherwise it is 'N'
District Name	#	#	#	Y - Yes, N - No, NA - Not Applicable, Y - Did Not Reply	Y, N, NA, Y	Y, N, NA, Y	Y, N, Y	Y, N, Y	Y, N, Y	Y, N, Y	Y, N, Y	Y, N, Y	Y, N, Y	Y, N
Absarokee Elem	2	184	36	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Absarokee H S	1	102	17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Alberton K-12 Schools	3	204	94	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Amsterdam Elem	1	135	48	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Anaconda Elem	3	756	352	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Anaconda H S	1	361	143	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Anderson Elem	2	185	17	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Arlee Elem	2	276	209	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arlee H S	1	126	84	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arrowhead Elem	2	86	44	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ashland Elem	2	77	77	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Auchard Creek Elem	1	26	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Augusta Elem	2	44	30	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Augusta H S	1	38	17	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Avon Elem	1	25	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Ayers Elem	1	13	11	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Baker K-12 Schools	4	363	90	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Beaverhead County H S	1	344	55	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Belgrade Elem	4	2189	765	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Belgrade H S	1	830	171	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Belt Elem	3	210	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Belt H S	1	101	40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Benton Lake Elem	1	7	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Biddle Elem	1	13	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Big Dry Creek Elem	1	8	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Big Sandy Elem	2	102	55	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big Sandy H S	1	54	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big Timber Elem	2	335	96	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Bigfork Elem	2	780	336	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bigfork H S	1	287	84	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Billings Elem	26	10496	4160	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Billings H S	3	5179	1145	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bloomfield Elem	1	6	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Blue Creek Elem	1	193	25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bonner Elem	2	366	205	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Box Elder Elem	2	315	315	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bozeman Elem	9	3688	856	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bozeman H S	1	1820	232	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bridger K-12 Schools	3	198	80	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Broadus Elem	2	174	63	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Broadview Elem	2	120	68	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Broadview H S	1	56	21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brockton Elem	2	50	50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brockton H S	1	31	31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brorson Elem	1	7	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Browning	8	1379	1354	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Elem														
Browning H S	1	553	553	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Butte Elem	7	2908	1381	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Butte H S	1	1438	421	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bynum Elem	1	32	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Canyon Creek Elem	2	191	63	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Carter County H S	1	45	18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cayuse Prairie Elem	2	184	17	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y
Centerville Elem	3	141	77	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Centerville H S	1	88	26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Charlo Elem	2	219	112	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Charlo H S	1	100	47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Chester-Joplin-Inverness El	4	177	34	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Chester-Joplin-Inverness El	1	71	7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Chinook Elem	3	218	81	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Chinook H S	1	113	35	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Choteau Elem	2	250	84	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Choteau H S	1	151	42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Circle Elem	3	152	74	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Circle H S	1	93	29	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Clancy Elem	2	285	59	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Clinton Elem	2	240	118	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cohagen Elem	1	10	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Colstrip Elem	2	412	143	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Colstrip H S	1	212	46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Columbia Falls Elem	5	1521	770	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Columbia Falls H S	1	781	311	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Columbus Elem	2	441	96	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Columbus H S	1	219	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Conrad Elem	4	383	99	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Conrad H S	1	200	39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cooke City Elem	1	4	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Corvallis K-12 Schools	4	1340	632	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Cottonwood Elem	1	12	0	Y	Y	NA	Y	Y	Y	N	Y	Y	Y	Y
Creston Elem	1	87	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Custer County H S	1	559	99	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Custer K-12 Schools	3	85	26	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Cut Bank Elem	4	520	273	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cut Bank H S	1	215	65	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Darby K-12 Schools	3	379	218	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Deer Creek Elem	1	16	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Deer Lodge Elem	2	456	209	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Deerfield Elem	1	8	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
DeSmet Elem	2	117	88	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dillon Elem	3	692	234	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dixon Elem	2	61	61	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dodson Elem	2	38	38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Dodson H S	1	18	18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Drummond Elem	2	116	47	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Drummond H S	1	87	26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
East Glacier Park Elem	1	42	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
East Helena Elem	3	1132	414	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ekalaka Elem	3	46	34	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Elder Grove Elem	2	356	48	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Elliston Elem	1	26	18	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Elysian Elem	2	139	68	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y

Ennis K-12 Schools	3	341	97	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Eureka Elem	2	509	256	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Evergreen Elem	3	763	524	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fairfield Elem	2	184	67	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fairfield H S	1	120	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fair-Mont-Egan Elem	2	171	43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fairview Elem	2	149	50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fairview H S	1	107	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fergus H S	1	402	95	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Flathead H S	2	2659	734	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Florence-Carlton K-12 Schools	3	896	283	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Forsyth Elem	2	273	113	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Forsyth H S	1	124	19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fort Benton Elem	2	175	87	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fort Benton H S	1	102	37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fortine Elem	1	59	30	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Frenchtown K-12 Schools	3	1246	479	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Froid Elem	2	52	30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Froid H S	1	25	12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fromberg K-12	3	130	51	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Frontier Elem	2	110	64	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Galata Elem	1	14	0	Y	Y	NA	N	Y	Y	N	Y	Y	Y	Y
Gallatin Gateway Elem	2	180	64	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Gardiner Elem	2	150	25	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Gardiner H S	1	95	16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Garfield County H S	1	44	14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Geraldine Elem	2	63	46	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Geraldine H S	1	38	22	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y

Glasgow K-12 Schools	4	804	310	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Golden Ridge Elem	1	42	2	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Grant Elem	1	10	9	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Grass Range Elem	2	39	18	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y
Grass Range H S	1	20	9	Y	Y	Y	N	Y	Y	N	Y	Y	N	Y
Great Falls Elem	17	7074	3181	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Great Falls H S	2	3265	964	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Greenfield Elem	2	50	17	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Greycliff Elem	1	9	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Hamilton K-12 Schools	5	1572	662	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hardin Elem	5	1237	828	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hardin H S	1	464	348	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harlem Elem	2	384	384	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harlem H S	1	143	143	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harlowton Elem	2	216	139	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harlowton H S	1	70	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Harrison K-12 Schools	3	105	51	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Havre Elem	4	1362	657	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Havre H S	1	569	139	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hawks Home Elem	2	10	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Heart Butte K-12 Schools	3	157	157	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Helena Elem	13	5136	1552	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Helena Flats Elem	2	210	50	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Helena H S	2	3011	454	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hellgate Elem	2	1318	513	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Highwood Elem	2	52	20	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Highwood H S	1	32	13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hinsdale Elem	2	59	32	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Hinsdale H S	1	32	15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hobson K-12 Schools	3	116	39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hot Springs Elem	2	143	101	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hot Springs H S	1	64	31	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Huntley Project K-12 Schools	3	726	261	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Hysham K-12 Schools	3	104	46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Independent Elem	1	267	43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Jackson Elem	1	19	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Jefferson H S	1	203	40	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Joliet Elem	2	235	77	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Joliet H S	1	136	26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Jordan Elem	2	94	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Judith Gap Elem	2	25	4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Judith Gap H S	1	19	5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kalispell Elem	6	2794	1180	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kester Elem	1	8	0	Y	Y	NA	N	N	N	N	N	N	Y	Y
Kila Elem	2	160	97	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
King Colony Elem	1	5	5	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Kinsey Elem	1	81	22	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Kircher Elem	1	32	16	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Knees Elem	1	16	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Lambert Elem	2	49	2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lambert H S	1	28	6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
LaMotte Elem	2	63	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Laurel Elem	3	1325	443	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Laurel H S	1	616	94	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lavina K-12 Schools	3	82	51	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lewistown Elem	4	802	332	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Libby K-12 Schools	3	1222	641	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Liberty Elem	1	19	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Lima K-12 Schools	3	74	49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lincoln County H S	1	340	140	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lincoln K-12 Schools	3	169	105	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lindsay Elem	1	15	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Livingston Elem	3	897	395	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lockwood Elem	3	1184	550	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lolo Elem	2	598	225	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lone Rock Elem	2	272	129	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lustre Elem	1	43	14	Y	Y	NA	N	N	N	N	N	N	Y	Y
Luther Elem	1	37	4	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Malmborg Elem	1	14	0	Y	Y	NA	Y	Y	Y	N	Y	Y	Y	Y
Malta K-12 Schools	5	570	309	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Manhattan High School	1	196	42	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Manhattan School	2	329	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Marion Elem	2	118	70	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
McLeod Elem	1	11	0	Y	Y	NA	N	N	N	N	N	N	Y	Y
Medicine Lake K-12 Schools	3	97	55	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Melrose Elem	1	11	0	Y	Y	NA	Y	N	N	Y	Y	Y	Y	Y
Melstone Elem	2	57	15	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Melstone H S	1	27	6	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Melville Elem	1	15	0	Y	Y	NA	N	Y	Y	Y	Y	Y	Y	Y
Miles City Elem	5	997	383	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Missoula Elem	12	4828	1887	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Missoula H S	4	3615	1095	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Monforton Elem	3	204	45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Montana City Elem	2	432	14	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Moore Elem	2	68	28	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Moore H S	1	41	21	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Morin Elem	1	27	19	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Mountain View Elem	1	24	0	Y	Y	NA	Y	Y	Y	Y	N	Y	Y	Y
Nashua K-12 Schools	3	143	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
North Star Elem	2	110	66	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
North Star HS	1	48	17	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Noxon Elem	2	125	82	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Noxon H S	1	81	37	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Opheim K-12 Schools	3	53	24	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Ophir K-12	3	190	24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Park City Elem	2	243	41	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Park City H S	1	85	13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Park H S	1	534	160	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pass Creek Elem	1	7	0	Y	Y	NA	Y	Y	Y	N	Y	Y	Y	Y
Pendroy Elem	1	37	37	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Philipsburg K-12 Schools	3	164	45	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pine Creek Elem	2	40	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Pine Grove Elem	1	6	0	Y	Y	NA	N	N	N	N	N	N	N	Y
Pioneer Elem	1	54	6	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Plains Elem	2	290	179	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Plains H S	1	149	77	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Plenty Coups H S	1	38	38	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Plentywood K-12 Schools	3	348	128	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Plevna K-12 Schools	3	85	26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polson Elem	4	1201	639	Y	Y	Y	Y	Y	y	y	y	Y	Y	Y
Polson H S	1	490	175	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Poplar Elem	3	527	527	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Poplar H S	1	216	216	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Potomac Elem	2	114	46	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Powder River Co Dist H S	1	122	30	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Powell County H S	1	280	88	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Power Elem	2	89	22	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Power H S	1	59	15	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Pryor Elem	2	49	49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ramsay Elem	2	140	55	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rapelje Elem	2	41	21	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Rapelje H S	1	20	10	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Rau Elem	1	66	29	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Reed Point Elem	2	60	19	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Reed Point H S	1	32	10	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Reichle Elem	1	10	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Richey Elem	2	48	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Richey H S	1	25	9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Roberts K-12 Schools	3	141	47	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Rosebud Elem	2	51	43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rosebud H S	1	44	26	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ross Elem	1	6	0	Y	Y	NA	N	N	N	N	N	N	N	Y
Roundup Elem	2	417	228	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Roundup High School	1	187	77	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Roy K-12 Schools	3	52	23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
S H Elem	1	4	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
S Y Elem	1	5	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Sand Springs Elem	1	2	0	Y	Y	NA	N	N	N	N	N	N	N	Y
Savage Elem	2	62	23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Savage H S	1	32	7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Scobey K-12 Schools	3	266	79	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Seeley Lake Elem	2	117	82	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Shawmut Elem	1	5	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Shelby Elem	3	374	152	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shelby H S	1	187	52	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shepherd Elem	2	559	201	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shepherd H S	1	279	69	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sheridan Elem	2	128	68	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sheridan H S	1	74	22	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shields Valley Elem	2	154	43	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Shields Valley H S	1	71	16	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sidney Elem	2	741	213	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sidney H S	1	389	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Smith Valley Elem	2	183	105	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
South Stacey Elem	1	4	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spring Creek Colony Elem	1	5	5	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Spring Creek Elem	1	5	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Springdale Elem	1	6	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Springhill Elem	1	13	0	Y	Y	NA	Y	Y	Y	N	Y	Y	Y	Y
St Ignatius K-12 Schools	3	503	348	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
St Regis K-12 Schools	3	173	130	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stanford K-12 Schools	3	117	60	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stevensville Elem	2	605	303	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Stevensville H S	1	366	101	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Sun River Valley Elem	3	192	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Sunburst K-12 Schools	5	217	87	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Superior K-12 Schools	3	317	193	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Swan Lake-Salmon Elem	1	2	0	Y	Y	NA	N	N	N	N	N	Y	N	Y

Swan River Elem	2	147	56	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Swan Valley Elem	2	33	5	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Sweet Grass County H S	1	195	49	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Target Range Elem	2	481	91	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Terry K-12 Schools	3	140	76	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Thompson Falls Elem	2	276	183	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Thompson Falls H S	1	199	120	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Townsend K-12 Schools	3	718	270	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Trail Creek Elem	1	6	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Trego Elem	1	32	24	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Trinity Elem	1	24	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Trout Creek Elem	2	38	23	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Troy Elem	2	282	164	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Troy H S	1	164	83	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turner Elem	2	51	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Turner H S	1	28	19	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Twin Bridges K-12 Schools	3	250	97	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ulm Elem	3	74	32	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Upper West Shore Elem	1	31	0	Y	Y	NA	N	N	N	Y	Y	Y	Y	Y
Valley View Elem	1	23	0	Y	Y	NA	N	Y	Y	N	Y	Y	Y	Y
Vaughn Elem	2	84	67	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Victor K-12 Schools	3	365	256	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Vida Elem	2	15	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Warrick Elem	1	3	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
West Glacier Elem	1	28	17	Y	Y	Y	Y	Y	Y	y	Y	Y	Y	Y
West Valley Elem	2	604	174	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
West Yellowstone	3	233	100	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

K-12														
Westby K-12 Schools	3	57	12	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
White Sulphur Spgs Elem	2	157	98	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
White Sulphur Spgs H S	1	76	33	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Whitefish Elem	3	1103	239	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Whitefish H S	1	510	61	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Whitehall Elem	2	291	133	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Whitehall H S	1	191	74	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Willow Creek Elem	2	35	18	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Willow Creek H S	1	14	5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Winifred K-12 Schools	3	83	39	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Winnett K-12 Schools	3	102	74	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Wisdom Elem	1	18	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Wise River Elem	1	21	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Wolf Point Elem	3	606	606	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wolf Point H S	1	253	253	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Woodman Elem	2	47	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Yaak Elem	1	12	0	Y	Y	NA	Y	Y	Y	Y	Y	Y	Y	Y
Yellowstone Academy Elem	1	68	59	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Addendum A(2)-I

State of Montana

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Board of Public Education

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

Dear Ms. Weiss:

The Board of Public Education is extremely pleased to offer its support to Montana's application for federal Race to the Top grant money. We are fortunate to have as our partners, elected officials with the vision to position our system of education as one which places our children's interests to the forefront of education reform.

Governor Brian Schweitzer and State Superintendent Denise Juneau, both ex-officio members of the Board of Public Education, are leaders who understand the need for comprehensive education reform at both the state and federal levels. The Board stands united with them in pursuit of this opportunity afforded by the Obama Administration.

Montana sees itself as a proven leader among rural states in incorporating the challenges of delivering 21st century education and opportunities by recognizing new and innovative policies which brighten the future of this state's school children, strengthen our communities, and provide long-term economic viability for Montana and the nation. We have placed as a priority in our strategic planning mitigation of drop-out rates, enhanced teacher quality, and access and affordability to a bright future beyond the 12th grade.

Again we support our state's application and respectfully urge you to award Race to the Top funding to Montana which is prepared to take innovative steps and make appropriate policy decisions which will benefit not only Montana's school children, but all of America's students.

Thank you for your favorable consideration.

Sincerely,

Patty Myers

Patty Myers

Cc: Governor Brian Schweitzer
State Superintendent Denise Juneau

MONTANA ADVISORY COUNCIL ON INDIAN EDUCATION

Advisory to the

Office of Public Instruction
Board of Public Education

Office of Public Instruction
Director of Indian Education
PO Box 202501
Helena, MT 59620-2501
(406) 444-3694

To Whom It May Concern:

In Montana, we have long been proud of our schools and students. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the world of work. These students will grow our economy, sustain our communities and ensure a brighter future for our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education.

As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality, and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges. The RTTT funding will benefit student learning and economic benefits to our state and nation.

We again urge you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but for schoolchildren nationwide.

Thank you for your consideration.

Sincerely,

Norma Bixby
Chair

MASBO
Established since 1968

Montana Association of School Business Officials
208 North Montana Ave. Suite 102 Helena, MT 59601
Lynda Brannon, Executive Director (P) 406-442-5599 (F) 406-442-1356
lbrannon@masbo.com www.masbo.com

5/19/2010

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

In Montana, we have long been proud of our schools and students. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the work world. These students will grow our economy, sustain our communities and ensure a brighter future for our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education. As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grand money to the schools and schoolchildren of Montana. As put in place by president Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

We again urge you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but for schoolchildren nationwide.

Thank you for your consideration.

(b)(6)

Lynda Brannon, Executive Director
MT Assoc. of School Business Officials

BUTTE HIGH SCHOOL

"Home of the Bulldogs"

401 S. Wyoming, Butte, MT 59701

Phone: (406) 533-2200 Fax: (406) 533-2277

To Whom It May Concern:

In Montana, we have long been proud of our schools and students. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the world of work. These students will be productive, contributing to our economy, sustaining our communities and ensuring a brighter future for our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education.

As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality, and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges. Rural schools face the challenges of long distances and small populations. Through the use of technology we could connect small schools with experts in a variety of disciplines. This would expand opportunity and assist student in viewing the world beyond their small communities. The RTTT funding will benefit student learning and economic benefits to our state and nation.

Thank you for your consideration.

(b)(6)

Judy Bryant, CFCS

President, Montana Association of Family and Consumer Sciences Educators

MONTANA AMBASSADORS

May, 2010

To Whom It May Concern,

WHEREAS: Montana has long been proud of our education system ranging from one room elementary schools to world-class research universities; and

WHEREAS: The students of Montana will be faced with developing the solutions to some of the greatest challenges of our times such as finding new sources of American energy; and

WHEREAS: The Race to the Top (RTTT) program is a once-in-a-lifetime opportunity to fund innovative reforms that are desperately needed to ensure our student's continued academic success; and

WHEREAS: Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding; and

WHEREAS: Through Race to the Top, Montana has a chance to turnaround our lowest performing schools, improve teacher and administrator quality, and increase access to a higher education for Montanans of any age; and

WHEREAS: The future of Montana's economy depends on a world-class workforce trained through partnerships, quality education systems and our business community.

THEREFORE: Be it resolved that the Montana Ambassadors support Montana's application for Race to the Top funds; and

BE IT FURTHER RESOLVED: The Montana Ambassadors urge you to award RTTT funding to the State of Montana.

Sincerely,

5/7/2010

Channing Hartelius
President

PO Box 722
Anaconda, Montana 59711
Ph: 406.563.5353 Fx: 406.563.5476
Email: gloria@montanaambassadors.com
http://www.montanaambassadors.com

MEDA
MONTANA ECONOMIC DEVELOPERS ASSOCIATION

118 E. Seventh St.; Suite 2A Anaconda, MT 59711
ph: 406.563.5259 fx: 406.563.5476
http://www.medamembers.org

May 26, 2010

Dan Villa, Education Policy Advisor
Governor Brian Schweitzer
State Capitol, Helena, MT 59601

Dear Dan,

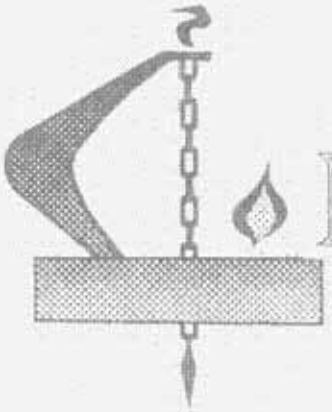
The Montana Economic Developers Association (MEDA) consists of economic development professionals from across our state. Our organization represents more than 200 members who are actively involved in local economic activity and planning throughout Montana.
On behalf of MEDA's leadership, I am writing this letter in support of Montana's Race to the Top Application. MEDA understands the effort involves:

- Enhancing dual credit, dual enrollment, and concurrent enrollment opportunities for all parts of Montana in order to increase the number of students obtaining certificates and degrees while lowering the cost of college.
- Expanding distance learning opportunities to the most remote parts of Montana so all children, regardless of where they live, have access to the best teachers, diverse class offerings and college-level courses.
- Developing a 3 tier system to assist schools and districts through a statewide system of support.
- Assisting schools that are persistently low achieving in cooperation with the Montana Board of Public Education.
- Changing the Montana University System, private, and tribal schools of education programs so that they prepare teachers and administrators to respond to the needs of today and tomorrow's students wherever they choose to live and work.
- Implementing a tiered system of licensure and tenure in Montana to improve all teachers and administrators as well as to reward high performing teachers regardless of tenure status.
- Embracing a comprehensive Science, Technology, Engineering and Math education agenda at the K-12, undergraduate, graduate, certificate, and vocational levels by supporting initiatives that improve the knowledge, resources and skills of teachers.
- Providing leadership and assistance to those schools that need to reduce drop-out and remediation rates and to increase graduation rates.

MEDA supports the above initiatives and looks forward to assisting with implementation of these efforts as applicable.

Sincerely,

Jim Davison, President



MONTANA
Association Of
Family & Consumer Sciences
Est: 1920

May 10, 2010

To Whom It May Concern:

I am writing to express support from the Montana Association of Family and Consumer Sciences for Montana's application for the federal Race to the Top funds. We understand the state seeks a grant from the U.S. Department of Education which will provide a wonderful opportunity to fund a comprehensive approach to innovative reforms to ensure continued success.

As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

By joining as a group of committed professionals, focused as a team on providing the opportunity for all of our children to reach their potential, we know Montana students will be the winners of this race.

Thank you for your consideration.

Sincerely,

(b)(6)

Mary C. Behrendt
President, MAFCS
P.O. Box 1259
Columbia Falls, MT 59912
406.892.6500, ext. 283

MONTANA COUNCIL OF TEACHERS OF MATHEMATICS

May 6, 2010

To Whom It May Concern:

In Montana, we are proud of our educational system and our students. Educators throughout the state work hard to help instill a love of learning in their students. We equip them with the skills needed to compete in an ever changing world of work. These students will help our economy grow, sustain our communities, and ensure a brighter future for themselves and our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reform. Although we are doing an excellent job in our state there is room for improvement. These reforms are needed to ensure our continued success in education. We must make certain that our students will be competitive in the world work market.

As stakeholders vested in the future of this state, the Montana Council of Teachers of Mathematics (MCTM) writes in support of awarding federal RTTT grant money to the schools and the school children of Montana. As put in place by President Obama, the RTTT fund distributes resources to state with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and State Superintendent of Public Instruction Denise Juneau, our school districts, our professional teaching organizations, and our State Curriculum Specialists are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, we have a chance to decrease drop-out rates, maintain and improve teacher quality, and increase access to higher education. As a mostly rural state, Montana has unique challenges. The RTTT funding will benefit student learning as we seek better ways in which to attend to all of our challenges.

We ask you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide concrete results, results that will have positive ramifications not just for Montana for schoolchildren nationwide. Montana is full of dedicated educators who will honor the spirit of the funding and provide solid results.

Thank you for your consideration.

Sincerely,

(b)(6)

Lisa M. Wood

President, Montana Council of Teachers of Mathematics

Montana Indian Education Association

Box 55, Browning, Montana 59417
406-338-5689 406-338-5688 (fax) csjuneau@3rivers.net

May 7, 2010

To Whom It May Concern:

The Montana Indian Education Association (MIEA) is pleased to join many other educational groups in supporting the Race to the Top Application for Montana. The MIEA is a non-profit organization representing a little over 500 members as advocates for American Indian Education. We have been in operation for 29 years.

The Race to the Top program is a wonderful opportunity for a comprehensive approach to innovative reforms to strengthen educational opportunities for student success. As advocates for Indian education, MIEA looks forward to working with the Office of Public Instruction in this exciting endeavor to closing the achievement gap for American Indian students and providing a brighter future for these students and their communities.

The long term economic benefits of a high school diploma for an individual, for their family and for their community are clearly supported by research. Montana's reservation communities face the highest rates of poverty in the state and education is one of the answers in combating these challenges. We need all of our students graduating from high school and continuing their education. We will all benefit when this happens.

We all recognize that one caring teacher can make all the difference for a child in their efforts to achieve in school. We must offer our teachers the training and professional development to help them reach all students successfully as proposed in Montana's Race to the Top Program.

We are proud of our schools and students and hope that they will have the opportunity to be a part of the Race to the Top Program. We urge you to award this funding to Montana.

Sincerely,

(b)(6)

Carol C. Juneau, Chairperson
Montana Indian Education Association

Montana Library Association
Montana's Libraries from the Mountains to Plains

PO Box 1352
Three Forks, MT 59752
Phone: 406-285-3090
Fax: 406-285-3091

To Whom It May Concern:

In Montana, we have long been proud of our schools and students. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the world of work. These students will grow our economy, sustain our communities and ensure a brighter future for our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education.

As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. Our school, public and academic libraries are bridges for education in our communities. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality, and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges. The RTTT funding will benefit student learning and economic benefits to our state and nation.

The Montana Library Association urges you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but for schoolchildren nationwide.

Thank you for your consideration.

(b)(6)

Eva English
President
Montana Library Association

Montana PTA

everychild. onevoice.

Montana PTA
PO Box 1269
Laurel, MT 59044-1269

Montana Office of Public Instruction
PO Box 202501
Helena, MT 59620-2501

To Whom It May Concern:

Montana PTA is proud to be a long time partner of our schools, families and students. In classrooms and homes across the state, educators and families help develop the minds of our next generation to be able to compete when they enter the world of work. These students will grow our economy, sustain our communities and ensure a brighter future for our state and nation.

Thomas Jefferson first declared literacy to be the key to citizenship. We must teach critical thinking with deliberative conversations around the dinner table, family vacations and school settings to peak a students' interest to invest time into their future with education. Race to the Top (RTTT) program is a brilliant opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education with the shift to a global economy.

As stakeholders vested in the future of this state, Montana PTA writes in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality, increase access to a higher education and partner with families for the success of all students. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

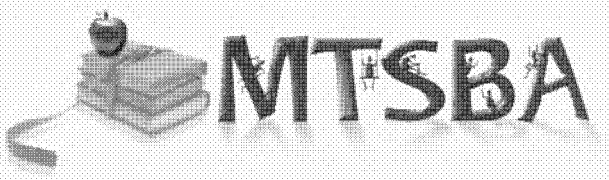
Montana PTA again urges you to award RTTT funding to the state of Montana. We are prepared to work with families and teachers across the state as we take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but for schoolchildren nationwide.

Thank you for your time and consideration of all our children,

(b)(6)

Dee Hensley-Maclean, Montana PTA President

MONTANA CONGRESS OF
PARENTS & TEACHERS
INCORPORATED



May 6, 2010

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

In Montana, we have long been proud of our schools and students. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the work world. These students will grow our economy, sustain our communities and ensure a brighter future for our state.

The Race to the Top (RTTT) program is a wonderful opportunity to fund a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education.

As stakeholders vested in the future of this state, we write in support of awarding federal RTTT grand money to the schools and schoolchildren of Montana. As put in place by president Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain or improve teacher quality and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

We again urge you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but for schoolchildren nationwide.

Thank you for your consideration.

Lance L. Melton
Executive Director
Montana School Board Association

Montana School Boards Association – 863 Great Northern Blvd., Suite 301, Helena, Montana 59601
(406) 442-2180 – (406) 442-2194 (FAX) – www.mtsba.org
Lance L. Melton, Executive Director

Montana Science Teachers' Association

To Whom It May Concern:

On behalf of the Montana Science Teachers' Association (MSTA), we support the Montana application to the Race to the Top program. In a state the size of Montana, it is important that a network of partners work together to foster high quality education for all students. The Race to the Top proposal offers the opportunity to fund a comprehensive approach to innovative reforms. These reforms are desperately needed to ensure our continued success in education. In classrooms across the state, educators help develop the minds of our next generation to be able to compete when they enter the world of work. These students will grow our economy, sustain our communities and ensure a brighter future for our state.

As stakeholders vested in the future of this state, the MSTA supports the awarding of federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

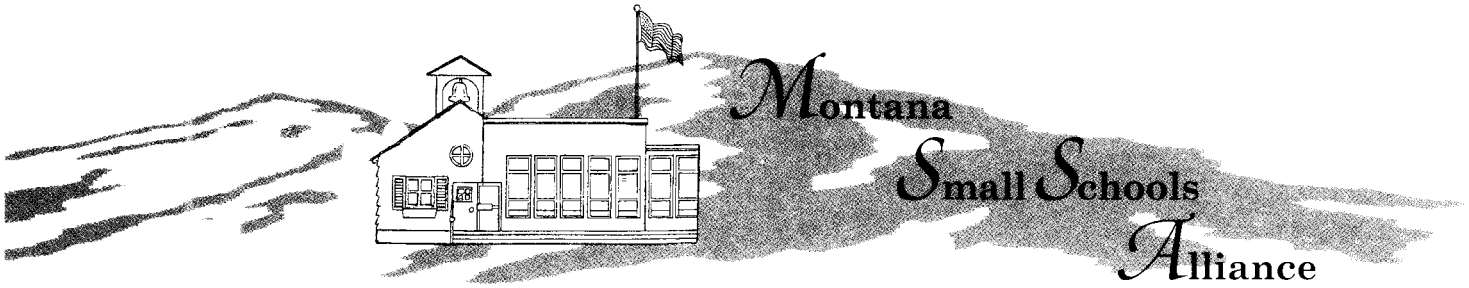
Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease dropout rates, maintain or improve teacher quality, and increase access to a higher education. Montana has been a leader in science education as demonstrated by state NAEP science scores, CRT scores, and the vast accomplishments of Montana students in STEM programs and careers. Maintaining an effective teaching force is a priority of MSTA. The RTTT funding will benefit student learning and economic benefits to our state and nation.

We again urge you to award RTTT funding to the state of Montana. We are prepared to take innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana but also for schoolchildren nationwide.

Thank you for your consideration.

(b)(6)

Alyson Mike, Ed.D.
President
Montanan Science Teachers' Association
3778 Fox Crossing Road
Helena, MT 59602



Power Block, Suite 516,
Seven West Sixth Avenue, Helena, MT 59601

(406) 447-4218 • Fax (406) 447-4255

May 11, 2010

Arne Duncan, Secretary, US Department of Education

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

We understand that The Race to the Top (RTTT) is an opportunity for our state, Montana, to fund a comprehensive approach to innovative reforms in our public education system. Montana has always had good schools and most of our children have done well. However, we know that the quality in our schools is eroding and that we have failed some of our children, particularly those on some of our Indian Reservations. We have caring professionals, but we need help to insure a 21st Century education for all our students, no matter where their parents choose to live.

Montanans have never been afraid of hard work and long hours, but we know if our children are to succeed, we must all work together to make every school in Montana a model school that preserves our citizens' dignity and sense of place while equipping then for successful citizenship in America and the world. The Montana Small Schools Alliance supports the 240 smallest school districts in Montana. Many of these schools are in remote parts of our state and we believe that to sustain their communities we must have excellent schools. Through Race to the Top, Montana has a chance to decrease drop-out rates, maintain and improve teacher quality and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

We urge you to award RTTT funding to the state of Montana. We are prepared to take collaborative, innovative steps that will provide tangible results, results that will have positive ramifications in Montana as well as for schoolchildren nationwide. Thank you for your consideration.

Sincerely,

Claudette Morton

Dr. Claudette Morton, Executive Director

To Whom It May Concern:

Montana has a proud history of putting its children and schools first. In classrooms across the state, educators help develop the minds of our next generation to assist them in competing in what has become a global economy. The Montana State Reading Council (MSRC), an affiliate of the International Reading Association, is proud to be a part of the exemplary educational system in Montana.

MSRC looks forward to working closely with the Montana Office of Public Instruction in providing Montana students with the high quality instruction they so richly deserve. The Race to the Top (RTTT) program is a wonderful opportunity for funding a comprehensive approach to innovative reforms, reforms that are desperately needed to ensure our continued success in education.

As a stakeholder vested in the future of our great state, the Montana State Reading Council writes in support of awarding federal RTTT grant funds to the schools and children of Montana. As stated by President Obama, RTTT will distribute resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." MSRC wholeheartedly agrees with this RTTT philosophy and lends its full support to the Montana plan.

Montana and MSRC have always put its children. Through Race to the Top, Montana has a chance to decrease dropout rates, maintain or improve teacher quality, and increase access to a higher education. Lessons learned from the process will have ramifications nationwide, but most importantly, to rural states that face the same economic and geographic challenges as Montana. The RTTT funding will not only benefit student learning, but provide a much needed boost not only to our schools, but to our economy as a whole by providing employers with a well educated pool of potential employees.

Again, we urge you to award RTTT funding to the state of Montana. MSRC is prepared to assist the Office of Public Instruction in taking innovative steps that will provide tangible results, results that will have positive ramifications not just in Montana, but also for schoolchildren nationwide.

Thank you,

Jerry Guay

Jerry Guay, State Coordinator
Montana State Reading Council

MONTANA STATE UNIVERSITY
College of
EDUCATION, HEALTH & HUMAN DEVELOPMENT

May 21, 2010

Joanne Weiss, Director, Race To The Top Program
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

We are proud of the academic achievement of Montana schools and students. Our public schools do a wonderful job in preparing students in Montana to enter University and work, especially in this period of resource constraints. Our K-12 students come to Montana State University prepared and ready to learn.

The Race to the Top (RTTT) program is an incredible opportunity to fund a comprehensive approach to innovation and reform needed to ensure our continued success in the education of our citizens. We at Montana State University are supportive of Montana's proposal for grant money to continue to improve schools and learning for schoolchildren of Montana. We have been included in the planning by Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau. This collaboration is a strength of Montana's proposal.

In particular, as we work to influence the preparation of professional educators new to the field of education and provide ongoing training to practicing teachers, we know that this work is the foundation to success in every classroom, school, and community. Tying our efforts to the directions being proposed in the Montana Race to the Top application will only strengthen our preparation programs.

Montana has always put the well-being of schoolchildren first when it comes to education reform. Through Race to the Top, we have a chance to decrease drop-out rates, maintain or improve teacher quality, and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

We again urge you to award RTTT funding to the state of Montana. We are prepared to be a full partner in taking innovative steps that will provide results that will have positive ramifications for students in Montana and for schoolchildren nationwide.

Thank you for your consideration.

Cordially,

Larry J. Baker, Dean

Joanne Erickson, Department Head

Office of the Dean
Dean Larry Baker
250 Reid Hall
P.O. Box 172940
Bozeman, MT 59717-2940

Tel (406) 994-4133
Fax (406) 994-1854

School Administrators of Montana
SAM

SCHOOL ADMINISTRATORS OF MONTANA
Educational Leaders...Advocates for Youth

(406) 442-2510 Phone
(406) 442-2518 Fax
www.sammt.org

April 28, 2010

To Whom It May Concern:

On behalf of the School Administrators of Montana (SAM), I would like to offer this letter of support for our state's application to secure the much-needed and valued *Race to the Top* (RTTT) resources.

Montanans are very proud of our long-standing commitment to excellence in education for our students and the schools they attend. In spite of our vast expanse of land, educators in all sizes and types of classrooms across our state strive to develop the maximum potential in all students that will enable them to be highly successful world-citizens. As we all know, with a quality education, these students and their successes will enable our communities, our state, our nation, and our world to thrive and prosper.

It is felt that the RTTT resources, if secured, would give us an excellent opportunity to fund an even more comprehensive approach to innovative improvements that are very much needed to ensure our continued success as a provider of quality education for our students.

As school and district educational leaders vested in the future of Montana, we write in support of awarding federal RTTT resources to the schools of our state that would benefit our students. As envisioned by President Obama, the RTTT resources are intended to be distributed to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform". The vision and leadership of elected leaders Governor Brian Schweitzer and Superintendent of Public Instruction Denise Juneau is helping bring Montanans together to demonstrate why our state is the most qualified state to receive the RTTT funding and we support these efforts.

School students come first in our state when it comes to improvement. Through RTTT, Montana has a chance to further decrease drop-out rates, enhance teacher quality and increase access to higher education opportunities. Lessons learned from this application process will be shared with other frontier and rural states facing similar challenges.

SAM urges you to award RTTT funding to the state of Montana. We as an educational community are prepared to take the innovative steps necessary to produce tangible results that will benefit our state's students as well as those across our great nation.

Thanks for your consideration.

Sincerely,

Darrell Rud

Darrell Rud
Executive Director

MEA-MFT
Public Schools, Public Service

May 27, 2010

Joanne Weiss
Race to the Top Program Coordinator
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Ms. Weiss:

On behalf of my union, MEA-MFT, I am pleased to support Montana's Race to the Top application.

MEA-MFT is the merged state affiliate of NEA and AFT. As a merged union of teachers, university faculty, Head Start, state and county employees, and health care providers, we are Montana's largest labor union by far. We are proud to represent so many folks living and working in nearly all Montana communities who give so much to the present and future health and welfare of our state and nation.

Montana's public school students have a history of high achievement, and our capable members, governance, and staff are engaged and prepared to work enthusiastically with state and local education partners to further advance student success.

Throughout the grant development process MEA-MFT worked in partnership with Governor Brian Schweitzer, Superintendent of Public Instruction Denise Juneau, and Chair of the Board of Public Education Patty Myers. At our urging MEA-MFT teacher local affiliates across the state joined with school district superintendents and trustees and signed MOUs demonstrating their support of the RTTT application effort.

1232 East Sixth Ave., Helena, MT 59601 ■ TEL 406/442-4250 or 800/398-0826 FAX 406/443-5081 www.mea-mft.org

Montana would not have achieved what is in truth an incredible number of participants serving the overwhelming majority of our public school students had MEA-MFT not believed the governor, superintendent, and board of public education have a compelling plan to move our state's educational program forward and that an RTTT grant will help make that plan happen. We are confident that as school districts and our bargaining units confab, collaborate, and bargain as necessary to implement the challenging changes our RTTT grant provokes, they will reach educational conclusions good for all.

We are especially looking forward to working with our state and local school community partners in developing and implementing uniform, rigorous, research-based, purposeful teacher and administrator evaluation protocols and instruments. Our commitment to educator evaluation could not be greater -- now more than ever.

We urge you to award a Race to the Top grant to Montana. You can be sure our educational leaders will not waste a penny putting these taxpayer dollars to positive educational outcomes for students, teachers, and public school communities across our great state. You can count on MEA-MFT to help.

Sincerely,

(b)(6) [redacted]

Eric Feaver, President
MEA-MFT

cc: Governor Brian Schweitzer
Superintendent Denise Juneau
Board of Public Education Chair Patty Myers

The University of Montana

Phyllis J. Washington
College of Education & Human Sciences
Office of the Dean
The University of Montana
32 Campus Drive
Missoula, MT 59812-6336

May 26, 2010

Joanne Weiss, Director, Race To the Top Program
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

Dear Director Weiss:

In Montana, we have long been proud of our schools and students. In schools across the state school leaders and teachers collaborate to develop the minds of our next generation so they will be able to compete when they enter the world of work. These students will grow our economy, sustain our communities, and ensure a brighter future for our state and the nation.

The Race to the Top (RTTT) program provides an incredible opportunity to fund a comprehensive approach to innovation and reforms that are needed to ensure our continued success in education. As a stakeholder vested in the future of this state, I write in support of awarding federal RTTT grant money to the schools and schoolchildren of Montana. As put in place by President Obama, the RTTT fund distributes resources to states with "ambitious yet achievable plans for implementing coherent, compelling, and comprehensive education reform." Thanks to the vision and leadership of Governor Brian Schweitzer and state Superintendent of Public Instruction Denise Juneau, our school districts are working together to demonstrate why Montana is the most qualified state to receive Race to the Top funding.

We in Montana are unified in our belief that working to enhance the preparation of professional educators new to the field of education, and providing ongoing training to practicing teachers and school leaders will provide the foundation for success in every classroom, school, and community. Tying our efforts to the directions being proposed in the Montana Race to the Top application will only strengthen the end result.

Montana has always put its schoolchildren first when it comes to education reform. Through Race to the Top, Montana has a chance to decrease drop-out rates, improve teacher and school leader quality, and increase access to a higher education. Lessons learned from the process will be made available to benefit other rural states facing similar challenges.

Again, I urge you to award RTTT funding to the state of Montana. Educational leaders throughout this state and their higher education partners are prepared to take innovative steps that will provide tangible results – results that will have positive ramifications not just in Montana, but for schoolchildren nationwide.

Thank you for your consideration of the Montana proposal.

Sincerely,

Roberta D. Evans

Dr. Roberta D. Evans, Dean
College of Education and Human Sciences
The University of Montana – Missoula
32 Campus Dr.
Missoula, MT 59812-6336

Joanne Weiss, Director, Race To The Top Program

U. S. Department of Education

400 Maryland Avenue, SW

Washington, DC 20202

I am currently the principal of a primary school in North Central Montana. I am proud to say that I reside in a state that holds high expectations for our students, and they rise to the occasion with notable academic performance. These students will become our future and are well prepared to do so due to the diligence and devotion of Montana educators.

The concern of these educators for their students, and the connection of building positive relationships, has created awareness for the many students who struggle in keeping up with the demands of grade level academics in the regular education classroom. In addition, the implementation of Response to Intervention (RtI) in our school has given these students the much needed opportunity to be instructed through a means of individualized/small group instruction to achieve personal success.

Our school is immersed in the implementation of Response to Intervention with our students. We have seen the success and the personal pride that academic successes can bring to students when they've had the opportunity to learn utilizing general education, differentiated instruction strategies and settings. RtI is an effective system designed to meet the needs of *every* student in our school.

Being a local stakeholder engaged in the students and future of our state, I write to you in support of awarding federal Race To The Top (RTTT) grant money to the students and schools of Montana. The great state of Montana embraces our school children and is committed to strong leadership and teacher effectiveness, which in turn will enhance and sustain student performance. The allocation of RTTT funds would allow vital expansion to such programs as Response to Intervention for cultivating student achievement.

Again, I encourage you to award RTTT funding to the state of Montana. Our state, though very rural in nature, has strong commitments to our students and collaboratively seeks valuable results for their personal success of academic achievements.

Thank you for your consideration.

Sincerely,

(b)(6)

Karla Geda, Principal

Lincoln-McKinley Primary School

Havre, Montana 59501

Budget Part I: Budget Summary Table

Instructions:
In the Budget Summary Table, the State should include the budget totals for each budget category and each year of the grant. These line items are derived by adding together the line items from each of the Project-Level Budget Tables.

Budget Part I: Summary Budget 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	860,219	971,593	988,967	309,089	3,129,868
2. Fringe Benefits	255,128	290,808	300,472	77,272	923,680
3. Travel	48,153	3,653	6,280	0	58,086
4. Equipment	35,000	0	0	0	35,000
5. Supplies	43,000	43,000	43,000	5,000	134,000
6. Contractual	4,252,300	12,833,281	6,076,680	5,160,000	28,322,261
7. Training Stipends	0	0	0	0	0
8. Other	427,150	1,413,650	671,150	526,000	3,3037,950
9. Total Direct Costs (lines 1-8)	5,665,822	15,265,177	7,786,077	6,000,089	35,640,845
10. Indirect Costs*	341,943	686,279	438,734	249,029	1,715,986
11.Funding for Involved LEAs	0	0	0	0	0
12. Supplemental Funding for Participating LEAs	0	0	0	0	0
13. Total Costs (lines 9-12)	6,007,765	15,951,456	8,224,811	6,249,118	37,356,831
14. Funding Subgranted to Participating LEAs (50% of Total Grant)	9,375,000	9,375,000	9,375,000	9,375,000	37,500,000
15. Total Budget (lines 13-14)	15,382,765	25,326,456	17,599,811	15,624,118	73,933,151

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.

I. Budget for Standards and Assessment

Project Outcome	Description	Justification	Cost
B(1) Developing and Adopting common standards	Board of Public Education study groups	3 meetings @ $4,500	$13,500
	Travel	Costs for consultants who conducted the alignment study to attend the BPE meetings	$6,000
	Integration of Common Core with MT standards	Educator panels to develop Montana standards to include expectations not included in the Common Core (travel, substitute teacher fee, honoraria)	$20,000
B(2) Developing and Implementing common, high quality assessments	MT participation in Smarter Balanced Assessment Consortium	Participation in the consortium as a governing state will be funded through Race to the Top Assessment grant	$0
B(3) Supporting the transition to enhanced standards and high quality assessments	Instructional Coordinator	1.0 FTE OPI – Facilitates and provides professional development related to standards-based education (standards, curriculum, instruction and assessment) 4 year position	$240,000
	Instructional Coordinator	1.0 FTE OPI – Focuses on implementation of standards, monitors progress of school districts in implementation of standards-based education 3-year position	$180,000
	Development of model curricula	Consultant services, funding to convene teams of K-16 educators, pay for substitute teacher fees	$59,000
	Training grants to five regional service areas	Level 1 – Awareness Level 2 – Job-embedded training Level 3 – Network of experienced MT educators	$3,500,000
Total Indirect Costs for Standards and Assessment			$84,516
SUB-TOTAL for Standards and Assessment			**$4,103,016**

II. Budget for Data Systems to Support Instruction

	Description	Justification	Cost
Project Outcome	Project Management Services	OPI - Oversees project from conception through implementation	$576,000
	Functional Requirements Process - consultant	OPI - Works with project manager to develop documentation for the project. Assists with development of business requirements and with writing RFP and training materials	$307,200
	Travel	Two days of Travel for two senior project staff to attend two-day meeting each of the three years of the grant in Washington, D.C.	$10,959
	Computers	Computers for 13 staff and 6 contracted personnel	$18,200
	Desks, supplies, phones and data costs	Staff will need desks, supplies, phones and a data connection to the network	$142,500
	Rent	Non-state office rent for 13 staff and 6 contracted personnel	$384,750
	Printing and publishing costs	Print training materials for data governance, BI tools, SIF, and daily printing by each staff person	$10,000
SUB-TOTAL for items that pertain to all 5 outcomes identified in C(2)			**$1,449,609**

Project Outcome	Description	Justification	Cost
C(2) Accessing and using state data **Outcome: Establishing data linkages among state agency partners to connect from early childhood to K-12 to post-secondary and the workforce**	Computer Systems Analyst	DLI will provide UI data extracts as needed * This position also supports BI tools and performance measures and reporting outcomes.	$ 218,477*
	Programmer	DLI - furnish wage file data	$48,000
	Business Analyst	DPHHS – develop requirements and manages implementation & sharing of data	$216,360
	Programmer	OCHE – develop data linkages to OPI and DLI * This position also supports BI tools, and performance measures and reporting outcomes.	$ 130,912*
	Database Administrator	OPI - Database Administrator * This position also supports BI tools, and performance measures and reporting outcomes.	$135,422*
	Consultants - 2 Computer Interface Programmers	OPI - Assist with development of matching mechanism to match student data between contributing systems	$345,600
	Consultant	DLI, Workforce Services Division – Assist with conversion of data	$37,500
	Consultant	OCHE – EIS vendor to help with data integration and transcripts. * This consultant also supports the transcripts outcome.	$247,000*
	Computer Systems Analyst	OPI – Work with IT staff to define data sets and develop documentation, ensure data integrity, develop data validations, web portal, repots, BI tools, queries. * This position also supports the performance measures, transcripts, reporting and BI Tools outcomes.	$ 218,477*
	Equipment	DPHHS - Server resources upgrades * This equipment will support the data linkages and performance measures and reporting outcomes.	$10,000*

Project Outcome	Description	Justification	Cost
C(2) Accessing and using state data **Outcome: Establishing data linkages among state agency partners to connect from early childhood to K-12 to post-secondary and the workforce**	Computer Systems Analyst	OPI – Responsible for all system interfaces including SIF implementation. * This position will also support the transcripts outcome	$218,477*
	Business Analyst	OPI – Serves as Data Resource Administrator and develops data standards and definitions and provides training to LEAs. * This position also supports the transcripts outcome within the grant	$216,359*
	Business Analyst	OPI - Ensure data integrity and assist with development of data validations. * This position also supports the BI tools outcome within the grant	$216,359*
	Computer Systems Analyst	OPI – Security Officer - will oversee the independent information security audit and ongoing process to review and assess security issues and risks	$218,477
	Security Assessment Consultant	Independent review and analysis of the level of vulnerability on the networks and servers and evaluate network security architecture, policies, and processes	$150,000
	Consultant	DPHHS – professional services through an existing contractor for the CCUBS system	$575,000
SUB-TOTAL for Data Linkages			**$3,202,420**

Project Outcome	Description	Justification	Cost
C(2) Accessing and using state data **Outcome: Creating an electronic student transcript repository for K-12 education**	Training	On-site SIF Training for key stakeholders	$25,000
	Travel	15 days of data governance and transcript training for LEAs and stakeholders. This cost is also associated with the data governance outcome	$2,625*
	Equipment	OPI - Database servers and web servers to host the SIF environment	$25,000
	Data Hosting	State data center to host the data warehouse for OPI	$41,760
	Software	OPI – SIF licenses and maintenance	$105,000
	Software	OPI – Windows & SQL server licenses	$16,000
	National Transcript Service Contract	Facilitate the transmission of transcripts	$500,000
	Consultant	OCHE – EIS Vendor to assist with data integration and transcripts. This consultant was previously identified under the data linkages outcome.	*
	Computer Systems Analyst	OPI – Responsible for SIF implementation. * This position was previously identified under the data linkages outcome.	*
	Business Analyst	OPI – Develops data standards and definitions necessary for	*

		standardized transcripts. This position was previously identified under the data linkages outcome.	
	Business Analyst	OPI - Ensure data integrity and assist with development of data validations. This position was previously identified under the data linkages outcome.	* This position was previously identified under the data linkages outcome
SUB-TOTAL for Electronic Student Transcript Repository			**$715,385**

Project Outcome	Description	Justification	Cost
C(2) Accessing and using state data **Outcome: Creating a data governance structure for P-20 data**			
	Business Analyst	OPI – Data Governance Workgroup Program Director	$216,360
	Business Analyst	OPI – Part of Data Governance Workgroup; convenes data steward on regular basis; assists with training stakeholders and staff	$216,360
	Lawyer	OPI – Provide legal assistance with policy development and interpretation of laws	$293,067
	Travel	Travel to LEAs to provide data governance training. * This item was previously identified under the electronic transcripts outcome	*
SUB-TOTAL for Data Governance			**$725,787**

Project Outcome	Description	Justification	Cost
C(2) Accessing and using state data **Outcome: Implementing business intelligence and web reporting tools for users of P-20 data**	Consultant	DPHHS – BI Tools consulting	$393,200
	Software	DPHHS – BI licensing	$100,000
	BI Tools Training	Training for key project stakeholders	$11,500
SUB-TOTAL for BI and Web Reporting Tools			**$504,700**
SUB-TOTAL for Performance Measurement and Reporting			**$0*** **All costs associated with this outcome have been previously identified with other outcomes**
Total Indirect Costs for all Outcomes in C(2)			**$305,719**
SUB-TOTAL for C(2)			**$6,903,620**

Project Outcome	Description	Justification	Cost
C(3) Using Data to improve instruction	Vendor contract with SAS	110,000 students in Grades 3-12 @$3.50=$385,000/year 15,000 educators @$25 = $375,000/year	$3,040,000
	Data Control Specialist	1.0 FTE OPI – works with the vendor and provides Help Desk services to school districts in using the SAS product	$240,000
	Operating budget for Help Desk	Rent, desktop, phone, supplies	$20,000
Indirects for C(3)			$66,667
SUB-TOTAL for C(3)			$3,366,667
SUB-TOTAL for Data Systems to Support Instruction			**$10,270,287**

III. Budget for Great Teachers and Leaders

Project Outcome	Description	Justification	Cost
D(2) Improving teacher and principal effectiveness based on performance	Adoption of administrative rules regarding principal and teacher evaluation	Advisory group will recommend minimum criteria for evaluation of principals and teachers	$25,000
	Implementation of revised evaluation system	Using RSAs, provide training of school leadership and teachers for successful implementation	$100,000
D(3) Ensuring equitable distribution of effective teachers and principals	Expand student learning opportunities through MT Digital Academy, College NOW! and distance learning	Provide operational support MTDA; expand MTDA course offerings into elementary and middle school; expand dual credit opportunities through College NOW!	$2,100,000
D(4) Improving the effectiveness of teacher and principal	Grants to Schools of Education – Montana University System – to revise Professional Educator Preparation Programs (PEPPS)	$2 million each to MT State University and University of MT for planning, research, and implementation associated with revision of PEPPS;	$4,000,000
D(5) Providing effective support to teachers and principals	Response to Intervention Coordinator	1.0 FTE OPI – manages the statewide implementation of RTI	$270,000
	Administrative Assistant	1.0 FTE OPI – supports the statewide implementation of RTI	$192,000
	Accountant	1.0 FTE OPI for allocating mini- grants, providing travel reimbursements	$222,195
	Web Developer	1.0 FTE OPI – Hosts website, wikis and blog; produces on-line newsletter; posts research and reports	$265,250

	Data Control Specialist	1.0 FTE – works with schools in using RTI tools. This position was previously identified under C(3)	*
D(5) Providing effective support to teachers and principals	Mini-grants to schools to build capacity	Grants to fund staffing, instructional materials and technology	$3,000,000
	Training	Funding for national experts to provide workshops, regional consultants to provide regional trainings, and facilitators to do site visits to schools	$1,800,000
Indirects for Great Teachers and Leaders			$810,835
SUB-TOTAL for Great Teachers and Leaders			**$12,785,280**

IV. Budget for Turning Around Lowest Achieving Schools

Project Outcome	Description	Justification	Cost
E(1) Intervening in the lowest-achieving schools and LEAs	Use growth in student achievement as a criteria for determining need for intervention	Use the SAS program to identify type and intensity of need for intervening services	* Costs associated with this outcome are included in C(3)
(E)(2) Turning around the lowest-achieving schools	Develop model for raising achievement in lowest-achieving schools	Establish support systems for schools appropriate to their level and intensity of need	$4,500,000
Indirects for Turning Around Lowest Achieving Schools			$342,300
SUBTOTAL for Turning Around Lowest Achieving Schools			**$4,842,300**

V. Budget for Emphasis on Science, Technology, Engineering and Math

Project Outcome	Description	Justification	Cost
Emphasis on Science, Technology, Engineering and Math (STEM)	Mini-grants to schools for integrating renewable energy into curriculum	Support districts in designing hands-on, inquiry- and problem-based learning opportunities related to STEM	$5,000,000
	Integration of STEM into Montana content standards	Education consultants to analyze and build best practices	$100,000
	Implementation of technology into classroom learning	Engineering kits, professional development for teachers; math/science partnerships	$550,000
Indirects for STEM			$105,950
SUBTOTAL for STEM			**$5,755,950**

VI. Total Budget for Race to the Top

			Cost
			$37,356,832

Addendum A(3)-I: Montana NAEP Graphical Scores 2003-2009

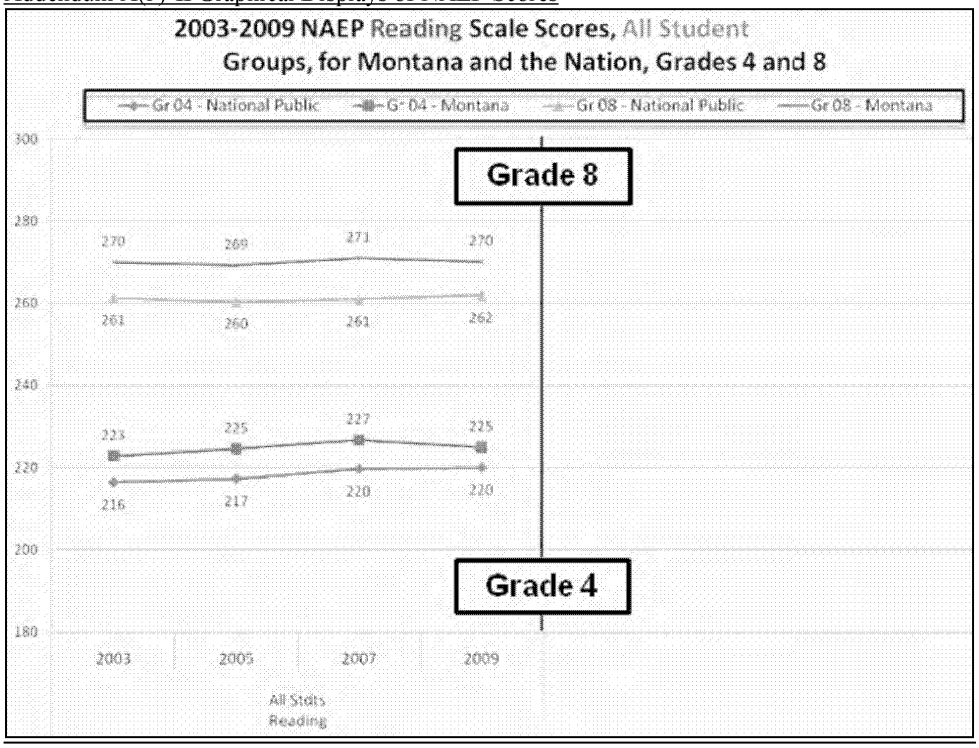
On the NAEP Reading Assessment, Montana 8th Grade All Students group, since 2003, have shown stability in their performance over time. Montana 4th Grade

Reading Grade 8				Reading Grade 4					Math Grade 8				Math Grade 4			
2003	2005	2007	2009	2003	2005	2007	2009		2003	2005	2007	2009	2003	2005	2007	2009
270	269	271	270	223	225	227	225		286	286	287	282	236	241	244	244
273	272	274	273	227	228	230	228		289	290	291	296	238	243	247	247
248	251	249	253	202	205	209	206		265	266	265	267	224	227	229	227
239	234	235	238	188	193	191	192		246	252	248	244	212	220	223	223
258	259	260	261	208	212	215	214		258	272	272	277	227	231	234	235

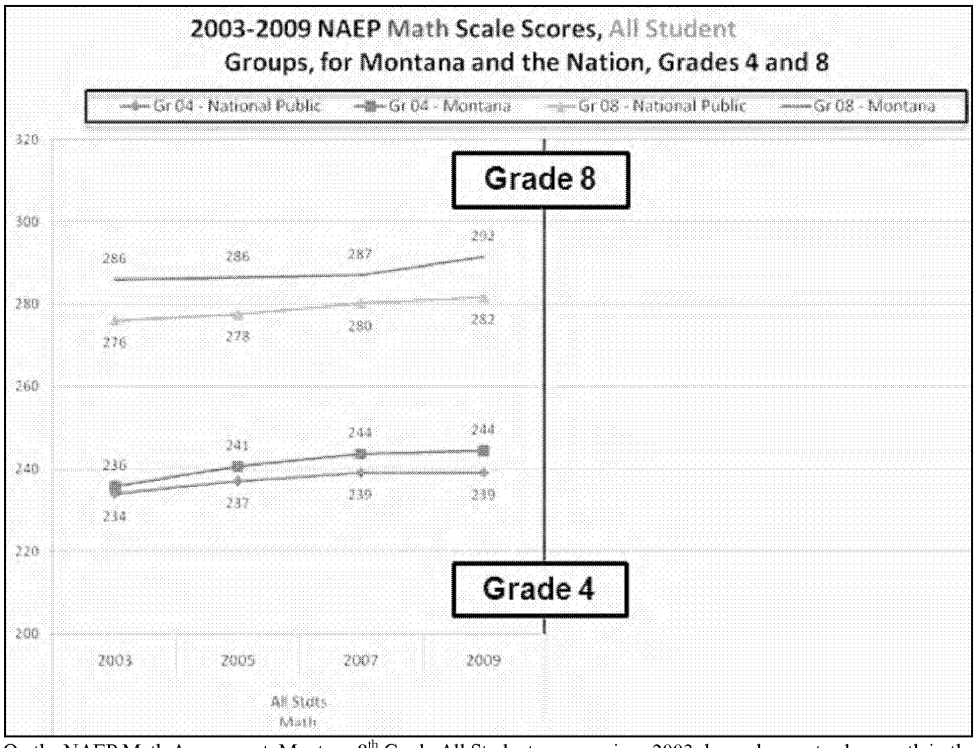
Reading Grade 8				Reading Grade 4					Math Grade 8				Math Grade 4			
2003	2005	2007	2009	2003	2005	2007	2009		2003	2005	2007	2009	2003	2005	2007	2009
3	3	3	3	4	3	3	3		3	4	4	14	2	2	3	3
(22)	(18)	(22)	(17)	(21)	(20)	(18)	(19)		(21)	(20)	(22)	(15)	(12)	(14)	(15)	(17)
(31)	(35)	(36)	(32)	(35)	(32)	(36)	(33)		(40)	(34)	(39)	(38)	(24)	(21)	(21)	(21)
(12)	(10)	(11)	(9)	(15)	(13)	(12)	(11)		(28)	(14)	(15)	(5)	(9)	(10)	(10)	(9)

Reading Grade 8				Reading Grade 4					Math Grade 8				Math Grade 4			
2003	2005	2007	2009	2003	2005	2007	2009		2003	2005	2007	2009	2003	2005	2007	2009
(25)	(21)	(25)	(20)	(25)	(23)	(21)	(22)		(24)	(24)	(26)	(29)	(14)	(16)	(18)	(20)
(34)	(38)	(39)	(35)	(39)	(35)	(39)	(36)		(43)	(38)	(43)	(52)	(26)	(23)	(24)	(24)
(15)	(13)	(14)	(12)	(19)	(16)	(15)	(14)		(31)	(18)	(19)	(19)	(11)	(12)	(13)	(12)

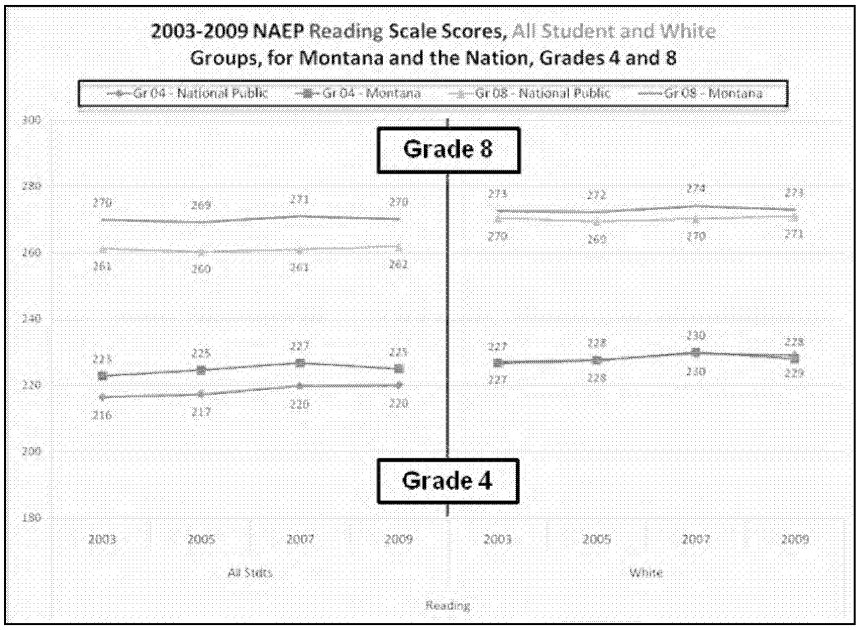
Addendum A(3)-II Graphical Displays of NAEP Scores



All Students Group, over the same period of time, again in Reading, has shown slight overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group.



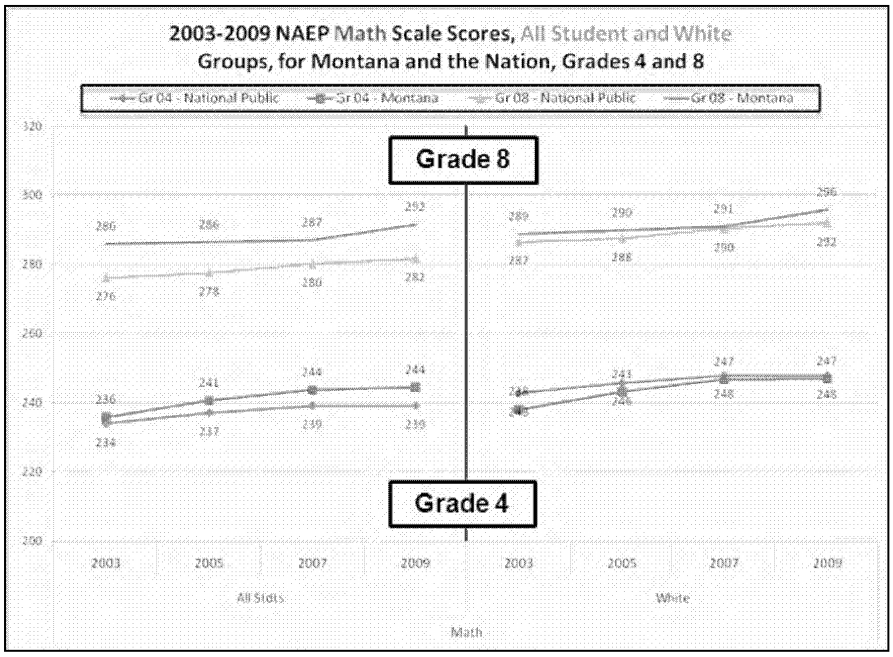
On the NAEP Math Assessment, Montana 8th Grade All Students group, since 2003, have shown steady growth in their performance over time, particularly in 2009. The Montana 4th Grade All Students group, over the same period of time, again in Math, has shown overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group. In particular, Montana 8th Grade Students widened the gap with the national public school group in 2009.



Left Side of Chart:
On the NAEP Reading Assessment< Montana 8th Grade All Students group, since 2003, have shown stability in their performance over time. Montana 4th Grade All Students Group, over the same period of time, again in Reading, has shown slight overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group.

Right Side of Chart:
On the NAEP Reading Assessment Montana White 8th Grade Students, since 2003, have also shown a stability in their performance over time similar to the All Student group results. Montana White 4th Grade Students, over the same period of time, again in Reading, have also shown slight overall growth across the entire time period, similar to the All Student group. In both groups the performance gap between the White national public school group and the Montana White student group was small and paralleled one another.

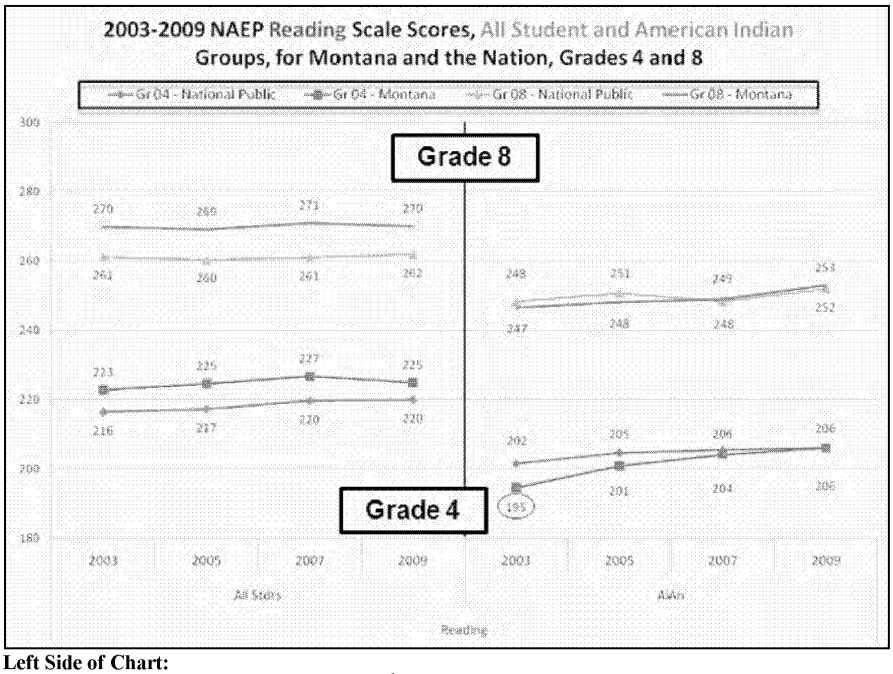
Achievement Gap Review:
The achievement gap between the All Student group and the White Student group for both 8th and 4th Grade Students in Reading indicates, without exception, that the White Student group has performed at a higher level. This difference has been relatively stable with a differential of 3 with the exception of 2003 4th Grade Reading where the difference was 4.



Left Side of Chart:
On the NAEP Math Assessment Montana 8th Grade All Students group, since 2003, have shown steady growth in their performance over time, particularly in 2009. The Montana 4th Grade All Students group, over the same period of time, again in Math, has shown overall growth across the entire time period. In both Grades, the Montana All Students group performed at a higher level than the national public school All Students group. In particular, Montana 8th Grade Students widened the gap with the national public school group in 2009.

Right Side of Chart:
Montana White 8th Grade Students, since 2003, on the NAEP Math Assessment have shown steady growth in their performance over time similar to the All Student results. Montana White 4th Grade Students, over the same period of time, again in Math, have shown also had overall growth across the entire time period, similar to the All Student group. In both groups the performance gap between the White national public school group and the Montana White student group was small and nearly paralleled one another.

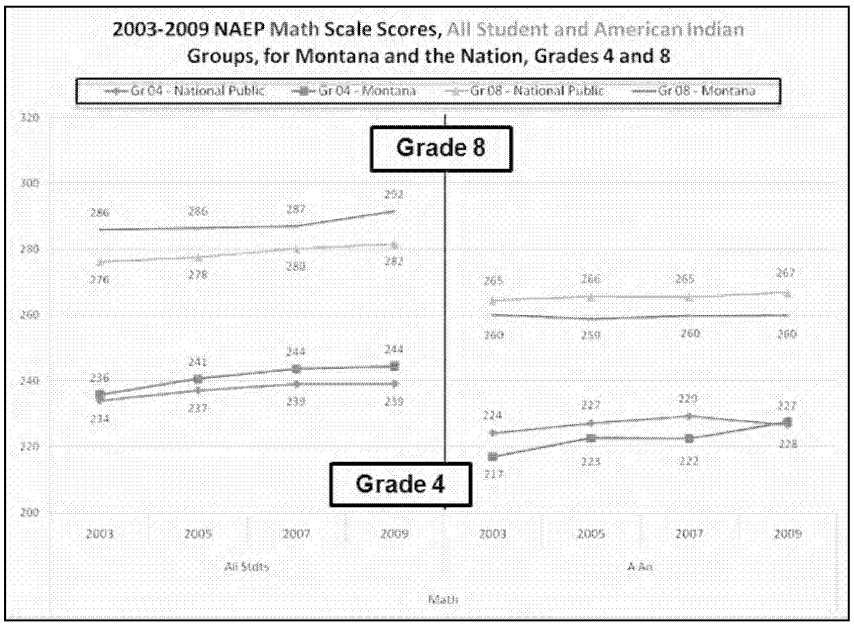
Achievement Gap Review:
The achievement gap between the All Student group and the White Student group for both 8th and 4th Grade Students in Math indicates, without exception, that the White Student group has performed at a higher level. This difference is particularly noted in 2008 8th Grade Math, where the differential was 14 points.



Left Side of Chart:
On the NAEP Reading Assessment Montana 8th Grade All Students group, since 2003, have shown stability in their performance over time. Montana 4th Grade All Students Group, over the same period of time, again in Reading, has shown slight overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group.

Right Side of Chart:
On the NAEP Reading Assessment Montana American Indian 8th Grade Students, since 2003, have shown overall growth in their performance over time unlike the All Student results. Montana American Indian 4th Grade Students, over the same period of time, again in Reading, have also shown slight growth across the entire time period, similar to the All Student group. In both groups the performance gap between the American Indian national public school group and the Montana American Indian student group was small and paralleled one another.

Achievement Gap Review:
The achievement gap between the White Student group and the American Indian Student group for both 8th and 4th Grade Students in Reading indicates, without exception, that the White Student group has performed at a higher level. This difference has steadily decreased over time for both grades.



Left Side of Chart:

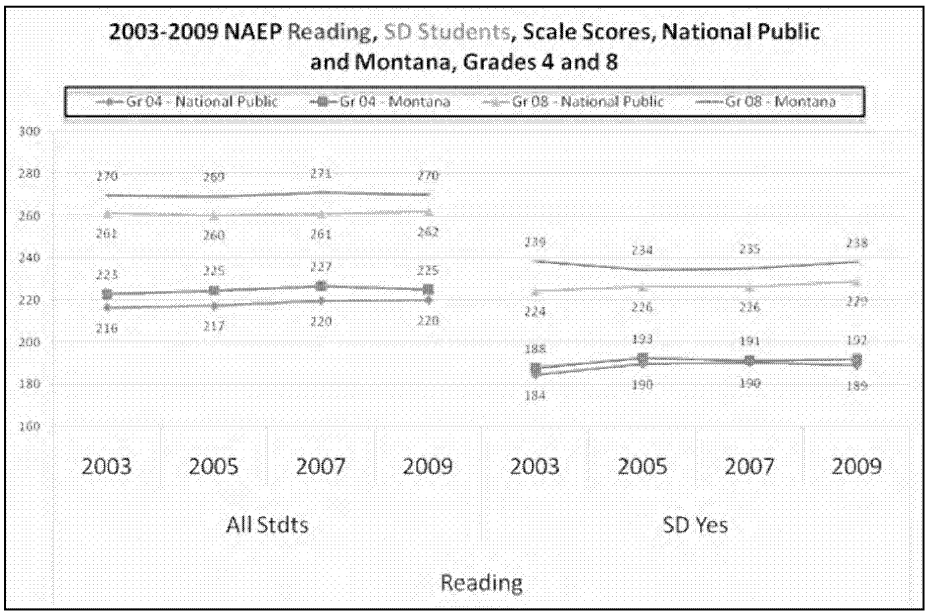
On the NAEP Math Assessment Montana 8th Grade All Students group, since 2003, have shown steady growth in their performance over time, particularly in 2009. The Montana 4th Grade All Students group, over the same period of time, again in Math, has shown overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group. In particular, Montana 8th Grade Students widened the gap with the national public school group in 2009.

Right Side of Chart:

O n the NAEP Math Assessment Montana American Indian 8th Grade Students, since 2003, have shown very slight overall growth in their performance over time unlike the All Student results. Montana American Indian 4th Grade Students, over the same period of time, again in Math, have shown overall growth until 2009. In both groups the performance gap between the American Indian national public school group and the Montana American Indian student group was small and somewhat paralleled one another.

Achievement Gap Review:

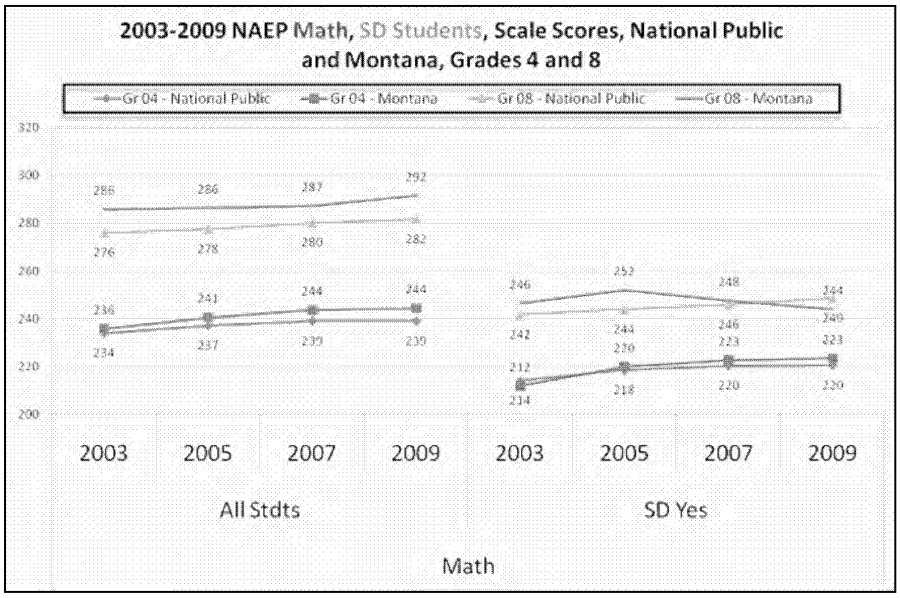
The achievement gap between the White Student group and the American Indian Student group for both 8th and 4th Grade Students in Math indicates, without exception, that the White Student group has performed at a higher level. In the 8th and 4th grade, this difference has increased across the period.



Left Side of Chart:
On the NAEP Reading Assessment Montana 8th Grade All Students group, since 2003, have shown a stability in their performance over time. Montana 4th Grade All Students Group, over the same period of time, again in Reading, has shown slight overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group.

Right Side of Chart:
On the NAEP Reading Assessment Montana 8th Grade Students with Disabilities group, since 2003, have almost been able to regain their same performance level in 2009 that we saw in 2003. Montana 4th Grade Students with Disabilities, over the same period of time, again in Reading, have shown slight overall growth through 2009. In both groups the performance gap between the national Students with Disabilities public school group and the Montana Students with Disabilities group was small and somewhat paralleled one another.

Achievement Gap Review:
The achievement gap between the White Student group and the Students with Disabilities group for both 8th and 4th Grade Students in Reading indicates, without exception, that the White Student group has performed at a higher level. This difference has averaged about 37 points for both grades over the time period and there appears to be no definitive change in direction.



Left Side of Chart:

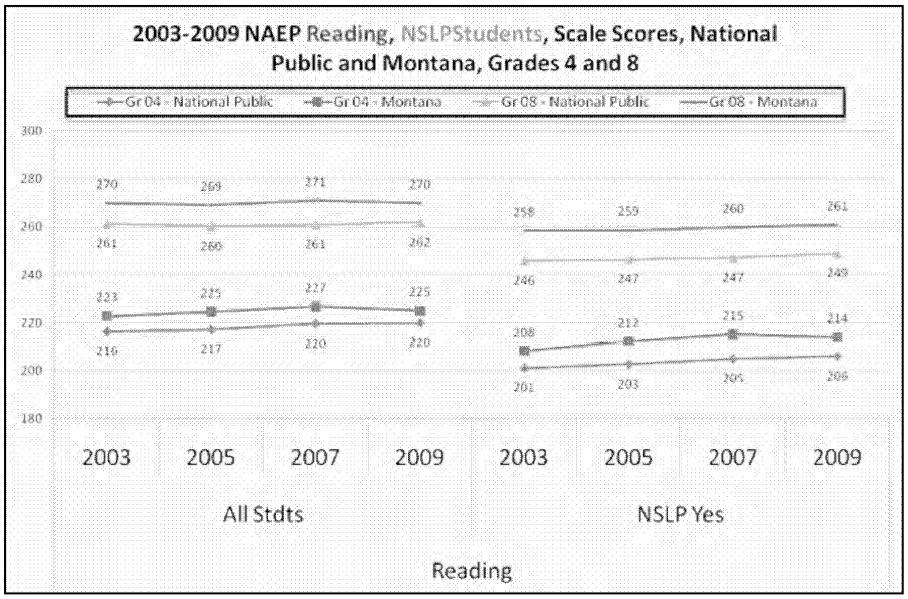
On the NAEP Math Assessment Montana 8th Grade All Students group, since 2003, have shown steady growth in their performance over time, particularly in 2009. The Montana 4th Grade All Students group, over the same period of time, again in Math, has shown overall growth across the entire time period. In both Grades, the Montana All Students group performed at a higher level than the national public school All Students group. In particular, Montana 8th Grade Students widened the gap with the national public school group in 2009.

Right Side of Chart:

O n the NAEP Math Assessment Montana 8th Grade Students with Disabilities group, since 2003, have shown a decrease in their performance level from 2005 to 2009. Montana 4th Grade Students with Disabilities group, over the same period of time, again in Math, have shown growth through 2009. In both groups the performance gap between the national Students with Disabilities public school group and the Montana Students with Disabilities student group was small and somewhat paralleled one another particularly among 4th Grade groups.

Achievement Gap Review:

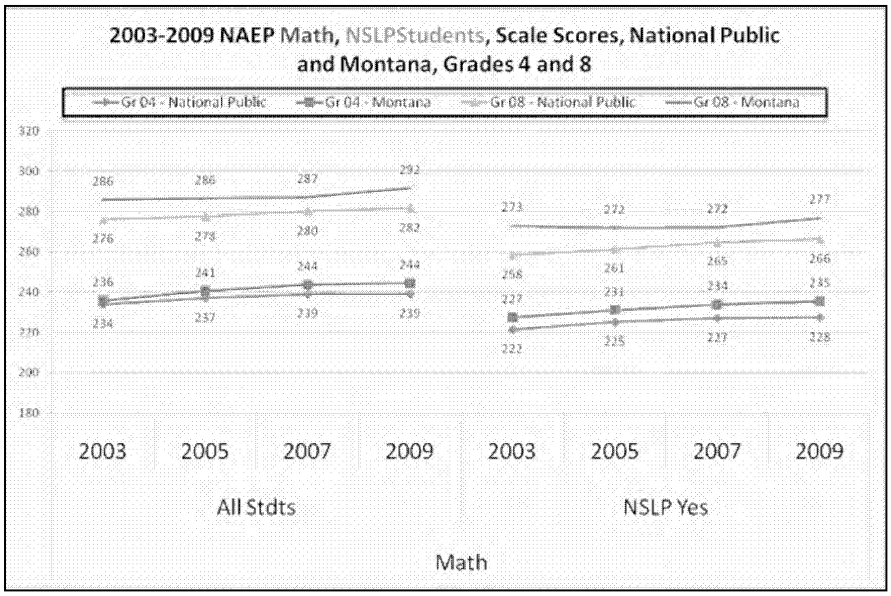
The achievement gap between the White Student group and the Students with Disabilities group for both 8th and 4th Grade Students in Math indicates, without exception, that the White Student group has performed at a higher level. In the 4th Grade, this difference has decreased slightly overall across the period. For 8th Grade Students there appears to be no definitive change in direction.



Left Side of Chart:
On the NAEP Reading Assessment Montana 8th Grade All Students group, since 2003, have shown a stability in their performance over time. Montana 4th Grade All Students Group, over the same period of time, again in Reading, has shown slight overall growth across the entire time period. In both grades, the Montana All Students group performed at a higher level than the national public school All Students group.

Right Side of Chart:
On the NAEP Reading Assessment Montana 8th Grade Students participating in the National School Lunch Program, since 2003, have shown slight growth in their performance. Montana 4th Grade Students participating in the National School Lunch Program, over the same period of time, again in Reading, have also shown slight overall growth through 2009. In both groups the performance gap between the national public school student participating in the National School Lunch Program group and the Montana student group participating in the National School Lunch Program was larger than that of the All Student group and paralleled one another.

Achievement Gap Review:
The achievement gap between the White Student group and the Students participating in the National School Lunch Program group for both 8th and 4th Grade Students in Reading indicates, without exception, that the White Student group has performed at a higher level. This difference has averaged about 13 points for 8th Grade groups and has decreased over the time period. The average difference at the 4th Grade level is about 15 points and has also decreased over time.



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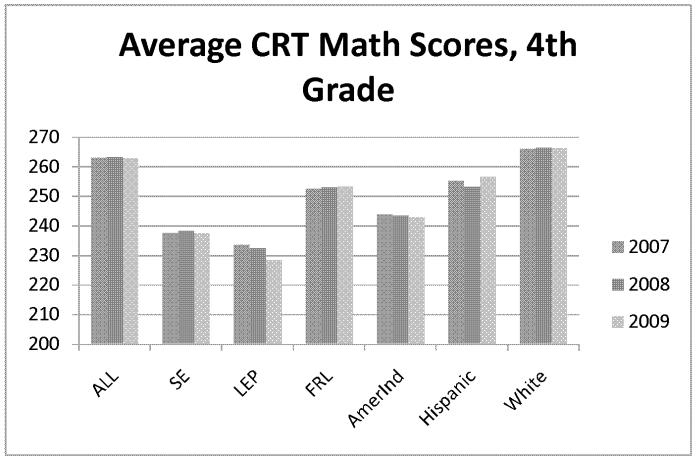
Right Side of Chart:
On the NAEP Math Assessment Montana 8th Grade Students participating in the National School Lunch Program, since 2003, have shown overall growth in their performance. Montana 4th Grade Students participating in the National School Lunch Program, over the same period of time, again in Math, have shown steady overall growth through 2009. In both groups the performance gap between the national public school student participating in the National School Lunch Program group and the Montana student group participating in the National School Lunch Program was slightly larger than that of the All Student group and paralleled one another.

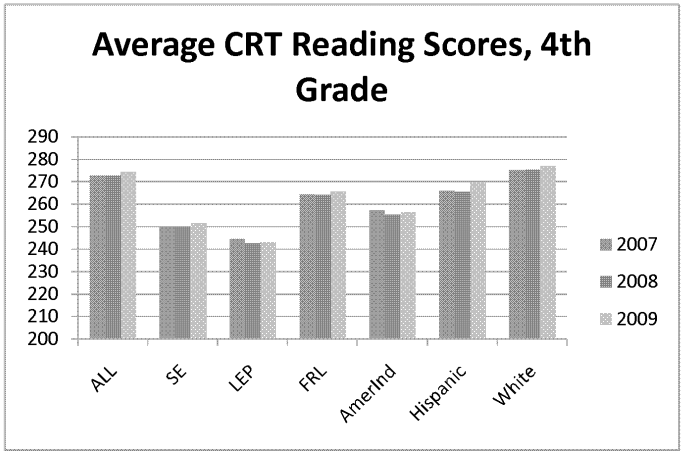
Achievement Gap Review:
The achievement gap between the White Student group and the Students participating in the National School Lunch Program group for both 8th and 4th Grade Students in Math indicates, without exception, that the White Student group has performed at a higher level. This difference has averaged about 13 points for 8th Grade groups and has decreased over the time period. The average difference at the 4th Grade level is about 15 points and has also decreased over time

Addendum A(3)-III: CRT Data

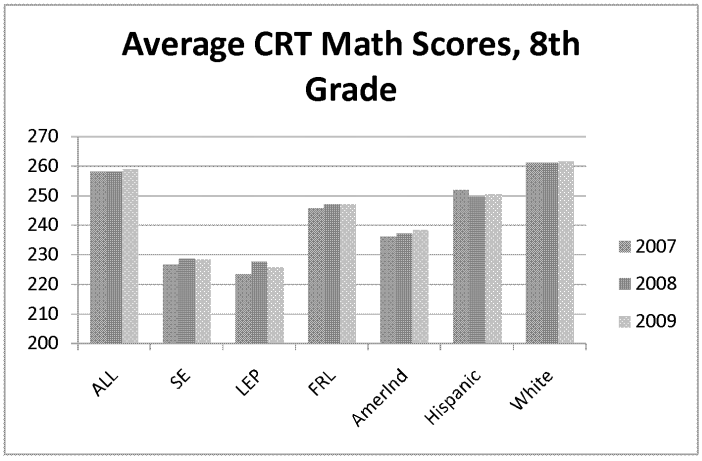
These scores are statewide averages from the Criterion-Reference Test (CRT) exam, conducted for AYP purposes since 2005. These are scale scores, with a range from 200 to 300. Typical cut points for the various proficiency categories are 275 (above is Advanced), 250 (above is Proficient), and 225 (above is Near Proficient, below is Novice). The student groups examined in these charts are Special education eligible (SE), Limited English Proficient (LEP), Free and Reduced Lunch Program Eligible (FRL), and three racial/ ethnic groups; White, American Indian, and Hispanic.



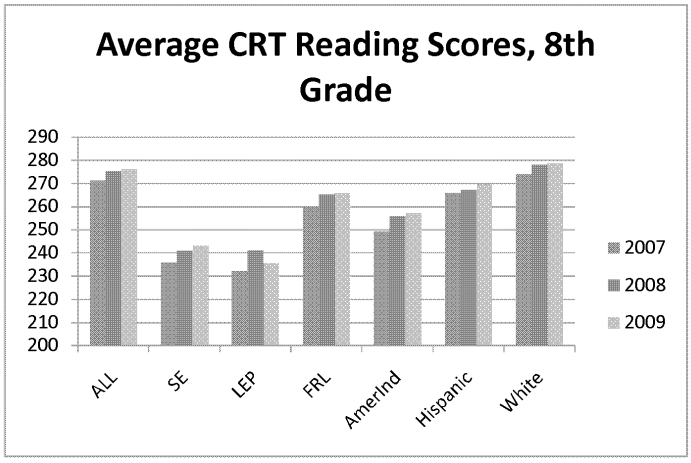
The chart above shows the three-year trend data for the Math CRT for students in fourth grade. Only two groups have a net decrease from 2007 to 2009 for this test. The Limited English Proficient (LEP) group shows a decrease because students graduate out of LEP status and are no longer included as they show English proficiency. The other group showing a small decrease is the American Indian group.



The chart above shows the three-year trend data for the fourth grade results of the Reading CRT. Most of the student groups show only a small increase from 2007 to 2009. Two groups, American Indian students and LEP students, show a small decrease from 2007-2009. The magnitude of these increases and decreases are very small (1 or 2 points).



This chart shows the three year trend data for the CRT Math exam. The Hispanic ethnic group is the only group with a lower score from 2007 to 2009. The white racial group, the free and reduced lunch program group, and the "all students" group show slight increase from 2007-2009. Both Special Education students and LEP students show an increase from 2007 scores, while also having a slight decrease from 2008.



This chart shows the three-year trend average statewide 8th grade scores for reading. Most of the student groups examined show increases in reading for all years. The American Indian student group showed the largest increase by score and percentage over the three years. The free & reduced lunch eligible students did not show an increase from 2008 to 2009. The LEP student group increased from 2007 to 2008, but decreased for the next year.

Addendum B(1)-I

STATE OF MONTANA

BRIAN SCHWEITZER
GOVERNOR

JOHN BOHLINGER
LT. GOVERNOR

May 14, 2009

Ray Scheppach, Executive Director
National Governor's Association
Hall of the States
444 N. Capitol St., Suite 267
Washington, D.C. 20001-1512

Dear Mr. Scheppach:

I am writing to confirm Montana's willingness to participate in the common core standards initiative spearheaded by the National Governor's Association Center for Best Practices and the Council of Chief State School Officers. The common core standards initiative is a natural fit with the direction the state's Board of Education and its advisory Kindergarten to College Workgroup have taken to prepare Montana's children for the 21st century and to ensure that all students are ready for college and ready for work.

Superintendent of Public Instruction Denise Juneau, who is our Chief State School Officer, has also signed the attached memorandum of agreement as a demonstration of Montana's interest. The Board of Public Education will work collaboratively with the Superintendent to ensure Montana's participation and input in the process. Our points of contact will be Steve Meloy, Executive Secretary to the Board of Public Education and Nancy Coopersmith, Assistant Superintendent at the Office of Public Instruction. Steve can be reached at (406) 444-0300 or by email at smeloy@mt.gov. Nancy can be reached at (406) 444-5541 or by email at ncoopersmith@mt.gov.

Sincerely,

BRIAN SCHWEITZER
Governor

Cc: Jan Lombardi, Governor's Education Policy Advisor
Denise Juneau, Superintendent of Public Instruction
Steve Meloy, Board of Public Education

STATE CAPITOL • P.O. BOX 200801 • HELENA, MONTANA 59620-0801
TELEPHONE: 406-444-3111 • FAX: 406-444-5529 • WEBSITE: WWW.MT.GOV

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 of standards (see attached timeline). 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 common core standards in English language arts and mathematics 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 standards. 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 standards. 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 standards.

- **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 standards 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 standards may choose to include additional state standards beyond the common core standards. 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 standards based on research and evidence-based learning and can support the development of assessments that are aligned to the common core standards 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 standards 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 standards 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:

Addendum B(1)-II

Contents

Introduction
Toward greater focus and coherence

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. [M]athematical process goals should be integrated in these content areas.

National Research Council, 2009

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 U.S. 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

Because the mathematics concepts in [U.S.] 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

There are many ways to organize curricula. The challenge, now rarely met, is to avoid those that distort mathematics and turn off students.

Steen, 2007

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. 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.' These Standards are a substantial answer to that challenge.

It is important to recognize that "fewer standards" are no substitute for *focused* standards. Achieving "fewer standards" would be easy to do by resorting to broad, general statements. Instead, these Standards 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)

These Standards endeavor to follow such a design, not only by stressing conceptual understanding of key ideas, but also by continually returning to organizing principles such as place value or the laws of arithmetic to structure those ideas.

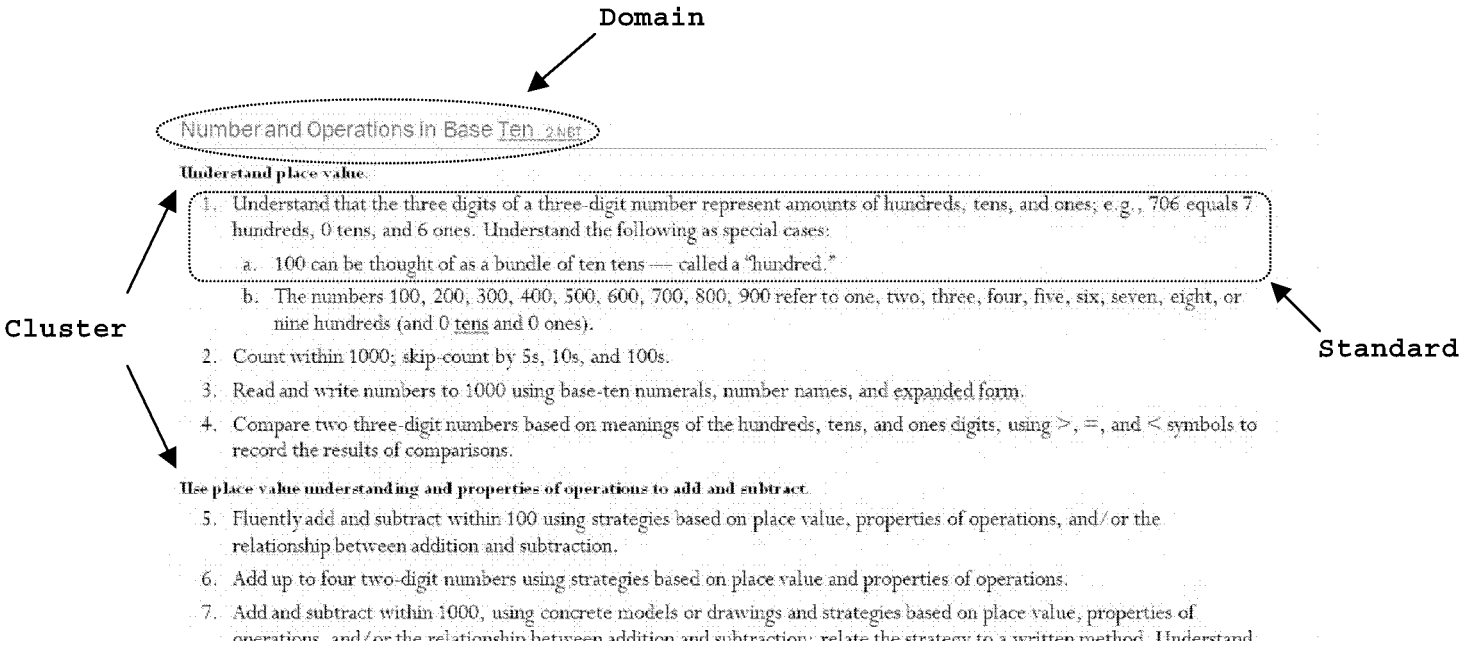
In addition, the 'sequence of topics and performances' that is outlined in a body of mathematics standards must also respect what is known about how students learn. As Confrey (2007) points out, developing "sequenced obstacles and challenges for students…absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise." In recognition of this, the development of these Standards began with research-based learning progressions detailing what is known today about how students' mathematical knowledge, skill, and understanding develop over time.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. 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 a student who can summon a mnemonic device to expand a product such as $(a + b)(x + y)$ and a student who can explain where the mnemonic comes from. 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 Standards begin on the next page with eight Standards for Mathematical Practice.

How to read the grade level standards



Standards define what students should understand and be able to do. **Clusters** summarize 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. Standards from different domains may sometimes be closely related.

Dotted Underlines: Dotted underlines, for example, associative property, indicate terms that are defined in the Glossary. In each grade, underlining is used for the first occurrence of a defined term, but not in subsequent occurrences.

Mathematics | Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education: the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections; and the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

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. Key related processes: Problem solving. Key related proficiencies: Conceptual understanding, strategic competence, productive disposition.

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. Key related processes: Problem solving, Representation. Key related Key related proficiencies: Strategic competence, productive disposition.

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. Key related processes: Problem solving, Representation. Key related proficiencies: Strategic competence, productive disposition.

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, two-way 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. Key related processes: Representation. Key related proficiencies: Adaptive reasoning.

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 analyze 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. Key related processes: Problem solving. Key related proficiencies: Strategic competence.

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, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, 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. Key related processes: Problem solving, Representation. Key related proficiencies: Procedural fluency.

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. Key related processes: Reasoning and proof. Key related proficiencies: Adaptive reasoning.

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. Key related processes: Problem solving, Reasoning and proof. Key related proficiencies: Adaptive reasoning.

Connecting the Standards for Mathematical Practice to the Standards for Mathematical Content

The Standards for Mathematical Practice describe ways in which developing student-practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curriculum, assessment, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction.

The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices.

In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve curriculum, instruction, assessment, professional development, and student achievement in mathematics.

Mathematics | Kindergarten

In Kindergarten, instructional time should focus on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (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; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 – 2 = 5$. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students 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 two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade Level Overview

Counting and Cardinality	• Know number names and the count sequence. • Count to tell the number of objects. • Compare numbers.
Operations and Algebraic Thinking	• Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
Number and Operations in Base Ten	• Work with numbers 11-19 to gain foundations for place value.
Measurement and Data	• Describe and compare measurable attributes. • Classify objects and count the number of objects in each category
Geometry	1. Identify and describe shapes. 2. Analyze, compare, create, and compose shapes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Counting and Cardinality K.CC

Know number names and the count sequence.

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
   a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
   b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
   c. Understand that each successive number name refers to a quantity that is one larger.
5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle; or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Compare numbers.

6. 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.[1]
7. Compare two numbers between 1 and 10 presented as written numerals.

Operations and Algebraic Thinking K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings,[2] sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
4. 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.
5. Fluently add and subtract within 5.

Number and Operations in Base Ten K.NBT

Work with numbers 11-19 to gain foundations for place value.

1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement and Data K.MD

Describe and compare measurable attributes.

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.

3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[3]

[1] Include groups with up to ten objects.
[2] Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

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. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Analyze, compare, create, and compose shapes.

4. Analyze and compare a variety of two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes.

[2] Limit category counts to be less than or equal to 10.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and 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 add-to, take-from, put-together, take-apart, 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 (e.g., adding two is the same as counting on two). They use properties of addition 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 relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare 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). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.[4]

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, 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.

Grade Level Overview

Operations and Algebraic Thinking
- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten
- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data
- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry
- Reason with shapes and their attributes.

Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

[4] Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Operations and Algebraic Thinking 1.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.[5]
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, *e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.*

Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.[6] *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*
4. Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*

Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*
8. Determine the unknown number in a whole-number addition or subtraction equation. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = __ – 3, 6 + 6 = __.*

Number and Operations in Base Ten 1.NBT

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
   a. 10 can be thought of as a bundle of ten ones — called a "ten."
   b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
   c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6. Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

[5] See Glossary, Table 1.
[6] Students need not use formal terms for these properties.

Measurement and Data 1.MD

Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

4. Organize, represent, and interpret data with up to three 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 1.G

Reason with shapes and their attributes.

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; build and draw shapes to possess defining attributes.
2. Compose two-dimensional shapes (such as rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (such as cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.[7]
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

[7] Students do not need to learn formal names such as "right rectangular prism."

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of 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 addition and subtraction within 100. They solve problems by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) 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 area, volume, congruence, similarity, and symmetry in later grades.

Grade Level Overview

Operations and Algebraic Thinking	• Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication.
Number and Operations in Base Ten	• Understand place value. • Use place value understanding and properties of operations to add and subtract.
Measurement and Data	• Measure and estimate lengths in standard units. • Relate addition and subtraction to length. • Work with time and money. • Represent and interpret data.
Geometry	• Reason with shapes and their attributes.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[8]

Add and subtract within 20.

2. Fluently add and subtract within 20. By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Number and Operations in Base Ten 2.NBT

Understand place value.

1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
   a. 100 can be thought of as a bundle of ten tens — called a "hundred."
   b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[9]

Measurement and Data 2.MD

Measure and estimate lengths in standard units.

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3. Estimate lengths using units of inches, feet, centimeters, and meters.
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

[8] See Glossary, Table 1.
[9] Explanations may be supported by drawings or objects.

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences on a number line diagram.

Work with time and money.

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

Represent and interpret data.

9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line 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 up to four categories. Solve simple put-together, take-apart, and compare problems[10] using information presented in a bar graph.

Geometry 2.G

Reason with shapes and their attributes.

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[11] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

[10] See Glossary, Table 1.
[11] Sizes are compared directly or visually, not compared by measuring.

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, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

(1) Students develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students use properties of operations to calculate products of whole numbers, using 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 relationship between multiplication and division.

(2) Students develop an understanding of fractions, beginning with unit fractions. Students view fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. Students understand that the size of a fractional part is relative to the size of the whole; for example, $1/2$ of the paint in a large bucket could be less paint than $1/3$ of the paint in a smaller bucket; but $1/3$ of a ribbon is longer than $1/5$ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. They solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

(3) Students recognize area as an attribute of two-dimensional regions. They measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being 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 to multiplication, and justify using multiplication to determine the area of a rectangle.

(4) Students describe, analyze, and compare properties of two-dimensional shapes. They compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

Grade Level Overview

Operations and Algebraic Thinking
- Represent and solve problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.
- Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Number and Operations in Base Ten
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions
- Develop understanding of fractions as numbers.

Measurement and Data
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represent and interpret data.
- Geometric measurement: understand concepts of area and relate area to multiplication and to addition.
- Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Geometry
- Reason with shapes and their attributes.

Mathematical Practices
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 3.OA

Represent and solve problems involving multiplication and division.

1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, , describe a context in which a total number of objects can be expressed as 5 × 7.*
2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as* 56 ÷ 8.
3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[12]
4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = ÷ 3, 6 × 6 = ?.*

Understand properties of multiplication and the relationship between multiplication and division.

5. Apply properties of operations as strategies to multiply and divide.[13] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by multiplying 3 × 5 = 15 then multiplying 15 × 2 = 30, or by multiplying 5 × 2 = 10 then multiplying 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
6. Understand division as an unknown-factor problem. *For example, divide 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*

Multiply and divide within 100.

7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By end of Grade 3, know from memory all products of one-digit numbers.

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies including rounding.[14]
9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

Number and Operations in Base Ten 3.NBT

Use place value understanding and properties of operations to perform multi-digit arithmetic.[15]

1. Use place value understanding to round whole numbers to the nearest 10 or 100.
2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3. Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Number and Operations—Fractions[16] 3.NF

Develop understanding of fractions as numbers.

1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.

[12] See Glossary, Table 2.
[13] Students need not use formal terms for these properties.
[14] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order.
[15] A range of algorithms may be used.
[16] Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, 8.

a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

a. Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$, $4/6 = 2/3$); explain why the fractions are equivalent, e.g., by using a visual fraction model.

b. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.*

c. Compare two fractions with the same numerator or the same denominator, by reasoning about their size; recognize that valid comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Measurement and Data 3.MD

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

1. Tell and write time to the nearest minute and measure time intervals in minutes; solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (*l*).[17] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[18]

Represent and interpret data.

3. 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. *For example, draw a bar graph in which each square in the bar graph might represent 1 pet, 5 pets, or 10 pets.*
4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

5. Recognize area as an attribute of plane figures and understand 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 is said to have an area of n square units.

6. Measure areas by counting unit squares, using square cm, square m, square in, square ft, and improvised units.
7. Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems; represent whole-number products as rectangular areas in mathematical reasoning.

c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$; use area models to represent the distributive property in mathematical reasoning.

d. Recognize area as additive; find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

8. Solve real-world and mathematical problems involving perimeters of polygons, such as finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different area or with the same area and different perimeter.

Geometry 3.G

[17] Excludes compound units such as cm^3 and finding the geometric volume of a container.

[18] Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).

Reason with shapes and their attributes.

1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals); recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part is $1/4$ of the area of the shape.*

Mathematics | Grade 4

In Grade 4, instructional time should focus on four critical areas: (1) developing understanding and fluency with whole number multiplication, and developing understanding of whole number division; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) continuing to develop understanding of area; and (4) understanding that geometric figures can be analyzed and classified based on their properties such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They use understandings of multiplication and division to develop fluency with multiplication and division of whole numbers. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), 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 or mentally calculate products. They develop fluency with efficient procedures 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 and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(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.

Grade Level Overview

Operations and Algebraic Thinking	• Use the four operations with whole numbers to solve problems. • Gain familiarity with factors and multiples. • Generate and analyze patterns.
Number and Operations in Base Ten	• Generalize place value understanding for multi-digit whole numbers. • Use place value understanding and properties of operations to perform multi-digit arithmetic.
Number and Operations—Fractions	• Extend understanding of fraction equivalence and ordering. • Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. • Understand decimal notation for fractions, and compare decimal fractions.
Measurement and Data	• Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. • Represent and interpret data. • Geometric measurement: understand concepts of angle and measure angles.
Geometry	• Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 4.OA

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison, e.g., interpret $5 \times 7 = 35$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.[19]
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity; assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Gain familiarity with factors and multiples.

4. Find the factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Generate and analyze patterns.

5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example: Given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*

Number and Operations in Base Ten[20] 4.NBT

Generalize place value understanding for multi-digit whole numbers.

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits, using >, =, and < symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

Use place value understanding and properties of operations to perform multi-digit arithmetic.[21]

4. Add and subtract multi-digit whole numbers accurately and efficiently using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Number and Operations—Fractions[22] 4.NF

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size; use this principle to recognize and generate equivalent fractions.
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$; recognize that valid comparisons rely on the two fractions referring to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

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[19] See Glossary, Table 2.
[20] Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.
[21] A range of algorithms may be used.
[22] Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
   a. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation (e.g., $3/8 = 1/8 + 1/8 + 1/8$ and $3/8 = 1/8 + 2/8$). Justify decompositions, e.g., by using a visual fraction model.
   b. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
   c. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
   a. Understand a fraction a/b as a multiple of $1/b$. *For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.*
   b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)*
   c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example: If each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.[23] *For example, express $3/10$ as $30/100$ and add $3/10 + 4/100 = 34/100$.*
6. Interpret a two-digit decimal as a fraction and use decimal notation for parts of wholes; round decimals to the nearest whole number by reasoning about their size. *For example, rewrite 1.62 as $1\ 62/100$; describe a length as 1.62 meters; locate 1.62 on a number line diagram and round 1.62 to 2.*
7. Compare two decimals to hundredths by reasoning about their size; recognize that valid comparisons rely on the two decimals referring to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.

Measurement and Data 4.MD

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; ℓ, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of smaller unit. Record measurement equivalents in a two-column table. *For example: Know that 1 ft is 12 times as long as 1 in; express the length of a 4 ft snake as 48 in; generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*
2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
3. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

4. Make a line 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 line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

[23] Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $1/360$ of a circle is called a "one-degree angle," and can be used to measure angles.

b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

6. Measure angles in whole-number degrees using a protractor; sketch angles of specified measure.
7. Recognize angle measure as additive; when an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Geometry 4.G

Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; identify these in two-dimensional figures.
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of specified size. Recognize right triangles as a category, and identify right triangles.
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts; identify line-symmetric figures and draw lines of symmetry.

Mathematics | Grade 5

In Grade 5, instructional time should focus on four critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) developing fluency with whole number operations; (3) integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths; 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 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 unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop fluency with multi-digit addition, subtraction, and multiplication, and develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations.

(3) Students apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. 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 decimals to hundredths efficiently and accurately.

(4) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured 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 real-world and mathematical problems.

Grade Level Overview

Operations and Algebraic Thinking	• Write and interpret numerical expressions. • Analyze patterns and relationships.
Number and Operations in Base Ten	• Understand the place value system. • Perform operations with multi-digit whole numbers and with decimals to hundredths.
Number and Operations—Fractions	• Use equivalent fractions as a strategy to add and subtract fractions. • Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
Measurement and Data	• Convert like measurement units within a given measurement system. • Represent and interpret data. • Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.
Geometry	• Graph points on the coordinate plane to solve real-world and mathematical problems. • Classify two-dimensional figures into categories based on their properties.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Operations and Algebraic Thinking 5.OA

Write and interpret numerical expressions.

1. Interpret grouping symbols in numerical expressions and evaluate expressions with grouping symbols.
2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as $2 \times (8 + 7)$; recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

3. Generate two numerical patterns using two given rules. Graph pairs of corresponding terms on a coordinate plane, and identify apparent relationships between corresponding terms. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Number and Operations in Base Ten 5.NBT

Understand the place value system.

1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use positive integer exponents to denote powers of 10.
3. Read, write, and compare decimals to thousandths.
   a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
   b. Compare two decimals to thousandths based on meanings of the digits, using >, =, and < symbols to record the results of comparisons.
4. Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5. Fluently add, subtract, and multiply multi-digit whole numbers using the standard algorithm for each operation.
6. Find quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division; express the quotient as a fraction or mixed number. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
7. Add, subtract, multiply, and divide decimals of one or two digits, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Number and Operations—Fractions 5-NF

Use equivalent fractions as a strategy to add and subtract fractions.

1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)*
2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result $2/5 + 1/2 = 3/7$ by observing that $3/7 < 1/2$.*

Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

3. Interpret a fraction as the result of dividing the numerator by the denominator ($a/b = a \div b$); solve word problems involving division of whole numbers leading to fractional answers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
   a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show* $(2/3) \times 4 = 8/3$, *and create a story context for this equation; do the same with* $(2/3) \times (4/5) = 8/15$. (*In general,* $(a/b) \times (c/d) = ac/bd$.)
   b. Find the area of a rectangle with fractional side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths; multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5. Interpret multiplication as scaling (resizing), including by:
   a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
   b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
6. Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[24]
   a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for* $(1/3) \div 4$ *and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that* $(1/3) \div 4 = 1/12$ *because* $(1/12) \times 4 = 1/3$.
   b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for* $4 \div (1/5)$ *and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that* $4 \div (1/5) = 20$ *because* $20 \times (1/5) = 4$.
   c. Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, How much chocolate will each person get if 3 people share* $1/2$ *lb of chocolate equally? How many* $1/3$*-cup servings are in 2 cups of raisins?*

Measurement and Data 5.MD

Convert like measurement units within a given measurement system.

1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step real-world problems.

Represent and interpret data.

2. Make a line 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 line 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.*

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
   a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
   b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5. Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.
   a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent three-fold whole-number products as volumes, e.g., to represent the associative property of multiplication.

[24] Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.

b. Apply the formulas $V = \ell\, w\, h$ and $V = b\, h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real-world and mathematical problems;

c. Recognize volume as additive; find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.

Geometry 5.G

Graph points on the coordinate plane to solve real-world and mathematical problems.

1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
2. Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.

3. Understand that attributes belonging to a category of two-dimensional 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 two-dimensional 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 and using concepts of ratio and rate to solve problems; (2) completing understanding of division 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 of 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 multiplication and division to ratios and rates. Thus students expand the scope of problems for which they can use multiplication and division 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 relationship between multiplication and division to understand and explain why the procedures for dividing fractions make sense. Students are able to use these operations to solve problems.

(3) Students reason about relationships among shapes to determine area, surface area, and volume. 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. They reason about right rectangular prisms with rational sides to extend the formula for its volume to rational side lengths. They prepare for work on scale drawings and constructions in Grade 8 by drawing polygons in the coordinate plane.

(4) Students understand the use of variables in mathematical expressions. They write expressions and equations that correspond to given situations, evaluate expressions, and use expressions and formulas to solve problems. Students understand that expressions in different forms can be equivalent, and they use the properties of operations to rewrite expressions in equivalent forms. 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 between quantities.

Students in Grade 6 develop their ability to think statistically. Students recognize that a typical data distribution does not have a definite center, and so different ways to measure center yield different values. The median measures center in the sense that it is roughly the middle value. The mean measures 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 also in the sense that it is a balance point. Students learn to describe and summarize distributions of data, identifying clusters, peaks, gaps, and symmetry, considering the context in which the data was collected.

Grade Level Overview

Ratios and Proportional Relationships	• Understand ratio concepts and use ratio reasoning to solve problems.
The Number System	• Apply and extend previous understandings of multiplication and division to divide fractions by fractions. • Apply and extend previous understandings of numbers to the system of rational numbers.
Expressions and Equations	• Apply and extend previous understandings of arithmetic to algebraic expressions. • Reason about and solve one-variable equations and inequalities. • Represent and analyze quantitative relationships between dependent and independent variables.
Geometry	• Solve real-world and mathematical problems involving area, surface area, and volume.
Statistics and Probability	• Develop understanding of statistical variability. • Summarize and describe distributions.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Ratios and Proportional Relationships 6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid $75 for 15 paperbacks, which is a rate of $5 per paperback."* [1]
3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
   a. 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. Use tables to compare ratios.
   b. Solve unit rate problems including unit pricing and constant speed. *For example, If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
   c. Find a percentage of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole given a part and the percentage.
   d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System 6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.). How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$-cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?*
2. Fluently divide multi-digit numbers using the standard algorithm for each operation.

Apply and extend previous understandings of numbers to the system of rational numbers.

3. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
4. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate planes familiar from previous grades to represent negative numbers and their distance from 0.
   a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
   b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
   c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
5. Understand the ordering of rational numbers.
   a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
   b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3\,^{\circ}C > -7\,^{\circ}C$ to express the fact that $-3\,^{\circ}C$ is warmer than $-7\,^{\circ}C$.*
6. Understand absolute value and its relationship to the order of rational numbers.

[1] Expectations for unit rates in this grade are limited to non-complex fractions.

a. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.*

b. Distinguish comparisons of absolute value from statements of order. *For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.*

7. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane, including using coordinates and absolute value reasoning to find distances between points with the same first coordinate or the same second coordinate.

Expressions and Equations 6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Evaluate numerical expressions involving whole-number exponents.
2. Write, read, and evaluate expressions in which letters stand for numbers.
   a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as $5 - y$.*
   b. Identify parts of an expression using mathematical language (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*
   c. Evaluate expressions by substituting values for their variables, including when using formulas in real-world problems. Perform arithmetic operations (including those involving whole-number exponents) in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.*
3. Apply the properties of operations as strategies to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply properties of operations to $y + y + y$ to produce the equivalent expression 3y.*
4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions $y + y + y$ and 3y are equivalent because they name the same number regardless of which number y stands for.*

Reason about and solve one-variable equations and inequalities.

5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6. Use variables to stand for numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can be used in cases where a number is unknown, or where, for the purpose at hand, it can be any number in a specified set.
7. Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
8. Write a statement of inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities graphically on a number line diagram.

Represent and analyze quantitative relationships between dependent and independent variables.

9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.*

Geometry 6.G

Solve real-world and mathematical problems involving area, surface area, and volume.

1. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the

prism. Apply the formulas $V = \ell\, w\, h$ and $V = b\, h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Statistics and Probability 6.SP

Develop understanding of statistical variability.

1. Recognize a statistical question as 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 collected to answer a statistical question has a distribution which can be described by its overall shape, center and spread.
3. Recognize that a measure of center for a numerical data set summarizes all of its values using a single number, while a measure of variation describes how its values vary using a single number.

Summarize and describe distributions.

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
    a. Reporting the number of observations.
    b. Describing the nature of the attribute of investigation, including how it was measured and its units of measurement.
    c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.
    d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.

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) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; 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 scale drawings by relating 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 properties of operations, 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 continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by taking slices. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects made up from triangles, quadrilaterals, polygons, cubes and right prisms.

(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.

Grade Level Overview

Ratios and Proportional Relationships	• Analyze proportional relationships and use them to solve real-world and mathematical problems.
The Number System	• Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
Expressions and Equations	• Use properties of operations to generate equivalent expressions. • Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
Geometry	• Draw, construct and describe geometrical figures and describe the relationships between them. • Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
Statistics and Probability	• Use random sampling to draw inferences about a population • Draw informal comparative inferences about two populations. • Investigate chance processes and develop, use, and evaluate probability models.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Ratios and Proportional Relationships 7.RP

Analyze proportional relationships and use them to solve real-world and mathematical problems.

1. Compute unit rates associated with ratios of nonnegative rational numbers, including ratios of lengths, areas and other quantities measured in like or different units. *For example, If a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction ½ / ¼ miles per hour, equivalently 2 miles per hour.*
2. Recognize and represent proportional relationships between covarying quantities.
   a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
   b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
   c. Represent proportional relationships by equations. *For example, total cost, t, is proportional to the number, n, purchased at a constant price, p; this relationship can be expressed as $t = pn$.*
   d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.
3. Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

The Number System 7.NS

Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
   a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*
   b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
   c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
   d. Apply properties of operations as strategies to add and subtract rational numbers.
2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
   a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
   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 $-(p/q) = (-p)/q = p/(-q)$. Interpret products of rational numbers by describing real-world contexts.
   c. Apply properties of operations as strategies to multiply and divide rational numbers.
   d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
3. Solve real-world and mathematical problems involving the four operations with rational numbers.[2]

Expressions and Equations 7.EE

Use properties of operations to generate equivalent expressions.

1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.

[2] Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

2. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
3. 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, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."*

Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

4. Use numbers expressed in the form of a single digit times a whole-number power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.*
5. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations as strategies for calculating with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional $1/10$ of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar $9\ 3/4$ inches long in the center of a door that is $27\ 1/2$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
6. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems 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 specific rational numbers. Solve equations of these forms fluently. Compare the algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. *For example, The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*
    b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example, As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*

Geometry 7.G

Draw, construct, and describe geometrical figures and describe the relationships between them.

1. Solve problems involving scale drawings of geometric figures in the coordinate plane, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
2. 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.
3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

4. Know the formulas for the area and circumference of a circle and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
5. 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.
6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Statistics and Probability 7.SP

Use random sampling to draw inferences about a population.

1. 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.
2. 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.*

Draw informal comparative inferences about two populations

3. 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.*
4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*

Investigate chance processes and develop, use, and evaluate probability models.

5. Understand that the probability of a chance event is a number between 0 and 1 expressing the likelihood of that event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
6. Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*
7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
    a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*
    b. Develop a possibly non-uniform probability model by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?*
8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
    a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
    b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes for which the event occurs.
    c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: if 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

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) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and 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 $m \cdot A$. 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 use ideas about distance and angles, how they behave under translations, rotations, reflections, and dilations, and ideas about congruence and similarity to describe and analyze two-dimensional figures and to solve problems. Students prove that the angles in a triangle add up to a straight line, and that various configurations of lines give rise to similar triangles because of the angles created when a transversal cuts parallel lines. 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. Students complete their work on volume by solving problems involving cones, cylinders, and spheres.

Grade Level Overview

The Number System	• Know that there are numbers that are not rational, and approximate them by rational numbers.
Expressions and Equations	• Work with radicals and integer exponents. • Understand the connections between proportional relationships, lines, and linear equations. • Analyze and solve linear equations and pairs of simultaneous linear equations.
Functions	• Define, evaluate, and compare functions. • Use functions to model relationships between quantities.
Geometry	• Understand congruence and similarity using physical models, transparencies, or geometry software. • Understand and apply the Pythagorean Theorem. • Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.
Statistics and Probability	• Investigate patterns of association in bivariate data.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

The Number System 8.NS

Know that there are numbers that are not rational, and approximate them by rational numbers.

1. Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.
2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ 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

Work with radicals and integer exponents.

1. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
2. Perform operations with 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.

Understand the connections between proportional relationships, lines, and linear equations.

3. Graph proportional relationships, interpreting the unit rate as the slope of the graph. 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.*
4. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.

Analyze and solve linear equations and pairs of simultaneous linear equations.

5. Solve linear equations in one variable.
   a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case 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).
   b. Solve linear equations with rational number coefficients, including equations that require expanding expressions using the distributive property and collecting like terms.
6. Analyze and solve pairs of simultaneous linear equations.
   a. 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.
   b. 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 $3x + 2y$ cannot simultaneously be 5 and 6.*
   c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, 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

Define, evaluate, and compare functions.

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.[3]
2. Compare properties of two functions each represented in a different way (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.*

[3] Function notation is not required in Grade 8.

3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*

Use functions to model relationships between quantities.

4. 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.
5. 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

Understand congruence and similarity using physical models, transparencies, or geometry software.

1. Verify experimentally the properties of rotations, reflections, and translations:
   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 that a plane figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
3. Describe the effect of dilations, translations, rotations and reflections on figures using coordinates.
4. Understand that a plane figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar figures, describe a sequence that exhibits the similarity between them.
5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, and about the angles created when parallel lines are cut by a transversal. *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.*

Understand and apply the Pythagorean Theorem.

6. Explain a proof of the Pythagorean Theorem and its converse.
7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.

9. Know the formulas for the volume of cones, cylinders and spheres and solve real-world and mathematical problems.

Statistics and Probability 8.SP

Investigate patterns of association in bivariate data.

1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
2. Know that straight lines are widely used to model 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.
3. 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, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*
4. 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 study in order to be college and career ready. Additional mathematics that students should learn in order to take advanced courses such as calculus, advanced statistics, or discrete mathematics is indicated by (+), as in this example:

> (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers).

Standards with a (+) symbol are beyond the college and career readiness threshold, but may appear in courses intended for all students. Any standard without a (+) symbol is intended to be in the common mathematics curriculum for all college and career ready students.

How are the high school standards organized?

The high school standards are listed in conceptual categories:

- Number and Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics and Probability.

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.

Modeling standards

Modeling is best interpreted not as a collection of isolated topics but 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—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 8, 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.

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.

With each extension of number, the meanings of addition, subtraction, multiplication, and division are extended. In each new number system—integers, rational numbers, real numbers, and complex numbers—the four operations stay the same in two important ways: They have the commutative, associative, and distributive properties and their new meanings are consistent with their previous meanings. For example, multiplication by a whole number can be interpreted as repeated addition of the multiplicand in extensions of the whole numbers.

Extending the properties of whole-number exponents leads to new and productive notation. For example, properties of whole-number exponents suggest that $(5^{1/3})^3$ should be $5^{(1/3)\cdot 3} = 5^1 = 5$ and that $5^{1/3}$ should be the cube root of 5.

Calculators can provide ways for students to become better acquainted with these new number systems and their notation. They can be used 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, and volume. In high school, students encounter a wider variety of units in modeling, 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 or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. 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, which must conceptualize relevant attributes and create or choose suitable measures for them.

Content Overview

The Real Number System Quantities The Complex Number System Vector and Matrix Quantities	• Extend the properties of exponents to rational exponents • Classify numbers as rational or irrational • Reason quantitatively and use units to solve problems • Perform arithmetic operations with complex numbers • Represent complex numbers and their operations on the complex plane • Use complex numbers in polynomial identities and equations • Represent and model with vector quantities • Perform operations on vectors • Perform operations on matrices and use matrices in applications		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices

The Real Number System N-RN

Extend the properties of exponents to rational exponents

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define* $5^{1/3}$ *to be the cube root of* 5 *because we want* $(5^{1/3})^3 = 5^{(1/3)3}$ *to hold, so* $(5^{1/3})^3$ *must equal* 5.
2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Use properties of rational and irrational numbers

3. Explain why sums and products of rational numbers are rational, 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.

Quantities* N-Q

Reason quantitatively and use units to solve problems

1. Compare measurements of two quantities of the same type (e.g., two lengths or two weights) expressed in different units to decide which quantity is larger.
2. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
3. Define appropriate quantities for the purpose of descriptive modeling.
4. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

The Complex Number System N-CN

Perform arithmetic operations with complex numbers

1. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
2. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

Represent complex numbers and their operations on the complex plane

4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.
5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(1 - \sqrt{3}i)^3 = 8$ *because* $(1 - \sqrt{3}i)$ *has modulus* 2 *and argument* 120°.
6. (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

Use complex numbers in polynomial identities and equations

7. Solve quadratic equations with real coefficients that have complex solutions.
8. (+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x - 2i)$.
9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

(+) Vector and Matrix Quantities N-VM

Represent and model with vector quantities.

1. Understand that vector quantities have both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\mathbf{v}$, $|\mathbf{v}|$, $||\mathbf{v}||$, v).
2. Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.
3. Solve problems involving velocity and other quantities that can be represented by vectors.★

Perform operations on vectors.

4. Add and subtract vectors.
   a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.
   b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.
   c. Understand that vector subtraction $\mathbf{v} - \mathbf{w}$ is defined as $\mathbf{v} + (-\mathbf{w})$, where $-\mathbf{w}$ is the additive inverse of $\mathbf{w}$, with the same magnitude as $\mathbf{w}$ and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.
5. Multiply a vector $\mathbf{v}$ by a scalar.
   a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$.
   b. Compute the magnitude of a scalar multiple $c\mathbf{v}$ using $||c\mathbf{v}|| = |c|v$.
   c. Understand that when $|c|v \neq 0$, the direction of $c\mathbf{v}$ is either along $\mathbf{v}$ (for $c > 0$) or against $\mathbf{v}$ (for $c < 0$).

Perform operations on matrices and use matrices in applications.★

6. Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
7. Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.
8. Add, subtract, and multiply matrices of appropriate dimensions.
9. Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
10. 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.
11. Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Understand a matrix as a transformation of vectors.
12. Understand a 2×2 matrix as a transformation of the plane, and interpret the absolute value of the determinant in terms of area.

Expressions. An expression is a record of a computation with numbers and symbols that represent numbers, arithmetic operations, exponentiation, and, at more advanced levels, the operation of evaluating a function. 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 the properties of operations and exponents, and the conventions of algebraic notation. At times, an expression is the result of applying operations to simpler expressions. For example, $p + 0.05p$ is the sum of the simpler expressions p and $0.05p$. Viewing an expression as the result of operation on simpler expressions can sometimes clarify its underlying structure.

A spreadsheet or a computer algebra system can be used to experiment with algebraic expressions, perform complicated algebraic manipulations, and understand how algebraic manipulations behave.

Equations and inequalities. An equation is a statement of equality between two expressions, often viewed as a question asking for which values of the variables the expressions on either side are in fact equal. These values are the solutions to the equation. An identity is true for all numbers; identities are often developed by rewriting an expression in an equivalent form.

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 plotted 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 deducing from it one or more simpler equations. 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, but have a solution in a larger 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. Asking when two functions have the same value for the same input leads to an equation; graphing the two functions allows for finding approximate solutions of the equation. Converting a verbal description to an equation, inequality, or system of these is an essential skill in modeling.

Seeing Structure in Expressions Arithmetic with Polynomials and Rational Functions Creating Equations Reasoning with Equations and Inequalities	• Interpret the structure of expressions • Write expressions in equivalent forms to solve problems • Perform arithmetic operations on polynomials • Understand the relationship between zeros and factors of polynomials • Use polynomial identities to solve problems • Rewrite and graph rational functions • Create equations that describe numbers or relationships • Understand solving equations as a process of reasoning and explain the reasoning • Solve equations and inequalities in one variable • Solve systems of equations • Represent and solve equations and inequalities graphically		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices

Seeing Structure in Expressions A-SSE

Interpret the structure of expressions

1. Interpret expressions that represent a quantity in terms of its context.★
   a. Interpret parts of an expression, such as terms, factors, and coefficients.
   b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret* $P(1+r)^n$ *as the product of P and a factor not depending on P.*
2. Use the structure of an expression to identify ways to rewrite it. *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* $(x^2 - y^2)(x^2 + y^2)$.

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.★
   a. Factor a quadratic expression to reveal the zeros of the function it defines.
   b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
   c. Use the properties of exponents to transform expressions for exponential functions. *For example 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%.*
4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.*★

Arithmetic with Polynomials and Rational Expressions A-APR

Perform arithmetic operations on polynomials

1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Understand the relationship between zeros and factors of polynomials

2. 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 $p(x)$.
3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

Use polynomial identities to solve problems

4. Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*
5. (+) Understand that the Binomial Theorem gives the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.

Rewrite rational expressions

6. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.
7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

Creating Equations* A-CED

Create equations that describe numbers or relationships

1. Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*
2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.*
4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law* $V = IR$ *to highlight resistance* R.

Reasoning with Equations and Inequalities A-REI

Understand solving equations as a process of reasoning and explain the reasoning

1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Solve equations and inequalities in one variable

3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Graph the solution set of an inequality on a number line.
4. Solve quadratic equations in one variable.
   a. Understand that the method of completing the square transforms any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. This leads to the quadratic formula.
   b. Solve by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.

Solve systems of equations

5. Understand that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.
6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line* $y = -3x$ *and the circle* $x^2 + y^2 = 3$.
8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.

9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

Represent and solve equations and inequalities graphically

10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a straight line).
11. Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*
12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

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 we continually make theories about dependencies between quantities in nature and society, 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;" by an algebraic expression like $f(x) = a + bx$; or by a recursive rule. The graph of a function is often a useful way of visualizing the relationship of the function models, and manipulating a mathematical expression for a function can throw light on the function's properties.

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 computer algebra system can be used to experiment with properties of these 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 for the same input 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.

Interpreting Functions Building Functions Linear, Quadratic, and Exponential Models Trigonometric Functions	• Understand the concept of a function and use function notation • Interpret functions that arise in applications in terms of the context • Analyze functions using different representations • Build a function that models a relationship between two quantities • Build new functions from existing functions • Construct and compare linear and exponential models and solve problems • Interpret expressions for functions in terms of the situation they model • Extend the domain of trigonometric functions using the unit circle • Model periodic phenomena with trigonometric functions • Prove and apply trigonometric identities		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices

Interpreting Functions F-IF

Understand the concept of a function and use function notation

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. The graph of f is the graph of the equation $y = f(x)$.
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
3. Understand that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n+1) = f(n) + f(n-1)$ for $n \geq 1$.*

Interpret functions that arise in applications in terms of the context

4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*★
5. 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.*★
6. 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.★

Analyze functions using different representations

7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.★
   a. Graph linear and quadratic functions and show intercepts, maxima, and minima.
   b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
   c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
   d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
   e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
   a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
   b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*
9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*

Building Functions F-BF

Build a function that models a relationship between two quantities

1. Write a function that describes a relationship between two quantities.★
   a. Determine an explicit expression, a recursive process, or steps for calculation from a context.
   b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*
   c. (+) Compose functions. *For example, if f(t) is the height of a falling body after t seconds, f(t − 12) is the height of the same body dropped 12 seconds later.*
2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.★

Build new functions from existing functions

3. 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. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*
4. Find inverse functions.
   a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example,* $f(x) = 2x^3$ *or* $f(x) = (x+1)/(x-1)$ *for* $x \neq 1$.
   b. (+) Verify by composition that one function is the inverse of another.
   c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.
   d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

Linear, Quadratic, and Exponential Models* F-LQE

Construct and compare linear, quadratic, and exponential models and solve problems

1. Distinguish between situations that can be modeled with linear functions and with exponential functions.
   a. Understand that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals.
   b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
   c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.
4. For exponential models, express as a logarithm the solution to $a\,b^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Interpret expressions for functions in terms of the situation they model

5. Interpret the parameters in a linear, quadratic, or exponential function in terms of a context.

Trigonometric Functions F-TF

Extend the domain of trigonometric functions using the unit circle

1. Understand that the radian measure of an angle is the length of the arc on the unit circle subtended by the angle.
2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.
4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

Model periodic phenomena with trigonometric functions

5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.★
6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.
7. (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.★

Prove and apply trigonometric identities

8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to calculate trigonometric ratios.
9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

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.

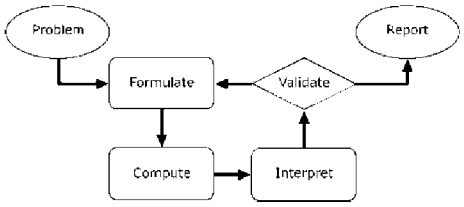
A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether 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, such as 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 sometimes 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 that 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, computer algebra systems, 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—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.

Although there are many types of geometry, school mathematics is devoted primarily to plane Euclidean geometry, studied both synthetically (without coordinates) and analytically (with coordinates). Euclidean geometry is characterized most importantly by the Parallel Postulate, that through a point not on a given line there is exactly one parallel line. (Spherical geometry, in contrast, has no parallel lines.)

During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.

The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). 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.

In the approach taken here, two geometric figures are defined to be congruent if there is a sequence of rigid motions that carries one onto the other. This is the principle of superposition. For triangles, congruence means the equality of all corresponding pairs of sides and all corresponding pairs of angles. During Grade 8, through experiences with geometric constructions and drawing triangles from given conditions, some students notice ways to specify enough measures in a triangle to ensure that all triangles drawn with those measures are congruent. Once these triangle congruence criteria (ASA, SAS, and SSS) are established using rigid motions, they can be used to prove theorems about triangles, quadrilaterals, and other geometric figures.

Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence, and lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent.

The definitions of sine, cosine, and tangent for acute angles are founded on right triangles and similarity, and, with the Pythagorean Theorem, are fundamental in many real-world and theoretical situations. The Pythagorean Theorem is generalized to non-right triangles by the Law of Cosines. Together, the Laws of Sines and Cosines embody the triangle congruence criteria for the cases where three pieces of information suffice 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.

Analytic geometry connects algebra and geometry, resulting in powerful methods of analysis and problem solving. Just as the number line associates numbers with locations in one dimension, a pair of perpendicular axes associates pairs of numbers with locations in two dimensions. This 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. Geometric transformations of the graphs of equations correspond to algebraic changes in their equations.

Dynamic geometry environments provide students with experimental and modeling tools that allow them to investigate geometric phenomena in much the same way as computer algebra systems allow them to experiment with algebraic phenomena.

Connections to Equations. 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 Overview

Congruence Similarity, Right Triangles, and Trigonometry Circles Expressing Geometric Properties with Equations Geometric Measurement and Dimension Modeling with Geometry	• Experiment with transformations in the plane • Understand congruence in terms of rigid motions • Prove geometric theorems • Make geometric constructions • Understand similarity in terms of similarity transformations • Prove theorems involving similarity • Define trigonometric ratios and solve problems involving right triangles • Apply trigonometry to general triangles • Understand and apply theorems about circles • Find arc lengths and areas of sectors of circles • Translate between the geometric description and the equation for a conic section • Use coordinates to prove simple geometric theorems algebraically • Explain volume formulas and use them to solve problems • Visualize relationships between two-dimensional and three-dimensional objects • Apply geometric concepts in modeling situations		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices

Congruence G-CO

Experiment with transformations in the plane

1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).
3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.
4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Understand congruence in terms of rigid motions

6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Prove geometric theorems

9. 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; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*
10. Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*
11. Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*

Make geometric constructions

12. 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.*
13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Similarity, Right Triangles, and Trigonometry G-SRT

Understand similarity in terms of similarity transformations

1. Verify experimentally the properties of dilations:
   a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
   b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.
3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Prove theorems involving similarity

4. Prove theorems about triangles using similarity transformations. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*
5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Define trigonometric ratios and solve problems involving right triangles

6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
7. Explain and use the relationship between the sine and cosine of complementary angles.
8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★

(+) **Apply trigonometry to general triangles**

9. Derive the formula $A = \frac{1}{2} ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
10. Prove the Laws of Sines and Cosines and use them to solve problems.
11. Understand and apply 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).

Circles G-C

Understand and apply theorems about circles

1. Prove that all circles are similar.

2. Identify and describe relationships among inscribed 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.*
3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
4. (+) Construct a tangent line from a point outside a given circle to the circle.

Find arc lengths and areas of sectors of circles

5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Expressing Geometric Properties with Equations G-GPE

Translate between the geometric description and the equation for a conic section

1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
2. Derive the equation of a parabola given a focus and directrix.
3. (+) Derive the equations of ellipses and hyperbolas given two foci for the ellipse, and two directrices of a hyperbola.

Use coordinates to prove simple geometric theorems algebraically

4. 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).*
5. Prove the slope criteria for parallel and perpendicular lines and use them 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).
6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.
7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*

Geometric Measurement and Dimension G-GMD

Explain volume formulas and use them to solve problems

1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*
2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*

Visualize relationships between two-dimensional and three-dimensional objects

4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Modeling with Geometry G-MG

Apply geometric concepts in modeling situations

1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*
2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*
3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*

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: a list or description of the possible outcomes (the sample space), each of which is assigned a probability. 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 Addition and Multiplication Rules. 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, regression functions, and correlation coefficients, and to simulate many possible outcomes in a short amount of time.

Connections to Functions and Modeling. Functions may be used to describe data; if the data suggest a linear relationship, the relationship can be modeled with a regression line, and its strength and direction can be expressed through a correlation coefficient.

Interpreting Categorical and Quantitative Data Making Inferences and Justifying Conclusions Conditional Probability and the Rules of Probability Using Probability to Make Decisions	• Summarize, represent, and interpret data on a single count or measurement variable • Summarize, represent, and interpret data on two categorical and quantitative variables • Interpret linear models • Understand and evaluate random processes underlying statistical experiments • Make inferences and justify conclusions from sample surveys, experiments and observational studies • Use the concepts of independence and conditional probability to interpret data • Use the rules of probability to compute probabilities of compound events in a uniform probability model • Calculate expected values and use them to solve problems • Use probability to evaluate outcomes of decisions		1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.	Mathematical Practices

Interpreting Categorical and Quantitative Data S-ID

Summarize, represent, and interpret data on a single count or measurement variable

1. Represent data with plots on the real number line (dot plots, histograms, and box plots).
2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.
3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
4. 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.

Summarize, represent, and interpret data on two categorical and quantitative variables

5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.
    a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.*
    b. Informally assess the fit of a function by plotting and analyzing residuals.
    c. Fit a linear function for scatter plots that suggest a linear association.

Interpret linear models

7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

8. Compute (using technology) and interpret the correlation coefficient of a linear fit.
9. Distinguish between correlation and causation.

Making Inferences and Justifying Conclusions S-IC

Understand and evaluate random processes underlying statistical experiments

1. Understand that statistics allows inferences to be made about population parameters based on a random sample from that population.
2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *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?*

Make inferences and justify conclusions from sample surveys, experiments, and observational studies

3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.
4. 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.
5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.
6. Evaluate reports based on data.

Conditional Probability and the Rules of Probability S-CP

Understand independence and conditional probability and use them to interpret data

1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.
3. Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*
5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*

Use the rules of probability to compute probabilities of compound events in a uniform probability model

6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
7. Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
8. (+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in terms of the model.
9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

(+) Using Probability to Make Decisions S-MD

Calculate expected values and use them to solve problems

1. Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.
2. Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.
3. Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. *For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.*
4. Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. *For example, find a current data distribution on the number of TV sets per household in the*

United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?

Use probability to evaluate outcomes of decisions

5. Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
   a. Find the expected payoff for a game of chance. *For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.*
   b. Evaluate and compare strategies on the basis of expected values. *For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.*
6. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
7. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

Postscript: A Note on High School Courses

The high school standards in this document do not specify how content should be organized into a sequence of high school courses.

However, it is expected that model course sequences based on these standards will become available in both a traditional sequence (Algebra 1, Geometry, and Algebra 2) as well as an integrated sequence (Integrated 1, Integrated 2, Integrated 3).

Glossary

Addition and subtraction within 5, 10, 20, 100, or 1000. Addition or subtraction of two whole numbers with whole number answers, and with sum or minuend in the range 0-5, 0-10, 0-20, or 0-100, respectively. 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 $3/4 + (-3/4) = (-3/4) + 3/4 = 0$.

Associative property of addition. See Table 3 in this Glossary.

Associative property of multiplication. See Table 3 in this Glossary.

Bivariate data. Pairs of linked numerical observations. Example: a list of heights and weights for each player on a football team.

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.[1]

Commutative property. See Table 3 in this Glossary.

Complex fraction. A fraction A/B where A and/or B are fractions (B nonzero).

Computation algorithm. A set of predefined steps applicable to a class of problems that gives the correct result in every case when the steps are carried out correctly. See also: *computation strategy*.

Computation strategy. 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. See also: *computation algorithm*.

Congruent. Two plane or solid figures are congruent if one can be obtained from the other by rigid motion (a sequence of 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."

Dot plot. *See line plot.*

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.

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, $643 = 600 + 40 + 3$.

Expected value. For a random variable, the weighted average of its possible values, with weights given by their respective probabilities.

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.[2] *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.

Identity property of 0. See Table 3 in this Glossary.

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.

Line 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 dot plot.[3]

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.[4] 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.

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[1] Adapted from Wisconsin Department of Public Instruction, http://dpi.wi.gov/standards/mathglos.html, accessed March 2, 2010.

[2] 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),

[3] Adapted from Wisconsin Department of Public Instruction, *op. cit.*

[4] To be more precise, this defines the *arithmetic mean*.

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.

Midline. In the graph of a trigonometric function, the horizontal line half-way between its maximum and minimum values.

Multiplication and division within 100. Multiplication or division of two whole numbers with whole number answers, and with product or dividend in the range 0-100. 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 $3/4 \times 4/3 = 4/3 \times 3/4 = 1$.

Number line diagram. A diagram of the number line used to represent numbers and support reasoning about them. In a number line diagram for measurement quantities, the interval from 0 to 1 on the diagram represents the unit of measure for the quantity.

Percent rate of change. A rate of change expressed as a percent. Example: if a population grows from 50 to 55 in a year, it grows by 5/50 = 10% per year.

Probability distribution. The set of possible values of a random variable with a probability assigned to each.

Properties of operations. See Table 3 in this Glossary.

Properties of equality. See Table 4 in this Glossary.

Properties of inequality. See Table 5 in this Glossary.

Properties of operations. 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).

Probability model. A probability model is used to assign probabilities to outcomes of a chance process by examining the nature of the process. The set of all outcomes is called the sample space, and their probabilities sum to 1. See also *uniform probability model*.

Random variable. An assignment of a numerical value to each outcome in a sample space.

Rational expression. A quotient of two polynomials with non-zero denomiator.

Rational number. A number expressible in the form a/b or $-a/b$ for some fraction a/b. The rational numbers include the integers.

Rectilinear figure. A polygon all angles of which are right angles.

Rigid motion. A transformation of points in space consisting of a sequence of one or more translations, reflections, and/or rotations. Rigid motions are here assumed to preserve distances and angle measures.

Repeating decimal. The decimal form of a rational number. See *terminating decimal*.

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.[5]

Similarity transformation. A rigid motion followed by a dilation.

Tape diagram. A drawing that looks like a segment of tape, used to illustrate number relationships. Also known as a strip diagram, bar model, fraction strip, or length model.

Terminating decimal. A decimal is called terminating if its repeating digit is 0.

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.

Transitivity principle for indirect measurement. If the length of object A is greater than the length of object B, and the length of object B is greater than the length of object C, then the length of object A is greater than the length of object C. This principle applies to measurement of other quantities as well.

Uniform probability model. A probability model which assigns equal probability to all outcomes. See also *probability model*.

Vector. A quantity with magnitude and direction in the plane or in space, defined by an ordered pair or triple of real numbers.

Visual fraction model. A tape diagram, number line diagram, or area model.

Whole numbers. The numbers 0, 1, 2, 3, ….

[5] Adapted from Wisconsin Department of Public Instruction, *op. cit*.

TABLE 1. Common addition and subtraction situations.[6]

	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[7]
Put Together/ Take Apart[8]	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[9]	("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

[6] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

[7] 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*.

[8] 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.

[9] 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.[10]

	Unknown Product	**Group Size Unknown** ("How many in each group?" Division)	**Number of Groups Unknown** ("How many groups?" Division)
	3 × 6 = ?	**3 × ? = 18 and 18 ÷ 3 = ?**	**? × 6 = 18 and 18 ÷ 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,[11] Area[12]	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 $p \div b = ?$

[10] The first examples in each cell are examples of discrete things. These are easier for students and should be given before the measurement examples.
[11] 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.
[12] 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 properties of operations. Here a, b and c stand for arbitrary numbers in a given number system. The properties of operations apply to the rational number system, the real number system, and the complex number system.

Associative property of addition	$(a + b) + c = a + (b + c)$
Commutative property 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 property of multiplication	$(a \times b) \times c = a \times (b \times c)$
Commutative property 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 property 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 $a \div c < b \div c$.

Sample of Works Consulted

Existing state standards documents.

Research summaries and briefs provided to the Working Group by researchers.

National Assessment Governing Board, *Mathematics Framework for the 2009 National Assessment of Educational Progress*. U.S. Department of Education, 2008.

NAEP Validity Studies Panel, Validity Study of the NAEP Mathematics Assessment: Grades 4 and 8. Daro et al., 2007.

Mathematics documents from: Alberta, Canada; Belgium; China; Chinese Taipei; Denmark; England; Finland; Hong Kong; India; Ireland; Japan; Korea, New Zealand, Singapore; Victoria (British Columbia).

Adding it Up: Helping Children Learn Mathematics. National Research Council, Mathematics Learning Study Committee, 2001.

Benchmarking for Success: Ensuring U.S. Students Receive a World-Class Education. National Governors Association, Council of Chief State School Officers, and Achieve, Inc., 2008.

Crossroads in Mathematics (1995) and *Beyond Crossroads* (2006). American Mathematical Association of Two-Year Colleges (AMATYC).

Curriculum Focal Points for Prekindergarten through Grade 8 Mathematics: A Quest for Coherence. National Council of Teachers of Mathematics, 2006.

Focus in High School Mathematics: Reasoning and Sense Making. National Council of Teachers of Mathematics. Reston, VA: NCTM.

Foundations for Success: The Final Report of the National Mathematics Advisory Panel. U.S. Department of Education: Washington, DC, 2008.

Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report: A PreK-12 Curriculum Framework.

How People Learn: Brain, Mind, Experience, and School. Bransford, J.D., Brown, A.L., and Cocking, R.R., eds. Committee on Developments in the Science of Learning, Commission on Behavioral and Social Sciences and Education, National Research Council, 1999.

Mathematics and Democracy, The Case for Quantitative Literacy, Steen, L.A. (ed.). National Council on Education and the Disciplines, 2001.

Mathematics Learning in Early Childhood: Paths Toward Excellence and Equity. Cross, C.T., Woods, T.A., and Schweingruber, S., eds. Committee on Early Childhood Mathematics, National Research Council, 2009.

The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy. The Carnegie Corporation of New York and the Institute for Advanced Study, 2009. Online: http://www.opportunityequation.org/

Principles and Standards for School Mathematics. National Council of Teachers of Mathematics, 2000.

The Proficiency Illusion. Cronin, J., Dahlin, M., Adkins, D., and Kingsbury, G.G.; foreword by C.E. Finn, Jr., and M. J. Petrilli. Thomas B. Fordham Institute, 2007.

Ready or Not: Creating a High School Diploma That Counts. American Diploma Project, 2004.

A Research Companion to Principles and Standards for School Mathematics. National Council of Teachers of Mathematics, 2003.

Sizing Up State Standards 2008. American Federation of Teachers, 2008.

A Splintered Vision: An Investigation of U.S. Science and Mathematics Education. Schmidt, W.H., McKnight, C.C., Raizen, S.A., et al. U.S. National Research Center for the Third International Mathematics and Science Study, Michigan State University, 1997.

Stars By Which to Navigate? Scanning National and International Education Standards in 2009. Carmichael, S.B., W.S. Wilson, Finn, Jr., C.E., Winkler, A.M., and Palmieri, S. Thomas B. Fordham Institute, 2009.

Askey, R., "Knowing and Teaching Elementary Mathematics," *American Educator*, Fall 1999.

Aydogan, C., Plummer, C., Kang, S. J., Bilbrey, C., Farran, D. C., & Lipsey, M. W. (2005). An investigation of prekindergarten curricula: Influences on classroom characteristics and child engagement. Paper presented at the NAEYC.

Blum, W., Galbraith, P. L., Henn, H-W. and Niss, M. (Eds) *Applications and Modeling in Mathematics Education*, ICMI Study 14. Amsterdam: Springer.

Brosterman, N. (1997). *Inventing kindergarten*. New York: Harry N. Abrams.

Clements, D. H., & Sarama, J. (2009). *Learning and teaching early math: The learning trajectories approach*. New York: Routledge.

Clements, D. H., Sarama, J., & DiBiase, A.-M. (2004). e. Mahwah, NJ: Lawrence Erlbaum Associates.

Cobb and Moore, "Mathematics, Statistics, and Teaching," *Amer. Math. Monthly* 104(9), pp. 801-823, 1997.

Confrey, J., "Tracing the Evolution of Mathematics Content Standards in the United States: Looking Back and Projecting Forward." K12 Mathematics Curriculum Standards conference proceedings, February 5-6, 2007.

Conley, D.T. *Knowledge and Skills for University Success*, 2008.

Conley, D.T. *Toward a More Comprehensive Conception of College Readiness*, 2007.

Cuoco, A., Goldenberg, E. P., and Mark, J., "Habits of Mind: An Organizing Principle for a Mathematics Curriculum," *Journal of Mathematical Behavior*, 15(4), 375-402, 1996.

Carpenter, T. P., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (1999). *Children's Mathematics: Cognitively Guided Instruction*. Portsmouth, NH: Heinemann.

Van de Walle, J. A., Karp, K., & Bay-Williams, J. M. (2010). *Elementary and Middle School Mathematics: Teaching Developmentally* (Seventh ed.). Boston: Allyn and Bacon.

Ginsburg, A., Leinwand, S., and Decker, K., "Informing Grades 1-6 Standards Development: What Can Be Learned from High-Performing Hong Kong, Korea, and Singapore?" American Institutes for Research, 2009.

Ginsburg et al., "What the United States Can Learn From Singapore's World-Class Mathematics System (and what Singapore can learn from the United States)," American Institutes for Research, 2005.

Ginsburg et al., "Reassessing U.S. International Mathematics Performance: New Findings from the 2003 TIMMS and PISA," American Institutes for Research, 2005.

Ginsburg, H. P., Lee, J. S., & Stevenson-Boyd, J. (2008). Mathematics education for young children: What it is and how to promote it. *Social Policy Report*, 22(1), 1-24.

Harel, G., "What is Mathematics? A Pedagogical Answer to a Philosophical Question," in R. B. Gold and R. Simons (Eds.), *Current Issues in the Philosophy of Mathematics from the Perspective of Mathematicians*. Mathematical Association of America, 2008.

Henry, V. J., & Brown, R. S. (2008). First-grade basic facts: An investigation into teaching and learning of an accelerated, high-demand memorization standard. *Journal for Research in Mathematics Education*, 39, 153-183.

Howe, R., "From Arithmetic to Algebra."

Howe, R., "Starting Off Right in Arithmetic," http://math.arizona.edu/~ime/2008-09/MIME/BegArith.pdf.

Jordan, N. C., Kaplan, D., Ramineni, C., and Locuniak, M. N., "Early math matters: kindergarten number competence and later mathematics outcomes," *Dev. Psychol.* 45, 850–867, 2009.

Kader, G., "Means and MADS," *Mathematics Teaching in the Middle School*, 4(6), 1999, pp. 398-403.

Kilpatrick, J., Mesa, V., and Sloane, F., "U.S. Algebra Performance in an International Context," in Loveless (ed.), *Lessons Learned: What International Assessments Tell Us About Math Achievement*. Washington, D.C.: Brookings Institution Press, 2007.

Leinwand, S., and Ginsburg, A., "Measuring Up: How the Highest Performing state (Massachusetts) Compares to the Highest Performing Country (Hong Kong) in Grade 3 Mathematics," American Institutes for Research, 2009.

Niss, M., "Quantitative Literacy and Mathematical Competencies," in *Quantitative Literacy: Why Numeracy Matters for Schools and Colleges*, Madison, B. L., and Steen, L.A. (eds.), National Council on Education and the Disciplines. Proceedings of the National Forum on Quantitative Literacy held at the National Academy of Sciences in Washington, D.C., December 1-2, 2001.

Pratt, C. (1948). I learn from children. New York: Simon and Schuster.

Reys, B. (ed.), *The Intended Mathematics Curriculum as Represented in State-Level Curriculum Standards: Consensus or Confusion?* IAP-Information Age Publishing, 2006.

Sarama, J., & Clements, D. H. (2009). *Early childhood mathematics education research: Learning trajectories for young children*. New York: Routledge.

Schmidt, W., Houang, R., and Cogan, L., "A Coherent Curriculum: The Case of Mathematics," *American Educator*, Summer 2002, p. 4.

Schmidt, W.H. and Houang, R.T., "Lack of Focus in the Intended Mathematics Curriculum: Symptom or Cause?" in Loveless (ed.), *Lessons Learned: What International Assessments Tell Us About Math Achievement*. Washington, D.C.: Brookings Institution Press, 2007.
Steen, L.A., "Facing Facts: Achieving Balance in High School Mathematics." *Mathematics Teacher*, Vol. 100. Special Issue.
Wu, H., "Fractions, decimals, and rational numbers," 2007, http://math.berkeley.edu/~wu/ (March 19, 2008).
Wu, H., "Lecture Notes for the 2009 Pre-Algebra Institute," September 15, 2009.
Wu, H., "Preservice professional development of mathematics Teachers," http://math.berkeley.edu/~wu/pspd2.pdf.
Massachusetts Department of Education. Progress Report of the Mathematics Curriculum Framework Revision Panel, Massachusetts Department of Elementary and Secondary Education, 2009. www.doe.mass.edu/boe/docs/0509/item5_report.pdf.
ACT College Readiness Benchmarks™
ACT College Readiness Standards™
ACT National Curriculum Survey™
Adelman, C. *The Toolbox Revisited: Paths to Degree Completion From High School Through College*, 2006.
Advanced Placement Calculus, Statistics and Computer Science Course Descriptions. May 2009, May 2010. College Board, 2008.
Aligning Postsecondary Expectations and High School Practice: The Gap Defined (ACT: Policy Implications of the ACT National Curriculum Survey Results 2005-2006).
Condition of Education, 2004: Indicator 30, Top 30 Postsecondary Courses, U.S. Department of Education, 2004.
Condition of Education, 2007: High School Course-Taking. U.S. Department of Education, 2007.
Crisis at the Core: Preparing All Students for College and Work, ACT.
Achieve, Inc., Florida Postsecondary Survey, 2008.
Golfin, Peggy, et. al. CNA Corporation. *Strengthening Mathematics at the Postsecondary Level: Literature Review and Analysis*, 2005.
Camara, W.J., Shaw, E., and Patterson, B. (June 13, 2009). First Year English and Math College Coursework. College Board: New York, NY (Available from authors).
CLEP Precalculus Curriculum Survey: Summary of Results. The College Board, 2005.
College Board Standards for College Success: Mathematics and Statistics. College Board, 2006.
Miller, G.E., Twing, J., and Meyers, J. "Higher Education Readiness Component (HERC) Correlation Study." Austin, TX: Pearson.
On Course for Success: A Close Look at Selected High School Courses That Prepare All Students for College and Work, ACT.
Out of Many, One: Towards Rigorous Common Core Standards from the Ground Up. Achieve, 2008.
Ready for College and Ready for Work: Same or Different? ACT.
Rigor at Risk: Reaffirming Quality in the High School Core Curriculum, ACT.
The Forgotten Middle: Ensuring that All Students Are on Target for College and Career Readiness before High School, ACT.
Achieve, Inc., Virginia Postsecondary Survey, 2004.
ACT Job Skill Comparison Charts
Achieve, Mathematics at Work, 2008.
The American Diploma Project Workplace Study. National Alliance of Business Study, 2002.
Carnevale, Anthony and Desrochers, Donna. *Connecting Education Standards and Employment: Course-taking Patterns of Young Workers,* 2002.
Colorado Business Leaders Top Skills, 2006.
Hawai'i Career Ready Study: access to living wage careers from high school, 2007.
States' Career Cluster Initiative. *Essential Knowledge and Skill Statements*, 2008.
ACT WorkKeys Occupational Profiles™
Program for International Student Assessment (PISA), 2006.
Trends in International Mathematics and Science Study (TIMSS), 2007.
International Baccalaureate, Mathematics Standard Level, 2006.
University of Cambridge International Examinations: General Certificate of Secondary Education in Mathematics, 2009.
EdExcel, General Certificate of Secondary Education, Mathematics, 2009.
Blachowicz, Camille, and Peter Fisher. "Vocabulary Instruction." In *Handbook of Reading Research*, Volume III, edited by Michael Kamil, Peter Mosenthal, P. David Pearson, and Rebecca Barr, pp. 503-523. Mahwah, NJ: Lawrence Erlbaum Associates, 2000.
Gándara, Patricia, and Frances Contreras. *The Latino Education Crisis: The Consequences of Failed Social Policies*. Cambridge, Ma: Harvard University Press, 2009.
Moschkovich, Judit N. "Supporting the Participation of English Language Learners in Mathematical Discussions." *For the Learning of Mathematics* 19 (March 1999): 11-19.
Moschkovich, J. N. (in press). Language, culture, and equity in secondary mathematics classrooms. To appear in F. Lester & J. Lobato (Ed.), Teaching and Learning Mathematics: Translating Research to the Secondary Classroom, Reston, VA: NCTM.
Moschkovich, Judit N. "Examining Mathematical Discourse Practices," *For the Learning of Mathematics* 27 (March 2007): 24-30.
Moschkovich, Judit N. "Using Two Languages when Learning Mathematics: How Can Research Help Us Understand Mathematics Learners Who Use Two Languages?" *Research Brief and Clip*, National Council of Teachers of Mathematics, 2009 http://www.nctm.org/uploadedFiles/Research_News_and_Advocacy/Research/Clips_and_Briefs/Research_brief_12_Using_2.pdf. (accessed November 25, 2009).
Moschkovich, J.N. (2007) Bilingual Mathematics Learners: How views of language, bilingual learners, and mathematical communication impact instruction. In N. Nasir and P. Cobb (Eds.), *Diversity, Equity, and Access to Mathematical Ideas*. New York: Teachers College Press, 89-104.
Schleppegrell, M.J. (2007). The linguistic challenges of mathematics teaching and learning: A research review. *Reading & Writing Quarterly,* 23:139-159.
Individuals with Disabilities Education Act (IDEA), 34 CFR §300.34 (a). (2004).
Individuals with Disabilities Education Act (IDEA), 34 CFR §300.39 (b)(3). (2004).
Office of Special Education Programs, U.S. Department of Education. "IDEA Regulations: Identification of Students with Specific Learning Disabilities," 2006.
Thompson, S. J., Morse, A.B., Sharpe, M., and Hall, S., "Accommodations Manual: How to Select, Administer and Evaluate Use of Accommodations and Assessment for Students with Disabilities," 2nd Edition. Council of Chief State School Officers, 2005.

Addendum B(1)-III

Dear State Partners:

Thank you so much for taking a look at this *unproofed, unformatted* final version of the Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects.

This final version is built on your excellent and thorough feedback. We want to begin by thanking you again for your work and that of your teams and the educators in your state. As you may know, we were also in receipt of ten thousand comments from the public Web site, so this draft reflects those comments as well. Finally, of course, several teacher organizations and other leading educational organizations and experts have continued to give us detailed feedback, so our work reflects this as well.

So thank you, thank you, thank you for your constructive feedback, conversation, and joint problem solving throughout the process. We never would have gotten to this final version without so much help and input from you. We hope you can now consider it your own work as well as ours.

In this note, we wanted to outline briefly themes from the feedback, how we incorporated the feedback, and what will be in the appendices and glossary that are not being sent now but will be in the published version.

Themes from the feedback and how we revised the Standards:

1. *Attending more fully to technical reading and writing*: Several states felt we had not adequately addressed technical reading and writing, and the Standards are substantially enhanced in this regard. You will notice the change in the title to make technical texts explicit. Also, we have threaded the demands of technical reading and writing throughout the grade-specific standards. Additional samples of technical reading will be added to Appendix B, and samples of student technical writing will be included in Appendix C.

2. *Ensuring text complexity is treated as a goal that does not overly constrain student reading throughout the year*: States were concerned that the way we had framed the text complexity requirements of the Standards seemed to limit attention to individual student needs during the year. We have substantially revised standard 10 on reading complex texts to ensure it is clear that it is an end-of-year expectation.

3. *Clarifying the grade-by-grade progressions, rendering them smoother and clearer to support high-quality instruction and assessment*. All of the progressions have been reviewed repeatedly and with care; we think you will find them far clearer as grade-specific standards year to year.

4. *Making sure the K–2 material is developmentally appropriate*: We have revised the K–2 standards to ensure that they are developmentally appropriate and that key skills such as fluency are extended to grade 5. In a similar vein, we have made standards pertaining to such areas as media and research applicable at the earliest grades in response to overwhelming feedback to do so.

5. *Expanding the richness of multimedia literacy and global diversity:* We have enhanced the Standards to address a fuller range of media and electronic text. We have also added clearer language on the need to study world literature and works from diverse cultures.

There are many other changes, based, as always, on our understanding of the feedback as well as the evidence for college and career readiness. We have made several clarifications that have been requested. We consider all of the changes we have made refinements, not radical revisions.

The appendices and glossary that will be published with the final Standards:

As requested, we will be adding a glossary of key terms. We are also refining Appendices A, B, and C in accord with your feedback.

Now that this is the final version, we are asking whether there are inadvertent errors that remain. Please let us know of any such errors by May 18th. We will not have the capacity to add significant new material or to make significant changes. However, we ask that states keep in mind their flexibility to add 15 percent to the Standards if they believe there is essential material that needs greater attention.

We have made every effort to listen closely and act with care and judgment. Thanks again for all your help and collaboration.

Best regards,

The ELA/Literacy Writing Team (Sue, David, and Jim)

COMMON CORE STATE STANDARDS FOR

English Language Arts
&
Literacy in History/Social Studies, Science, and Technical Subjects

Table of Contents

Introduction

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects ("the Standards") 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 in order to help ensure that all students are college and career ready in literacy no later than the end of high school.

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. The Standards also draw on the most important international models as well as research and input from numerous sources, including state departments of education, scholars, assessment developers, professional organizations, educators from kindergarten through college, and parents, students, and other members of the public. In their design and content, refined through successive drafts and numerous rounds of feedback, 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 college and career readiness in a twenty-first-century, globally competitive society. The Standards are intended to be a living work: 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 for the present document. 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.

The Standards set requirements for English language arts (ELA) but also for literacy in history/social studies, science, and technical subjects. Just as students must learn to read, write, speak, listen, and use language effectively in a variety of content areas, so too must the Standards specify the literacy skills and understandings required for college and career readiness in multiple disciplines. Literacy standards for grade 6 and above are predicated on teachers of ELA, history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. It is important to note that the 6–12 literacy standards in history/social studies, science, and technical subjects are not meant to replace content standards in those areas but rather to supplement them. States may incorporate the standards into their standards for these subjects or adopt them as content area literacy standards.

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 digitally. 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 meet the Standards develop the skills in reading, writing, speaking, and listening that are the foundation for any creative and purposeful expression in language.

May 2010

Key Design Considerations

CCR and grade-specific standards

The CCR standards anchor the document and define general, cross-disciplinary literacy expectations that must be met for students to be prepared to enter college and workforce training programs ready to succeed. The K–12 grade-specific standards define end-of-year expectations and a cumulative progression designed to enable students to meet college- and career-readiness expectations no later than the end of high school. The CCR and high school grade-specific standards work in tandem to define the college- and career-readiness line—the former providing broad standards, the latter providing additional specificity. Hence, both should be considered when developing college- and career-readiness assessments.

Students advancing through the grades are expected to meet each year's grade-specific standards, retain or further develop skills and understandings mastered in preceding grades, and work steadily toward meeting the more general expectations described by the CCR standards.

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.

A focus on results rather than means

By emphasizing 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 the full range of metacognitive strategies that students may need 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.

Research and media skills blended 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, and report on information and ideas, to conduct original research in order to answer questions or solve problems, and to analyze and create a high volume and extensive range of print and nonprint texts in media forms old and new. The need to conduct research and to produce and consume media is embedded into every aspect of today's curriculum. In like fashion, research and media skills and understandings are embedded throughout the Standards rather than treated in a separate section.

Shared responsibility for students' literacy development

The Standards insist that instruction in reading, writing, speaking, listening, and language be a shared responsibility within the school. The K–5 standards include expectations for reading, writing, speaking, listening, and language applicable to a range of subjects, including but not limited to ELA. The grades 6–12 standards are divided into two sections, one for ELA and the other for history/social studies, science, and technical subjects. This division reflects the unique, time-honored place of ELA teachers in developing students' literacy skills while at the same time recognizing that teachers in other areas must have a role in this development as well.

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 than at present can meet the requirements of college and career readiness. In K–5, the Standards follow NAEP's lead in balancing the reading of literature with the reading of informational texts, including texts in history/social studies, science, and technical subjects. In accord with NAEP's growing emphasis on informational texts in the higher grades, the Standards demand that a significant amount of reading of informational texts take place in and outside of the ELA classroom. Fulfilling the standards for 6–12 ELA requires much greater attention to a specific category of informational text—literary nonfiction—than has been traditional. Because the ELA classroom must focus on literature (stories, drama, and poetry) as well as literary nonfiction, a great deal of informational reading in grades 6–12 must take place in other classes if the NAEP assessment framework is to be matched instructionally.[1] 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.

NAEP likewise outlines a distribution across the grades of the core purposes and types of student writing. Similar to the Standards, the 2011 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: standards for grades 9–12 describe writing in all three forms, but, consistent with NAEP, the overwhelming focus of writing throughout high school should be on writing to argue and to inform or explain.[2]

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.

What is not *covered by the Standards*

The Standards should be recognized for what they are *not* as well as what they are. 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, 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 curiculum 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 do not define the nature of advanced work for students who meet the Standards prior to the end of high school. For those students, advanced work in such areas as literature, composition, language, and journalism should be available. This

[1] The percentages on the table reflect the sum of student reading, not just reading in ELA settings. Teachers of senior English classes, for example, are not required to devote 70 percent of reading to informational texts. Rather, 70 percent of student reading across the grade should be informational.

[2] As with reading, the percentages in the table reflect the sum of student writing, not just writing in ELA settings.

work should provide the next logical step up from the college and career readiness baseline established here.

4) The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participaton of students with special education needs. For example, for students with disabilities *reading* should allow for use of Braille, screen reader technology, or other assistive devices, while *writing* should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and *listening* should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and 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.

5) While the ELA and content area literacy components described herein are critical to college and career readiness, they do not define the whole of such readiness. Students require a wide-ranging, rigorous academic preparation and, particularly in the early grades, attention to such matters as social, emotional, and physical development and approaches to learning. Similarly, the Standards define literacy expectations in history/social studies, science, and technical subjects, but literacy standards in other areas, such as mathematics and health education, modeled on those herein are strongly encouraged to allow for a comprehensive, schoolwide literacy program.

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 for ELA and one for history/social studies, science, and technical subjects. Three appendices (lettered A, B, and C) accompany the main document.

Each section is divided into *strands*. K–5 and 6–12 ELA have Reading, Writing, Speaking and Listening, and Language strands; the 6–12 history/social studies, science, and technical subjects section focuses on Reading and Writing. Each strand is headed by a strand-specific set of *College and Career Readiness Anchor Standards* that is identical across all grades and content areas.

Standards for each grade within K–8 and for grades 9–10 and 11–12 follow the CCR standards in each strand. Each *grade-specific standard* (as these standards are collectively referred to) corresponds to the same-numbered CCR standard. Put another way, each CCR standard has an accompanying grade-specific standard translating the broader CCR statement into grade-appropriate end-of-year expectations.

Individual CCR standards can be identified by their strand, CCR status, and number (R.CCR.6, for example). Individual grade-specific standards can be identified by their strand, grade, and number or number and letter so that RI.4.3, for example, stands for Reading, Informational Text, grade 4, standard 3. Likewise, W.5.1a stands for Writing, grade 5, standard 1a. Strand designations can be found in brackets alongside the full strand title.

Who is responsible for which portion of the Standards

A single K–5 section lists 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 in these grades receive comes from one teacher. Grades 6–12 are covered in two content area–specific sections, the first for the English language arts teacher and the second for teachers of history/social studies, science, and technical subjects. Each section uses the same CCR standards but also includes grade-specific standards tuned to the literacy requirements of the particular discipline(s).

Key Features of the Standards

Reading: Text complexity and the growth of comprehension

The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by-grade "staircase" of increasing text complexity that rises from beginning reading to the college- and career-readiness level. Whatever they are reading, students must also show a steadily growing 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 reading, and research

The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

Speaking and Listening: Flexible communication and collaboration

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 work together, express and listen to ideas, integrate information from oral, visual, and multimodal sources, evaluate what they hear, use digital media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

Language: Conventions and vocabulary

The standards on conventions and effective language use 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 understanding words, their relationships, and

their nuances and on acquiring new words and phrases, particularly general academic and domain-specific vocabulary.

Appendices A, B, and C

Appendix A contains supplementary material on reading, writing, speaking and listening, and language as well as a glossary of key terms. Appendix B consists of text exemplars illustrating the complexity, quality, and range of reading appropriate for various grade levels. Appendix C includes annotated samples demonstrating at least adequate performance in student writing at various grade levels.

Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

K–5

College and Career Readiness Anchor Standards for Reading

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

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 how and why individuals, events, and ideas 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, chapter, scene, or stanza) 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. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
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 of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present 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.

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 [RL]

The following standards 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. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	**1.** Ask and answer questions about key details in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
2. With prompting and support, retell familiar stories, including key details.	**2.** Retell stories, including key details, and demonstrate understanding of their central message or lesson.	**2.** Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
3. With prompting and support, identify characters, settings, and major events in a story.	**3.** Describe characters, settings, and major events in a story, using key details.	**3.** Describe how characters in a story respond to major events and challenges.
Craft and Structure		
4. Ask and answer 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.** Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.
5. Recognize common types of texts (e.g., storybooks, poems).	**5.** Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	**5.** Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.
6. With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	**6.** Identify who is telling the story at various points in a text.	**6.** Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the connection between pictures or other illustrations and the overall story in which they appear.	**7.** Refer to pictures, illustrations, and details in a story to describe characters, setting, or events.	**7.** Use information from illustrations, other visual elements (e.g., maps), and the words in a print or digital text to demonstrate understanding of the characters, setting, or plot.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.	**9.** Compare and contrast the adventures and experiences of characters in stories.	**9.** Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	**10.** With prompting and support, read appropriately complex prose and poetry for grade 1.	**10.** By the end of the year, read literature, including stories, poetry, and drama, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Standards for Literature K–5 [RL]

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	**1.** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	**1.** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.	**2.** Determine a theme of a story, drama, or poem from details in the text; summarize the text.	**2.** Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
3. Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.	**3.** Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).	**3.** Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.	**4.** Determine the meaning of words and phrases as they are used in a text, including those 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.** Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
5. Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as *chapter*, *scene*, and *stanza*; describe how each successive part builds on earlier sections.	**5.** Explain major differences between poems, drama, and prose and refer to the core structural elements of poems (e.g., stanza, verse, rhythm, meter) and drama (e.g., casts of characters, setting descriptions, dialogue, acts, scenes, stage directions) when writing or speaking about a text.	**5.** Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
6. Distinguish their own point of view from that of the narrator or those of the characters.	**6.** Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.	**6.** Describe how a narrator's or speaker's point of view influences how events are described.
Integration of Knowledge and Ideas		
7. Explain how specific images and illustrations contribute to or clarify a story (e.g., create mood, emphasize particular aspects of characters or settings).	**7.** Integrate information gained from illustrations and other visual elements in a text with the words to demonstrate understanding of how the characters, setting, and plot interact and develop.	**7.** Analyze how visual and multimedia elements in conjunction with words contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction).
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)
9. Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).	**9.** Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.	**9.** Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 2–3 text complexity band independently and proficiently.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 4–5 text complexity band independently and proficiently.

Reading Standards for Informational Text K–5 [RI]

Kindergartners:	Grade 1 students:	Grade 2 students:
Key Ideas and Details		
1. With prompting and support, ask and answer questions about key details in a text.	**1.** Ask and answer questions about key details in a text.	**1.** Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.
2. With prompting and support, identify the main topic and retell key details of a text.	**2.** Identify the main topic and retell key details of a text.	**2.** Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.
3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.	**3.** Describe the connection between two individuals, events, ideas, or pieces of information in a text.	**3.** Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
Craft and Structure		
4. With prompting and support, ask and answer questions about unknown words in a text.	**4.** Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.	**4.** Determine the meaning of words and phrases in a text relevant to a *grade 2 topic or subject area*.
5. Identify the front cover, back cover, and title page of a book.	**5.** Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.	**5.** Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text quickly and efficiently.
6. Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.	**6.** Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.	**6.** Identify the main purpose of a text, including what the author wants to answer, explain, or describe.
Integration of Knowledge and Ideas		
7. With prompting and support, describe the connection between pictures or other illustrations and the overall text in which they appear.	**7.** Use pictures, illustrations, and details in a text to describe its key ideas.	**7.** Explain how specific images and other illustrations contribute to and clarify a text (e.g., show how something works).
8. With prompting and support, identify the reasons an author gives to support points in a text.	**8.** Identify the reasons an author gives to support points in a text.	**8.** Describe how reasons support specific points the author makes in a text.
9. With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	**9.** Identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).	**9.** Compare and contrast the most important points presented by two texts on the same topic.
Range of Reading and Level of Text Complexity		
10. Actively engage in group reading activities with purpose and understanding.	**10.** With prompting and support, read appropriately complex informational texts for grade 1.	**10.** By the end of year, read and comprehend informational texts, including historical, scientific and technical texts, in the grades 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range

Reading Standards for Informational Text K–5 [RI]

Grade 3 students:	Grade 4 students:	Grade 5 students:
Key Ideas and Details		
1. Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	**1.** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	**1.** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
2. Determine the main idea of a text; recount the key details and explain how they support the main idea.	**2.** Determine the main idea of a text and explain how it is supported by key details; summarize the text.	**2.** Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
3. Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	**3.** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	**3.** Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
Craft and Structure		
4. Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area*.	**4.** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.	**4.** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area*.
5. Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic quickly and efficiently.	**5.** Describe the overall structure of events, ideas, concepts, or information (e.g., chronology, comparison, cause/effect) in a text or part of a text.	**6.** Compare and contrast the organizational structure of events, ideas, concepts, or information (e.g., chronology, comparison, cause/effect, problem/solution) in two or more texts.
6. Distinguish their own point of view from that of the author of a text.	**6.** Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.	**7.** Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
Integration of Knowledge and Ideas		
7. Use information gained from illustrations, other visual elements (e.g., maps, photographs), and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	**7.** Interpret factual information presented graphically or visually (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to understanding the text in which they appear.	**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 particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).	**8.** Explain how an author uses reasons and evidence to support particular points in a text.	**8.** Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point(s).
9. Compare and contrast the most important points and key details presented in two texts on the same topic.	**9.** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.	**9.** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend informational texts, including historical, scientific, and technical texts, in the grades 2–3 text complexity band independently and proficiently.	**10.** By the end of year, read and comprehend informational texts, including historical, scientific, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as necessary at the high end of the range.	**10.** By the end of the year, read and comprehend informational text, including historical, scientific, and technical texts, in the grades 4–5 text complexity band level independently and proficiently.

Reading Standards: Foundational Skills (K–5) [RF]

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. Instruction should be differentiated: Good readers will need much less practice with these concepts than struggling readers. The point is to teach students what they need to learn and not what they already know—to discern when particular children or activities warrant more or less attention.

**** In Kindergarten children are expected to demonstrate increasing awareness and competence in the areas that follow.***

Kindergartners:	Grade 1 students:
Print Concepts	
1. Demonstrate understanding of the organization and basic features of print. a. Follow words from left to right, top to bottom, and page-by-page. b. Recognize that spoken words are represented in written language by specific sequences of letters. c. Understand that words are separated by spaces in print. d. Recognize and name all upper- and lowercase letters of the alphabet.	**1.** Demonstrate understanding of the organization and basic features of print. a. Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
Phonological Awareness	
2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Recognize and produce rhyming words. b. Count, pronounce, blend, and segment syllables in spoken words. c. Blend and segment onsets and rimes of single-syllable spoken words. d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (CVC) words.[1] (This does not include CVCs ending with /l/, /r/, or /x/.) e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.	**2.** Demonstrate understanding of spoken words, syllables, and sounds (phonemes). a. Distinguish long from short vowel sounds in spoken single-syllable words . b. Orally produce single-syllable words by blending sounds (phonemes), including consonant blends. c. Isolate and pronounce initial, medial vowel, and final sounds (phonemes) in spoken single-syllable words. d. Segment spoken single-syllable words into their complete sequence of individual sounds (phonemes).

[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–5) [RF]

** In Kindergarten children are expected to demonstrate increasing awareness and competence in the areas that follow.*

Kindergartners:*	Grade 1 students:	Grade 2 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 common spellings (graphemes) for the five major vowels. c. Read common 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.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Know the spelling-sound correspondences for common consonant digraphs.(two letters that represent one sound). b. Decode regularly spelled one-syllable words. c. Know final *-e* and common vowel team conventions 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 by breaking the words into syllables. f. Read words with inflectional endings. g. Recognize and read grade-appropriate irregularly spelled words.	**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. b. Know spelling-sound correspondences for additional common vowel teams. c. Decode regularly spelled two-syllable words with long vowels. d. Decode words with common prefixes and suffixes. e. Identify words with inconsistent but common spelling-sound correspondences. f. Recognize and read grade-appropriate irregularly spelled words.
4. 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. 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. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Phonics and Word Recognition		
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. b. Decode words with common Latin suffixes. c. Decode multisyllable words. d. Read grade-appropriate irregularly spelled words.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multi-syllabic words in context and out of context.	**3.** Know and apply grade-level phonics and word analysis skills in decoding words. a. Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multi-syllabic words in context and out of context.
Fluency		
4. Read with sufficient accuracy and fluency to support comprehension. a. Read on-level text with purpose and understanding. b. Read on-level prose and poetry orally with accuracy, appropriate rate, and expression. 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 prose and poetry orally with accuracy, appropriate rate, and expression. 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 prose and poetry orally with accuracy, appropriate rate, and expression. c. Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

College and Career Readiness Anchor Standards for Writing

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

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.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.
[2]See standards 1–3 in Language, pages 26–31, for specific editing expectations.

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 real and imagined experiences and events. 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 and content of their writing to accomplish a particular task and purpose.. 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 extended time frames throughout the year.

Writing Standards K–5 [W]

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Kindergartners:	Grade 1 students:	Grade 2 students:
Text Types and Purposes		
1. Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., *My favorite book is . . .*).	**1.** Write opinion pieces in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide some sense of closure.	**1.** Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., *because*, *and*, *also*) to connect opinion and reasons, and provide a concluding statement or section.
2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	**2.** Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.	**2.** Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement 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 in which they occurred, and provide a reaction to what happened.	**3.** Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.	**3.** Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts, and feelings, use temporal words to signal event order, and provide a sense of 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, respond to questions and suggestions from peers and add details to strengthen writing as needed.	**5.** With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.	**5.** With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
6. With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.	**6.** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.	**6.** With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
Research to Build and Present Knowledge		
7. Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	**7.** Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).	**7.** Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
8. With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	**8.** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	**8.** Recall information from experiences or gather information from provided sources to answer a question.
9. (Begins in grade 4)	**9.** (Begins in grade 4)	**9.** (Begins in grade 4)
Range of Writing		
10. (Begins in grade 3)	**10.** (Begins in grade 3)	**10.** (Begins in grade 3)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Text Types and Purposes		
1. Write opinion pieces on familiar topics or texts, supporting a point of view with reasons. a. Introduce the topic or book they are writing about, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., *because*, *therefore*, *since*, *for example*) to connect opinion and reasons. d. Provide a concluding statement or section.	**1.** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link opinion and reasons using words and phrases (e.g., *for instance*, *in order to, in addition*). d. Provide a concluding statement or section related to the opinion presented.	**1.** Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., *consequently*, *specifically*). d. Provide a concluding statement or section related to the opinion presented.
2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension. b. Develop the topic with facts, definitions, and details. c. Use linking words and phrases (e.g., *also*, *another*, *and*, *more*, *but*) to connect ideas within categories of information. d. Provide a concluding statement or section.	**2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension. b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., *in contrast*, *especially*). d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Provide a concluding statement or section related to the information or explanation presented.
3. Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Establish a situation and introduce a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and descriptions of actions, thoughts, and feelings to develop experiences and events or show the response of characters to situations. c. Use temporal words and phrases to signal event order. d. Provide a sense of closure.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use dialogue and description to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words and phrases to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. b. Use narrative techniques, such as dialogue, description, and pacing, to develop experiences and events or show the responses of characters to situations. c. Use a variety of transitional words, phrases, and clauses to manage the sequence of events. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Production and Distribution of Writing		
4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development and organization 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, develop and strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.	**5.** With guidance and support from peers and adults, develop and 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 (using keyboarding skills) as well as to interact and collaborate with others.	**6.** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing (using the keyboard) as well as to interact and collaborate with others.	**6.** With some guidance and support from adults, use technology, including the Internet, to produce and publish a minimum of two pages of writing (using the keyboard) as well as to interact and collaborate with others.
Research to Build Knowledge		
7. Conduct short research projects that build knowledge about a topic.	**7.** Conduct short research projects that build knowledge through investigation of different aspects of a topic.	**7.** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
8. Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.	**8.** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	**8.** Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.
9. (Begins in grade 4)	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 4 Reading standards* to literature (e.g., "Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text"). b. Apply *grade 4 Reading standards* to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 5 Reading standards* to literature (e.g., "Compare and contrast two or more characters, settings, or events in a story or a drama, drawing on specific details in the text"). b. Apply *grade 5 Reading standards* to informational texts (e.g., "Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence supports which point[s]").
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 discipline-specific 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 discipline-specific 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 discipline-specific tasks, purposes, and audiences.

College and Career Readiness Anchor Standards for Speaking and Listening

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate content from multiple graphical, visual, oral, or multimodal sources.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating 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—as part of a whole class, in small groups, 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 [SL]

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Kindergartners:	Grade 1 students:	Grade 2 students:
Comprehension and Collaboration		
1. Participate in collaborative conversations about *kindergarten topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion). b. Continue a conversation through multiple exchanges.	**1.** Participate in collaborative conversations about *grade 1 topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges. c. Ask questions to clear up any confusion about the topics and texts under discussion.	**1.** Participate in collaborative conversations about *grade 2 topics and texts* with peers and adults in small and larger groups. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.
2. Confirm understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details.	**2.** Demonstrate understanding of written texts read aloud or information presented orally or through media by asking and answering questions about key details and restating key elements.	**2.** Recount or describe key ideas or details from written texts read aloud or information presented orally or through media.
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	**3.** Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	**3.** Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
Presentation of Knowledge and Ideas		
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	**4.** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	**4.** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.	**5.** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	**5.** Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
6. Speak audibly and express thoughts, feelings, and ideas clearly.	**6.** Produce complete sentences when appropriate to task and situation. (See standards 1–3 in Language, pages 26–31, for specific expectations.)	**6.** Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See standards 1–3 in Language, pages 26–31, for specific expectations.)

Grade 3 students:	Grade 4 students:	Grade 5 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly. a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. c. Explain their own ideas and understanding in light of the discussion.	**1.** Engage effectively in range of collaborative discussions (one-on-one and in groups) on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussions. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others. d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. b. Follow agreed-upon rules for discussions and carry out assigned roles. c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others. d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.
2. Identify the main ideas and supporting details of written texts read aloud or information presented graphically, orally, visually, or multimodally.	**2.** Paraphrase portions of written texts read aloud or information presented graphically, orally, visually, or multimodally.	**2.** Summarize written texts read aloud or information presented graphically, orally, visually, or multimodally.
3. Ask and answer questions about information from a speaker's, offering appropriate elaboration and detail.	**3.** Identify the reasons and evidence a speaker provides to support particular points.	**3.** Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.
Presentation of Knowledge and Ideas		
4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.	**4.** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.	**4.** Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5. Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.	**5.** Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	**5.** Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.
6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification. (See standards 1–3 in Language, pages 26–31, for specific expectations.)	**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 standards 1–3 in Language, pages 26–31, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation. (See standards 1–3 in Language, pages 26–31, for specific expectations.)

College and Career Readiness Anchor Standards for Language

The K–5 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of capitalization, punctuation, and spelling when writing.

Effective Language Use

3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of word relationships and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

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 grammar, usage, and mechanics as well as learn ways to use language to enhance meaning. They must also be able to determine or clarify the meaning of grade-appropriate words encountered through listening, reading, and media use, come to appreciate that words have nonliteral meanings, shadings of meaning, and relationships to other words, and expand their vocabulary in the course of studying content. The inclusion of Language standards in their own strand should not be taken as an indication that skills related to conventions, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards K–5 [L]

The following standards for grades K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 31 for a complete list and Appendix A for an example of how these skills develop in sophistication.

Kindergartners:	Grade 1 students:	Grade 2 students:
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Print many upper- and lowercase letters. b. Use frequently occurring nouns and verbs. c. Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog*, *dogs*; *wish*, *wishes*). d. Understand and use question words (interrogatives) (e.g., *who*, *what*, *where*, *when*, *why*, *how*). e. Use the most frequently occurring prepositions (e.g., *to*, *from*, *in*, *out*, *on*, *off*, *for*, *of*, *by*, *with*). f. Produce and expand complete sentences in shared language activities.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Print all upper- and lowercase letters. b. Use common, proper, and possessive nouns. c. Use singular and plural nouns with matching verbs in basic sentences (e.g., *He hops*; *We hop*). d. Use personal, possessive, and indefinite pronouns (e.g., *I*, *me*, *my*; *they*, *them*, *their*, *anyone*, *everything*). e. Use verbs to convey a sense of past, present, and future (e.g., *Yesterday I walked home*; *Today I walk home*; *Tomorrow I will walk home*). f. Use frequently occurring adjectives. g. Use frequently occurring conjunctions (e.g., *and*, *but*, *or*, *so*, *because*). g. Use determiners (e.g., articles, demonstratives). h. Use frequently occurring prepositions (e.g., *during*, *beyond*, *toward*). i. Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to questions and prompts.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Use collective nouns (e.g., *group*). b. Form and use frequently occurring irregular plural nouns (e.g., *feet*, *children*, *teeth*, *mice*, *fish*). c. Use reflexive pronouns (e.g., *myself*, *ourselves*). d. Form and use the past tense of frequently occurring irregular verbs (e.g., *sat*, *hid*, *told*). e. Use adjectives and adverbs, and choose between them depending on what is to be modified. f. Produce, expand, and rearrange complete simple and compound sentences (e.g., *The boy watched the movie*; *The little boy watched the movie*; *The action movie was watched by the little boy*).
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize the first word in a sentence and the pronoun *I*. b. Recognize and name end punctuation. c. Write a letter or letters for most consonant and short-vowel sounds (phonemes). d. Spell simple words phonetically, drawing on knowledge of sound-letter relationships.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize dates and names of people. b. Use end punctuation for sentences. 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 frequently occurring irregular words. e. Spell untaught words phonetically, drawing on phonemic awareness and spelling conventions.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize holidays, product names, and geographic names. b. Use commas in greetings and closings of letters. c. Use an apostrophe to form contractions and frequently occurring possessives. d. Generalize learned spelling patterns when writing words (e.g., *cage* → *badge*; *boy* → *boil*). e. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.
Effective Language Use		
3. (Begins in grade 3)	**3.** (Begins in grade 3)	**3.** (Begins in grade 3)

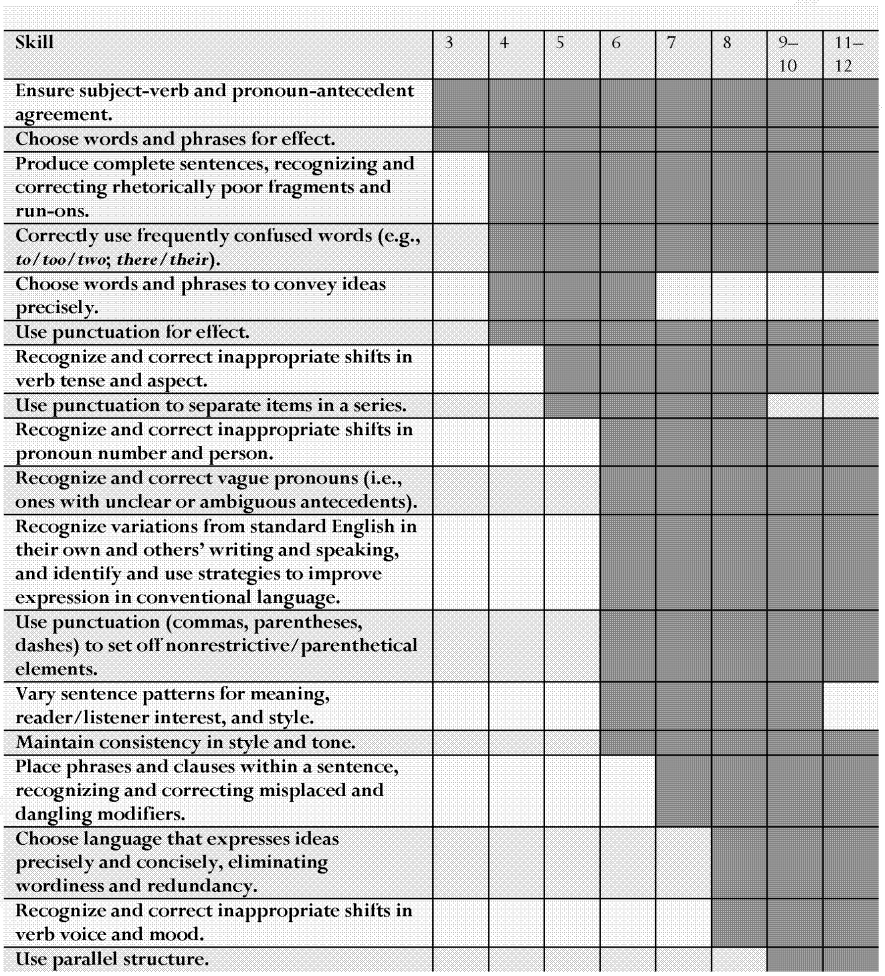
Kindergartners:	Grade 1 students:	Grade 2 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *kindergarten reading and content*. a. Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* as a bird and learning the verb *to duck*). b. Use the most frequently occurring inflections and affixes (e.g., *-ed*, *-s*, *re-*, *un-*, *pre-*, *-ful*, *-less*) as a clue to the meaning of an unknown word.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 1 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Use frequently occurring affixes as a clue to the meaning of a word. c. Identify frequently occurring root words (e.g., *look*) and their inflectional forms (e.g., *looks*, *looked*, *looking*).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 2 reading and content*, choosing flexibly from an array of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. Determine the meaning of the new word formed when a known prefix is added to a known word (e.g., *happy/ unhappy*, *tell/ retell*). 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. Use knowledge of the meaning of individual words to predict the meaning of compound words (e.g., *birdhouse*, *lighthouse*, *housefly*; *bookshelf*, *notebook*, *bookmark*). e. Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
5. With guidance and support from adults, explore word relationships and nuances in word meanings. a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent. b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms). c. Identify real-life connections between words and their use (e.g., note places at school that are *colorful*). d. Distinguish shades of meaning among verbs describing the same general action (e.g., *walk*, *march*, *strut*, *prance*) by acting out the meanings.	**5.** With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings. a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent. b. 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). c. Identify real-life connections between words and their use (e.g., note places at home that are *cozy*). d. 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 or choosing them or by acting out the meanings.	**5.** Demonstrate understanding of word relationships and nuances in word meanings. a. Identify real-life connections between words and their use (e.g., describe foods that *are spicy* or *juicy*). b. Distinguish shades of meaning among closely related verbs (e.g., *toss*, *throw*, *hurl*) and closely related adjectives (e.g., *thin*, *slender*, *skinny, scrawny*).
6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.	**6.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., *I named my hamster Nibblet because she nibbles too much because she likes that*).	**6.** Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., *When other kids are happy that makes me happy*).

Grade 3 students:	Grade 4 students:	Grade 5 students:
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Explain the function of nouns, pronouns, verbs, adjectives, and adverbs in general and their functions in particular sentences. b. Form and use regular and irregular plural nouns. c. Use abstract nouns (e.g., *childhood*). d. Form and use regular and irregular verbs. e. Form and use the simple (e.g., *I walked*; *I walk*; *I will walk*) verb tenses. f. Ensure subject-verb and pronoun-antecedent agreement.* g. Form and use comparative and superlative adjectives and adverbs, and choose between them depending on what is to be modified. h. Use coordinating and subordinating conjunctions. i. Produce simple, compound, and complex sentences.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Use relative pronouns (*who*, *whose*, *whom*, *which*, *that*) and relative adverbs (*where*, *when*, *why*). b. Form and use the progressive (e.g., *I was walking*; *I am walking*; *I will be walking*) verb aspects. c. Use modal auxiliaries (e.g., *can*, *may*, *must*) to convey various conditions. d. Order adjectives within sentences according to conventional patterns (e.g., *a small red bag* rather than *a red small bag*). e. Form and use prepositional phrases. f. Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.* g. Correctly use frequently confused words (e.g., *to*, *too*, *two*; *there*, *their*).*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of conjunctions, prepositions, and interjections in general and their function in particular sentences. b. Form and use the perfect (e.g., *I had walked*; *I have walked*; *I will have walked*) verb aspects. c. Use verb tense and aspect to convey various times, sequences, states, and conditions. d. Recognize and correct inappropriate shifts in verb tense and aspect.* e. Use correlative conjunctions.
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Capitalize important words in titles. b. Use commas in addresses. c. Use commas and quotation marks in dialogue. d. Form and use possessives. e. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., *sitting*, *smiled*, *cries*, *happiness*). f. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words. g. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use correct capitalization. b. Use commas and quotation marks to mark direct speech and quotations from a text. c. Use a comma before a coordinating conjunction in a compound sentence. d. Spell grade-appropriate words correctly, consulting references as needed.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. 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 a comma to set off the words *yes* and *no* (e.g., *Yes, thank you*), to set off a tag question from the rest of the sentence (e.g., *It's true, isn't it?*), and to indicate direct address (e.g., *Is that you, Steve?*). d. Use underlining, quotation marks, or italics to indicate titles of works. e. Spell grade-appropriate words correctly, consulting references as needed.
Effective Language Use		
3. Use language to achieve particular effects when writing or speaking. a. Choose words and phrases for effect.*	**3.** Use language to enhance meaning and achieve particular effects when writing or speaking. a. Choose words and phrases to convey ideas precisely.* b. Use punctuation for effect.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Expand, combine, and reduce sentences for meaning, reader/listener interest, and style.

Grade 3 students:	Grade 4 students:	Grade 5 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning word and phrases based on *grade 3 reading and content*, choosing flexibly from a range of strategies. a. Use sentence-level context as a clue to the meaning of a word or phrase. b. 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*). c. Use a known root word as a clue to the meaning of an unknown word with the same root (e.g., *company*, *companion*). d. Use glossaries or beginning dictionaries, both print and digital, to determine or clarify the precise meaning of key words and phrases.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 4 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *telegraph*, *photograph*, *autograph*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 5 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., cause/effect relationships and comparisons in text) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., *photograph*, *photosynthesis*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation and determine or clarify the precise meaning of key words and phrases.
5. Demonstrate understanding of word relationships and nuances in word meanings. a. Distinguish the literal and nonliteral meanings of words and phrases in context (e.g., *take steps*). b. Identify real-life connections between words and their use (e.g., describe people who are *friendly* or *helpful*). c. Distinguish shades of meaning among related words that describe states of mind or degrees of certainty (e.g., *knew*, *believed*, *suspected*, *heard*, *wondered*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Explain the meaning of simple similes and metaphors (e.g., *as pretty as a picture*) in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Demonstrate understanding of words by relating them to their opposites (antonyms) and to words with similar but not identical meanings (synonyms).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figurative language, including similes and metaphors, in context. b. Recognize and explain the meaning of common idioms, adages, and proverbs. c. Use the relationship between particular words (e.g., synonyms, antonyms, homographs) to better understand each of the words.
6. Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific vocabulary, including words and phrases that signal spatial and temporal relationships (e.g., *After dinner that night we went looking for them*).	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal precise actions, emotions, or states of being (e.g., *quizzed*, *whined*, *stammered*) and words and phrases basic to a particular topic (e.g., *wildlife*, *conservation*, and *endangered* when discussing animal preservation).	**6**. Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary, including words and phrases that signal contrast, addition, and other logical relationships (e.g., *however*, *although*, *nevertheless*, *similarly*, *moreover*, *in addition*).

Language Progressive Skills, by Grade

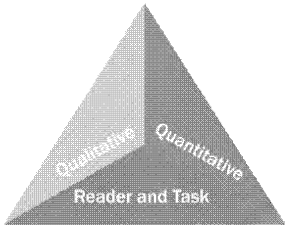
The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.



Skill	3	4	5	6	7	8	9–10	11–12
Ensure subject-verb and pronoun-antecedent agreement.								
Choose words and phrases for effect.								
Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.								
Correctly use frequently confused words (e.g., *to/too/two*; *there/their*).								
Choose words and phrases to convey ideas precisely.								
Use punctuation for effect.								
Recognize and correct inappropriate shifts in verb tense and aspect.								
Use punctuation to separate items in a series.								
Recognize and correct inappropriate shifts in pronoun number and person.								
Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).								
Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.								
Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.								
Vary sentence patterns for meaning, reader/listener interest, and style.								
Maintain consistency in style and tone.								
Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.								
Choose language that expresses ideas precisely and concisely, eliminating wordiness and redundancy.								
Recognize and correct inappropriate shifts in verb voice and mood.								
Use parallel structure.								

Standard 10: Range, Quality, and Complexity of Student Reading K–5

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 assigned and the questions 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	**Dramas**	**Poetry**	**Literary Nonfiction and Historical, Scientific, 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; technical texts, including directions, forms, and information displayed in graphs, charts, or maps; and digital sources on a range of topics

Texts Illustrating the Complexity, Quality, and Range of Student Reading K–5

* Read-aloud
** Read-along

	Literature: Stories, Drama, Poetry	Informational Texts: Literary Nonfiction and Historical, Scientific, and Technical Texts
K[1]	▪ *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 and Robin Page (2003)* ▪ *Amazing Whales!* by Sarah L. Thomson (2005)*
1[1]	▪ "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)*
2–3	▪ "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)
4–5	• *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, quality, and range.) 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 those topics or themes 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 Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

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 how and why individuals, events, and ideas 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 analyze 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, chapter, scene, or stanza) 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. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources. *
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
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 of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*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.

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 seminal 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 [RL]

The following standards 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. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a theme or central idea of a text and analyze its development over the course of the text; summarize the text.	**2.** Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; summarize the text.	**2.** Determine a theme or central idea of a text and analyze its development over the course of the text, including how it is conveyed through particular details; provide an accurate summary of the text distinct from personal opinions or judgments.
3. Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	**3.** Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).	**3.** Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figures of speech and the connotations (associations) of particular words and phrases; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.	**4.** Determine the meaning of words and phrases as they are used in a text, including analogies or allusions to other texts; analyze the impact of specific word choices on meaning and tone.
5. Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.	**5.** Analyze how a drama's or poem's form or structure (e.g. sonnet, soliloquy) contributes to its meaning.	**5.** Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
6. Explain how an author establishes and develops the point of view of the narrator or speaker in a text.	**6.** Analyze how an author establishes and contrasts the points of view of different characters or narrators in a text.	**6.** Explain how differences in the point of view of characters and the audience or reader (e.g., created through the use of dramatic irony) creates such effects as suspense or humor.
Integration of Knowledge and Ideas		
7. Compare and contrast the experience of reading a story, poem, or dram to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.	**7.** Compare and contrast a story, poem, or drama to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, camera focus and angles).	**7.** Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.
8. (Not applicable to literature)	**8.** (Not applicable to literature)	**8.** (Not applicable to literature)

Grade 6 students:	Grade 7 students:	Grade 8 students:
Integration of Knowledge and Ideas		
9. Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	**9.** Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	**9.** Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as necessary at the high end of the range.	**10.** By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band independently and proficiently.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support 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 matters uncertain.
2. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	**2.** Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.
3. Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.	**3.** Evaluate various explanations for characters' actions or for events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in the text and analyze the cumulative impact of several word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).	**4.** Determine the meaning of words and phrases as they are used in the text and analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)
5. Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.	**5.** Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice at what point to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
6. Analyze a case in which grasping point of view requires distinguishing what is directly stated from what is implied (e.g., through the use of satire, sarcasm, irony, or understatement).	**6.** Analyze differences and similarities in points of view or cultural experience as reflected in various works from different countries, drawing on a wide reading of world literature.
Integration of Knowledge and Ideas	
7. Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's *Landscape with the Fall of Icarus*).	**7.** Analyze multiple interpretations of a story or drama (e.g., recorded or live production of a play or novel), evaluating how each version interprets the source text. (Include at least one play by Shakespeare as well as one play by an American dramatist.)
8. (Not applicable to literature)	**8.** (Not applicable to literature)
9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, drawing on how two or more texts from the same period treat similar themes or topics.	**9.** Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare draws on Ovid or the Bible or how a later author draws on a play by Shakespeare) in order to evaluate how the texts treat similar themes or topics.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band independently and proficiently.

Reading Standards for Informational Text 6–12 [RI]

Grade 6 students:	Grade 7 students:	Grade 8 students:
Key Ideas and Details		
1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	**1.** Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
2. Determine a central idea of a text and analyze its development over the course of the text; summarize the text.	**2.** Determine two or more central ideas in a text and analyze their development over the course of the text and their relationship to one another; summarize the text.	**2.** Determine a central idea of a text and analyze its development over the course of the text, including how it is conveyed through particular details; provide an accurate summary of the text distinct from personal opinions or judgments.
3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).	**3.** Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).	**3.** Analyze how a text makes connections among and distinctions between key individuals, ideas, or events (e.g., through comparisons, analogies, or categories).
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.	**4.** Determine the meaning of words and phrases as they are used in a text, including analogies or allusions to other texts; analyze the impact of specific word choices on meaning and tone.
5. Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.	**5.** Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and 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. Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.	**6.** Determine 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.** Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
Integration of Knowledge and Ideas		
7. Integrate information presented in different formats (e.g., print or digital text, video, multimedia) to develop a coherent understanding of a topic or issue.	**7.** Compare and contrast the experience of reading a text to experiencing an audio, video, or multimedia version of it, analyzing the text's portrayal in each medium (e.g., how the delivery of a speech affects the impact of the words).	**7.** Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.
8. Delineate and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.	**8.** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is sufficient to support the claims.	**8.** Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient and identifying when irrelevant evidence is introduced.
9. Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).	**9.** Analyze 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.	**9.** Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Range of Reading and Level of Text Complexity		
10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	**10.** By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band independently and proficiently.

Grades 9–10 students:	Grades 11–12 students:
Key Ideas and Details	
1. Cite strong and thorough textual evidence to support 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 matters uncertain.
2. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.	**2.** Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
3. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.	**3.** Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.
Craft and Structure	
4. Determine the meaning of words and phrases as they are used in a text and analyze the cumulative impact of several word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).	**4.** Determine the meaning of words and phrases as they are used in a text and analyze 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).
5. Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).	**5.** Analyze and 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.
6. Analyze documents of historical and literary significance, including seminal U.S. documents (e.g., the Declaration of Independence, the Preamble to the Constitution, the Bill of Rights), for their premises and purposes.	**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. Evaluate the accounts of a subject in different mediums (e.g., a person's life story told in print or digital text, film, or multimedia), analyzing each version for which details are emphasized and how the account unfolds.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., print or digital text, video, multimedia) in order to address a question or solve a problem, resolving conflicting information when possible.
8. Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning and identifying false statements and fallacious reasoning.	**8.** Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning, identifying and evaluating stated and unstated premises and assumptions.
9. Analyze a case in which authors disagree with or otherwise respond to one another's ideas or accounts of events, evaluating the strength of each author's evidence, reasoning, and interpretation.	**9.** Synthesize information, explanations, and arguments from a range of sources to provide a coherent account of events or ideas, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity	
10. By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction in the grades 11–CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

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.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.
[2]See standards 1–3 in Language, pages 53–57, for specific editing expectations.

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 know how to combine elements of different kinds of writing—for example, to use narrative strategies within argument and explanation within narrative—to produce complex and nuanced writing. 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.

Writing Standards 6–12 [W]

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes		
1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented.	**1.** Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	**2.** Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Text Types and Purposes (continued)		
3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events. e. Provide a conclusion that follows from the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, 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, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	**5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	**5.** With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
6. Use technology, including the Internet, to produce and publish a minimum of three pages of writing as well as to interact and collaborate with others.	**6.** Use technology, including the Internet, to produce and publish a minimum of four pages of writing as well as to interact and collaborate with others.	**6.** Use technology, including the Internet, to produce and publish a minimum of five pages of writing as well as to interact and collaborate with others.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	**7.** Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.	**7.** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused 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 providing basic bibliographic information for 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 while avoiding plagiarism and following a standard format for citation.	**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 while avoiding plagiarism and following a standard format for citation.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 6 Reading standards* to literature (e.g., "Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics."). b. Apply *grade 6 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 7 Reading standards* to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history]). b. Apply *grade 7 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is sufficient to support the claims").	**9.** Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grade 8 Reading standards* to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new"). b. Apply *grade 8 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient and identifying when irrelevant evidence is introduced").
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 discipline-specific 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 discipline-specific 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 discipline-specific tasks, purposes, and audiences.

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes	
1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	**2.** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)	
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	**3.** Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution). d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.
Production and Distribution of Writing	
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. Develop and 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.	**5.** Develop and 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. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	**6.** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge	
7. Conduct short as well as more sustained research projects to answer a question (including a self-generate question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

Grades 9–10 students:	Grades 11–12 students:
Research to Build and Present Knowledge (continued)	
9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply *grades 9–10 Reading standards* to literature (e.g., "Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, drawing on how two or more texts from the same period treat similar themes or topics"). b. Apply *grades 9–10 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning and identifying false statements and fallacious reasoning").	**9.** Draw evidence form literary or informational texts to support analysis, reflection, and research. a. Apply *grades 11–12 Reading standards* to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare draws on Ovid or the Bible or how a later author draws on a play by Shakespeare) in order to evaluate how the texts treat similar themes or topics"). b. Apply *grades 11–12 Reading standards* to literary nonfiction (e.g., "Delineate and evaluate the argument and claims in a text, assessing the relevance and sufficiency of the evidence and the validity of the reasoning, identifying and evaluating stated and unstated premises and assumptions").
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.

College and Career Readiness Anchor Standards for Speaking and Listening

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate content from multiple graphical, visual, oral, or multimodal sources.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
6. Adapt speech to a variety of contexts and communicative tasks, demonstrating 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—as part of a whole class, in small groups, 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 [SL]

The following standards for grades 6–12 offer a focus for instruction in each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Comprehension and Collaboration		
1. Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 6 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. With guidance and support from adults, work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion. d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 7 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed. d. Acknowledge new information expressed by others and, when warranted, modify their own views and understanding.	**1.** Engage effectively in a range of collaborative discussions (one-on-one and in groups) on *grade 8 topics, texts, and issues*, building on others' ideas and expressing their own clearly. a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion. b. Work with peers to set rules for collegial discussions, clear goals and deadlines, and individual roles as needed. c. Pose questions that connect the ideas of several speakers and elicit elaboration, and respond to others' questions and comments with relevant evidence, observations, and ideas. d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views and understanding in light of the evidence presented.
2. Interpret information presented in graphical, oral, visual or multimodal formats and explain how it contributes to a topic, text, or issue under study.	**2.** Analyze the main ideas and supporting details presented in graphical, oral, visual, or multimodal formats and explain how the ideas clarify a topic, text, or issue under study.	**2.** Determine the purpose of information in graphical, oral, visual, or multimodal formats and evaluate the motives (e.g., social, commercial, political) behind its presentation.
3. Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	**3.** Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance of the evidence.	**3.** Delineate a speaker's argument and specific claims, evaluating the validity of the reasoning and sufficiency of the evidence.
Presentation of Knowledge and Ideas		
4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.	**4.** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	**5.** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.	**5.** Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)

Grades 9–10 students:	Grades 11–12 students:
Comprehension and Collaboration	
1. Initiate and participate effectively in a range of collaborative discussions (one-on-one and in groups) on *grades 9–10 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.	**1.** Initiate and participate effectively in a range of collaborative discussions (one-on-one and in groups) on *grades 11–12 topics, texts, and issues*, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
2. Synthesize information from multiple graphical, visual, or multimodal sources with other information presented orally, noting any discrepancies among the data.	**2.** Integrate information from multiple graphical, oral, visual, or multimodal sources in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and resolving conflicting information when possible.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.	**3.** Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
Presentation of Knowledge and Ideas	
4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.	**4.** Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks.
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	**5.** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)	**6.** Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See standards 1–3 in Language, pages 53–57, for specific expectations.)

College and Career Readiness Anchor Standards for Language

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Conventions

1. Demonstrate command of the conventions of standard English grammar and usage.
2. Demonstrate command of the conventions of capitalization, punctuation, and spelling.

Effective Language Use

3. Use language to enhance meaning, convey style, and achieve particular effects when writing and speaking.

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
5. Demonstrate understanding of word relationships and nuances in word meanings.
6. Acquire and use accurately a range of general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

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 grammar, usage, and mechanics. At the same time, they must come to appreciate that language is as at least as much a matter of craft as of rules and be able to use words, syntax, and punctuation to achieve particular rhetorical effects. They must also have extensive vocabularies, built through reading and study, enabling them to comprehend complex texts and engage in purposeful writing about and conversations around content. They need to become skilled in determining or clarifying the meaning of words and phrases 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, effective language use, and vocabulary are unimportant to reading, writing, speaking, and listening; indeed, they are inseparable from such contexts.

Language Standards 6–12 [L]

The following standards for grades 6–12 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*). See the table on page 57 for a complete listing and Appendix A for an example of how these skills develop in sophistication.

Grade 6 students:	Grade 7 students:	Grade 8 students:
Conventions		
1. Observe conventions of grammar and usage when writing or speaking. a. Ensure that pronouns are in the proper case (subjective, objective, possessive). b. Use intensive pronouns (e.g., *myself, ourselves*). c. Recognize and correct inappropriate shifts in pronoun number and person.* d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).* e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of phrases and clauses in general and their function in specific sentences. b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*	**1.** Observe conventions of grammar and usage when writing or speaking. a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences. b. Form and use verbs in the active and passive voice. c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood. d. Recognize and correct inappropriate shifts in verb voice and mood.*
2. Observe conventions of capitalization, punctuation, and spelling when writing. a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.* b. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. 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. Spell correctly.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break. b. Use an ellipsis to indicate an omission. c. Spell correctly.
Effective Language Use		
3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Vary sentence patterns for meaning, reader/listener interest, and style.* b. Maintain consistency in style and tone.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

Grade 6 students:	Grade 7 students:	Grade 8 students:
Vocabulary Acquisition and Use		
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 6 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *audience*, *auditory*, *audible*). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 7 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *belligerent*, *bellicose*, *rebel*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., *precede*, *recede*, *secede*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., personification) in context. b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *stingy*, *scrimping*, *economical*, *unwasteful*, *thrifty*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context. b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *refined*, *respectful*, *polite*, *diplomatic*, *condescending*).	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g. verbal irony, puns) in context. b. Use the relationship between particular words to better understand each of the words. c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., *bullheaded*, *willful*, *firm*, *persistent*, *resolute*).
6. Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.	**6.** Acquire and use accurately grade-appropriate general academic and domain-specific vocabulary.

Grades 9–10 students:	Grades 11–12 students:
Conventions	
1. Observe conventions of grammar and usage when writing or speaking. a. Use parallel structure.* 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.	**1.** Observe conventions of grammar and usage when writing or speaking. a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested. b. Resolve issues of complex or contested usage, consulting references (e.g., *Merriam-Webster's Dictionary of English Usage*, *Garner's Modern American English*) as needed.
2. Observe conventions of capitalization, punctuation, and spelling when writing. 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.	**2.** Observe conventions of capitalization, punctuation, and spelling when writing. a. Observe hyphenation conventions. b. Spell correctly.
Effective Language Use	
3. Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., *MLA Handbook*, Turabian's *Manual for Writers*) appropriate for the discipline and writing type.	**3.** Use language to enhance meaning, convey style, and achieve particular effects when writing or speaking. a. Vary syntax for effect, consulting references (e.g., Tufte's *Artful Sentences*) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.
Vocabulary Acquisition and Use	
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 9–10 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *analyze*, *analysis*, *analytical*; *advocate*, *advocacy*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	**4.** Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grades 11–12 reading and content*, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., *conceive*, *conception*, *conceivable*). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., satire, sarcasm) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.	**5.** Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text. b. Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.	**6.** Acquire and use accurately general academic and domain-specific vocabulary sufficient for reading, writing, speaking, and listening at the college and career readiness level.

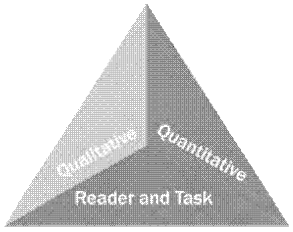
Language Progressive Skills, by Grade

The following skills, marked with an asterisk (*) in Language standards 1–3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

Skill	3	4	5	6	7	8	9–10	11–12
Ensure subject-verb and pronoun-antecedent agreement.	■	■	■	■	■	■	■	■
Choose words and phrases for effect.	■	■	■	■	■	■	■	■
Produce complete sentences, recognizing and correcting rhetorically poor fragments and run-ons.		■	■	■	■	■	■	■
Correctly use frequently confused words (e.g., *to/too/two*; *there/their*).		■	■	■	■	■	■	■
Choose words and phrases to convey ideas precisely.		■	■	■				
Use punctuation for effect.		■	■	■	■	■	■	■
Recognize and correct inappropriate shifts in verb tense and aspect.			■	■	■	■	■	■
Use punctuation to separate items in a series.			■	■	■	■		
Recognize and correct inappropriate shifts in pronoun number and person.				■	■	■	■	■
Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).				■	■	■	■	■
Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.				■	■	■	■	■
Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.				■	■	■	■	■
Vary sentence patterns for meaning, reader/listener interest, and style.				■	■	■	■	
Maintain consistency in style and tone.				■	■	■	■	■
Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.					■	■	■	■
Choose language that expresses ideas precisely and concisely, eliminating wordiness and redundancy.						■	■	■
Recognize and correct inappropriate shifts in verb voice and mood.						■	■	■
Use parallel structure.							■	■

Standard 10: Range, Quality, and Complexity of Student Reading 6–12

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 assigned and the questions posed

Note: More detailed information on text complexity and how it is measured is contained in Appendix A.

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, argument, and functional text 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 sources) written for a broad audience

Texts Illustrating the Complexity, Quality, and Range of Student Reading 6–12

	Literature: Stories, Dramas, Poetry	Informational Texts: Literary Nonfiction
6–8	▪ *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)
9–10	▪ *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)
11–CCR	▪ "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, quality, and range.) 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 those topics or themes in depth.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects

6–12

College and Career Readiness Anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

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 how and why individuals, events, or ideas 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 analyze 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, chapter, scene, or stanza) 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. Integrate and evaluate content presented graphically, visually, orally, and multimodally as well as in words within and across print and digital sources.*
8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
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 Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present Knowledge" in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. 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 texts 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 Literacy in History/Social Studies 6–12 [RH]

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards.

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 central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	**2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	**2.** Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among 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; determine whether earlier events caused later ones or simply preceded them.	**3.** Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	**4.** Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.	**4.** Determine the meaning of words and phrases as they are used in a text, including analyzing 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).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	**5.** Analyze how a text uses structure 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 history/social science 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, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., pictures, videos, maps) with other information within or across print or digital texts.	**7.** Integrate quantitative or technical information (e.g., charts, research data) with other information within or across print or digital texts.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., print or digital text, video, multimedia) in order to address a question, resolving conflicting information when possible.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	**8.** Assess the extent to which the evidence in 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 of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	**10.** By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	**10.** By the end of grade 12, read and comprehend history/social studies texts in the grades 11–12 text complexity band independently and proficiently.

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 science and technical texts.	**1.** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	**1.** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	**2.** Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.	**2.** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them 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 attending to special cases or exceptions defined in the text.	**3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
Craft and Structure		
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.	**4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 9–10 texts and topics*.	**4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*.
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	**5.** Analyze the structure of the relationships among concepts in a text, including relationships among key terms pertaining to important ideas and processes (e.g., *force*, *friction*, *reaction force*, *energy*).	**5.** Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	**6.** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.	**6.** Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved or uncertain.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical 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.** Demonstrate understanding of quantitative or technical information by translating information provided by the words in a text into graphical form (e.g., a table or chart) or translating information expressed graphically or mathematically (e.g., in an equation) into words.	**7.** Integrate and evaluate multiple sources of information presented in different formats (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem, resolving conflicting information when possible.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	**8.** Assess the extent to which the evidence in a text supports a claim or a recommendation for solving a scientific or technical problem.	**8.** Evaluate the hypotheses, data, and conclusions in a science or technical text, verifying data and corroborating or challenging conclusions when possible by using 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 and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	**9.** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range and Level of Text Complexity		
10. By the end of grade 8, read and comprehend	**10.** By the end of grade 10, read and comprehend	**10.** By the end of grade 12, read and comprehend

science/technical texts in the grades 6–8 text complexity band independently and proficiently.	science/technical texts in the grades 9–10 text complexity band independently and proficiently.	science/technical texts in the grades 11–12 text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade. They relate to their College and Career Readiness (CCR) counterparts by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes[1]

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.[2]
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

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.

[1]These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

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 and 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 for Literacy in History/Social Studies, Science, and Technical Subjects 6–12 [WHST]

The standards below begin at grade 6; standards for K–5 writing in history/social studies, science, and technical subjects are integrated into the K–5 Writing standards.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
2. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. f. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. g. Establish and maintain a formal style. c. Provide a concluding statement or section that follows from and supports the argument presented.	**1.** Write arguments focused on *discipline-specific content*. f. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. g. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. h. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. i. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. j. Provide a concluding statement or section that follows from or supports the argument presented.	**1.** Write arguments focused on *discipline-specific content*. f. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. g. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. h. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. i. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. j. Provide a concluding statement or section that follows from or supports the argument presented.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
4. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. g. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. h. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. i. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. j. Use precise language and domain-specific vocabulary to inform about or explain the topic. k. Establish and maintain a formal style and objective tone. l. Provide a concluding statement or section that follows from and supports the information or explanation presented.	**3.** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. g. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. h. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. i. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. j. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. k. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. l. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	**3.** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary 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 discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the 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 incorporate narrative accounts into their analyses of 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.	**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 incorporate narrative accounts into their analyses of 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.	**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 incorporate narrative accounts into their analyses of 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 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and Distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	**4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	**5.** Develop and 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.	**5.** Develop and 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. Use technology, including the Internet, to produce and publish a minimum of five pages of writing as well as to interact and collaborate with others.	**6.** Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	**6.** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generate question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	**7.** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
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 while avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	**8.** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
10. Draw evidence from informational texts to support analysis reflection, and research.	**9.** Draw evidence from informational texts to support analysis, reflection, and research.	**9.** Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
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 discipline-specific 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 discipline-specific 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 discipline-specific tasks, purposes, and audiences.

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

College refers to two- and four-year postsecondary schools

Entry-level, credit-bearing, academic college courses (e.g. English, mathematics, sciences, social sciences, humanities)

Rigorous: The standards will include high-level cognitive demands by asking students to demonstrate deep conceptual understanding through the application of content knowledge and skills to new situations.

High-level cognitive demand includes reasoning, justification, synthesis, analysis, and problem-solving.

Clear and Specific: The standards should provide sufficient guidance and clarity so that they are teachable, learnable, and measurable. The standards will also be clear and understandable to the general public.

Quality standards are precise and provide sufficient detail to convey the level of performance expected without being overly prescriptive. (the "what" not the "how"). The standards should maintain a relatively consistent level of grain size.

Teachable and learnable: Provide sufficient guidance for the design of curricula and instructional materials. The standards must be reasonable in scope, instructionally manageable, and promote depth of understanding.

The standards will not prescribe *how* they are taught and learned but will allow teachers flexibility to teach and students to learn in various instructionally relevant contexts.

Measureable: Student attainment of the standards should be observable and verifiable and the standards can be used to develop broader assessment frameworks

Coherent: The standards should convey a unified vision of the big ideas and supporting concepts within a discipline and reflect a progression of learning that is meaningful and appropriate.

Grade-by-grade standards: The standards will have limited repetition across the grades or grade spans to help educators align instruction to the standards.

Internationally benchmarked: The standards will be informed by the content, rigor, and organization of standards of high-performing countries so that all students are prepared for succeeding in our global economy and society.

Assurance Indicators and Descriptors

The American Recovery and Reinvestment Act of 2009 (ARRA) requires a State receiving funds under the State Fiscal Stabilization Fund (SFSF) program to provide assurances in four key areas of education reform: (a) achieving equity in teacher distribution, (b) improving collection and use of data, (c) standards and assessment, and (d) supporting struggling schools. For each area of reform, the ARRA prescribes specific actions that the State must assure it will implement. The U.S. Department of Education has established specific data and information collection and public reporting requirements that a State receiving funds under the SFSF program must meet with respect to the statutory assurances. This report provides information related to the SFSF assurances, is posted on the web site of the Montana Office of Public Instruction, and is updated annually.

Education Reform Area: Standards and Assessments

Table C provides information on the approval status of Montana's Comprehensive Assessment System (MontCAS) for the criterion-referenced tests (CRT and CRT-Alt). It also provides information about the number of students with disabilities and the number of limited English proficient students who are included in the reading/language arts and mathematics assessments. Montana's Report Card is posted at and includes information on student performance on the National Assessment of Education Progress. The table also provides information on the indicators related to high school graduation rates and college continuation.

Table C. Indicators related to Standards and Assessment

Indicator	Description	MT Response
(c)(1)	The approval status, as determined by the U.S. Department of Education, of the State's assessment system with respect to reading/language arts, mathematics, and science assessments	USED Approved – Reading/Language Arts Mathematics USED Pending – Science Posted on OPI web site at http://www.opi.mt.gov/PDF/Assessment/MontCAS/MontCAS-Overview.pdf
(c) (2)	Whether the state has developed and implemented valid and reliable alternate assessments for students with disabilities that are approved by the U.S. Department of Education	Approved
(c)(3)	Whether the State's alternate assessment for students with disabilities, if approved by the Department, are based on grade-level, modified or alternate standards	Alternate Achievement Standards

Montana University System

College!Now

Montana's Two-Year College Initiative

Why Now?

Montana's economy needs more skilled workers, and two-year colleges can meet much of the demand. According to the most recent projections, Montana's economy will add approximately 98,000 jobs between 2006 and 2016 and approximately 25,000 of these will require at least a postsecondary certificate or associate degree. Half of the 25 fastest-growing jobs will require at least an associate's degree.

Montana will also need educated workers to fill jobs being left by retiring Baby Boomers. One out of every five Montana workers is over 55 years old, which means that education leaders, business and community leaders, and policymakers need to take action today to prepare the workforce they'll need tomorrow.

Montana must increase the education and training levels of its working adults to meet workforce demands. The percentage of traditional college-age Montanans (18-24 years old) is expected to decrease over the next several years, which means we must bring more adults 25 and older to college--or back to college – to ensure a competitive workforce and a sustainable economy.

Montana's two-year colleges are not being used to their full potential. Just under 25% of Montana college students attend two-year institutions, compared with nearly 45% in Western states.

Montana cannot afford to keep doing "business as usual" in higher education. Making college opportunities affordable – for students and taxpayers -- requires more careful stewardship and better coordination system-wide.

What Is It?

Montana's colleges and universities are teaming up with business and community leaders, K-12 educators, and elected officials on a policy initiative to make two-year colleges more affordable and accessible statewide. Montanans have spoken--they are looking for education and training that will help them get and create high-wage jobs that will strengthen their communities and their families. Using a combination of new policies, new technologies, and old-fashioned cooperation, these groups are working to bring certificates and degrees to every corner of Montana--within available funding.

What Are Two-Year College Initiative Strategies?

Offer basic two-year college services statewide for Montana's students and employers.
Montana's 15 two-year colleges will become "hubs" for their local regions, providing services that will help students get started or get up to speed and help businesses with "just in time" assistance and programs for their employees. Today, some colleges offer Adult Basic Education while others do not. Working together and with K-12 schools, Montana's two-year colleges can bring these services to every corner of the state with current resources. Developmental education programs are being offered at four-year universities where costs are higher. Too many courses and programs do not fit the needs or realities of working adults.

Expand dual high school/college enrollment and improve two-year/four-year transfer.
Montana has made progress in helping students get a jump start on college through dual enrollment programs in the high schools, but more students and parents need to be aware of and have access to these opportunities.

Some two-year colleges do not offer the transfer degree, with the result that students in those communities do not have access to the more affordable tuition rates for the first two years of a baccalaureate degree. This initiative will bring the transfer degree (Associate of Arts or Associate of Science) to all two-year colleges.

Use technology to expand access for students and create savings for two-year colleges.
Montana's two-year colleges are banding together to create a virtual community college that will combine and re-package key courses and programs and offer them online. The college will initially focus on dual enrollment courses and then move into workforce programs.

The two-year colleges are also moving toward common information technology systems that will make information sharing easier and more efficient and even pave the way for sharing some administrative services.

Fund colleges based on students' progress and success, not just enrollment.
Today's state funding policy for two-year colleges is all about getting students to college, with little or no emphasis on getting students through college. Graduating more students with the resources available demands a focus on both.