



A Look at

Grades Seven and Eight in California Public Schools

Transitioning to the
**California Common Core State Standards
in English Language Arts and Mathematics**

Electronic Edition



Curriculum Frameworks and Instructional Resources Division
Instruction and Learning Support Branch
California Department of Education

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Notice

The guidance in *A Look at Grades Seven and Eight in California Public Schools: Transitioning to the California Common Core State Standards in English Language Arts and Mathematics* is not binding on local educational agencies or other entities. Except for the statutes, regulations, and court decisions that are referenced herein, the document is exemplary, and compliance with it is not mandatory. (See *Education Code* Section 33308.5.)

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A Message from the State Superintendent of Public Instruction



In 1997, California adopted its first set of content standards in English language arts and mathematics. These educational standards provided clear goals for student learning and helped teachers determine the knowledge and skills students needed to be successful in classrooms and careers. In 2010, the California State Board of Education (SBE) adopted standards in both mathematics and English language arts: the California Common Core State Standards (CA CCSS), which included California additions. In January 2013, the SBE modified the mathematics standards and in March 2013, the SBE modified the standards for English language arts. The CA CCSS maintain the rigor of the 1997 standards and help ensure that students consistently receive a high-quality education, from school to school and from state to state.

A Look at Grades Seven and Eight in California Public Schools: Transitioning to the California Common Core State Standards in English Language Arts and Mathematics is a valuable resource for teachers, administrators, and parents during our first steps to incorporate the CA CCSS in grade-level curriculum. This online document continues the guidance on implementing the CA CCSS provided for earlier grades in the publication *A Look at Kindergarten Through Grade Six in California Public Schools: Transitioning to the California Common Core State Standards in English Language Arts and Mathematics*.

As the CA CCSS are put into practice over the next few years, new curriculum frameworks, professional development opportunities, and standards-based instructional materials and assessments will continue to be developed. This document provides an initial step in implementation as we begin the integration of the new standards.

A Look at Grades Seven and Eight in California Public Schools: Transitioning to the California Common Core State Standards in English Language Arts and Mathematics serves as another tool for improving the academic achievement of California's students. It represents the California Department of Education's ongoing commitment to provide resources and guidance to parents and educators dedicated to making a difference in the future of our students

Tom Torlakson
State Superintendent of Public Instruction

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Special thanks also go to the CDE staff members who created *A Look at Kindergarten Through Grade Six in California Public Schools: Transitioning to the Common Core State Standards in English Language Arts and Mathematics*. They created the model for this new edition that focuses on grades seven and eight.

Introduction



This grade-level guide provides teachers, parents, administrators, and others with an overview of what seventh- and eighth-grade students are expected to learn in English language arts and mathematics in California's public schools. It was also developed to assist educators with the transition from the content standards adopted in 1997 for English language arts and mathematics to the California Common Core State Standards (CA CCSS), which included California additions, adopted in August 2010 for English language arts and mathematics and modified in 2013.

The California *Education Code* (EC) mandates the adopted course of study for grades one through twelve. EC Section 51220, in describing the courses of study for students in grades seven through twelve, states that the study of English include knowledge of and appreciation for literature, language, and composition and the skills of reading, listening, and speaking. It also requires mathematics instruction designed to develop mathematical understandings, operational skills, and insight into problem-solving procedures.

In grades seven through twelve, every school in California is required to offer, in addition to English and mathematics, courses in social sciences, foreign language or languages, physical education, science, visual and performing arts, applied arts, career technical education, and other studies that may be prescribed. However, physical education is the only subject in which the amount of instructional time is established: a total period of time not less than 400 minutes each 10 school days. The schedule of the instructional day and week is determined by the teacher and the local school and district administration.

The 1997 California Standards and the California Common Core State Standards

California's standards have been hailed for their rigor, setting high expectations for all students. In 1997, California adopted content standards in English language arts and mathematics. Since that time, standards have been adopted in history–social science, science, visual and performing arts, health, world languages, physical education, school library, and career technical education. California also has standards in English-language development (ELD), which define the stages of becoming proficient in English. All content standards are posted on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/> (accessed April, 10, 2014).

As part of a multi-state initiative to establish clear and consistent education standards, the California State Board of Education (SBE) voted unanimously on August 2, 2010, to adopt new standards for both mathematics and English language arts: the CA CCSS. These are based on research, internationally benchmarked, and designed to prepare every student for success in college and the workplace. In 2013, the SBE modified the CA CCSS for both mathematics and English language arts.

Implementation of the new standards has begun. It will take several years to fully implement the CA CCSS...

Implementation of the new standards has begun, but it will take several years to fully implement the CA CCSS, as the process will include adopting aligned instructional materials, creating professional learning opportunities, and administering new statewide assessments. For more information about the implementation of the CA CCSS and for links to download the new standards, please visit the CDE Common Core State Standards Resources Web page at <http://www.cde.ca.gov/ci/cc/> (accessed March

11, 2014). During this transition period, educators, parents, and students will have an opportunity to become familiar with the many similarities between California’s 1997 content standards and the CA CCSS and to learn about the enhancements for each grade level.

California’s content standards provide detailed expectations of what students should know and be able to do at each grade level. Although the standards are intended to provide objectives for students and teachers, decisions about classroom instruction are generally made at the local level by the teacher, local administrator, and/or the locally elected school board.

Curriculum and instruction are influenced by more than content knowledge, standards, and specific subject objectives. The following sections include some of the other areas and issues that influence and connect a grade-level course of study, including universal access, statewide testing and accountability, federal accountability, and funding. In addition, brief overviews of classroom assessment, instructional materials, and teacher standards are provided.

Universal Access

The ultimate goal of the education system in California is to ensure that all students have access to high-quality curriculum and instruction so that they may meet or exceed the knowledge and skills defined in the state’s academic content standards. There have been dramatic shifts in the student population in recent years. Ethnically and racially diverse students made up 53 percent of the student population in 1990 (California Department of Education 1991). By the 2008–09 school year, this group represented 72 percent, making California’s student population the most diverse in the nation (California Department of Education 2010a). Approximately 25 percent of California’s students are English learners (ELs) and over 50 percent of students qualify for free and reduced-price lunch programs (California Department of Education 2010a).

Teachers must create learning environments in which differences are respected and supported by teacher and students alike.

The diversity of California’s students presents unique opportunities and significant challenges for instruction. Students come to school with a wide variety of skills, abilities, and interests as well as different levels of proficiency in English and other languages. Additionally, as students begin to develop an understanding of their role in their own families and communities, the differences in cultural norms, traditions, and values between themselves and others are likely to become more evident. The wider the variation of the student population in each classroom, the more complex the teacher’s role becomes in organizing high-quality curriculum and instruction. Teachers must create learning environments in which differences are respected and supported by teacher and student alike. Teachers who are aware of their own cultural values and are willing to learn about and appreciate other people’s cultural values can establish safe learning environments for students.

English learners face the challenge of learning English as an additional language as they learn grade-level content through English. This challenge creates a dual responsibility for all teachers who teach ELs. Teachers need to ensure that ELs have full access to grade-level curriculum and develop proficiency in English in order to achieve success with academic tasks in grade-level disciplines. Effective English Language Development (ELD) instruction may require additional support in planning *Integrated* and *Designated ELD* instruction.

Instruction in content areas should promote collaborative discussions using academic English, meaningful interaction with complex text, and engaging tasks that develop critical-thinking and analytical skills required in all content areas. The CDE has published an excellent resource, *Improving Education for English Learners: Research-Based Approaches* (California Department of Education 2010b), that provides the most comprehensive, up-to-date strategies to serve ELs. The book includes guidelines for ELD instruction, as well as recommended instructional practices. The publication is available through the CDE Press Web page at <http://www.cde.ca.gov/re/pn/rc/> (accessed March 10, 2014).

The academic success of students with special needs depends on the teacher’s skill in providing instruction and support to all students. A student’s 504 Plan or individualized education program (IEP) often includes suggested techniques to ensure that the student has full access to a program designed to provide appropriate learning

opportunities, instructional materials, and strategies that best meet his or her needs. When systematically planned differentiation strategies are used, students with special needs can benefit from appropriately challenging curriculum and instruction. Strategies for differentiating instruction for students include adjusting pacing, complexity, novelty, and depth. Despite modifications made, however, the focus is always to help students learn grade-level content to the best of their ability.

A school-wide Multi-tiered Systems of Support (MTSS) incorporates the systems and processes of Response to Instruction and Intervention (RtI²) and Positive Behavioral Interventions and Supports (PBIS) to assist struggling learners in a system-wide continuum of resources, strategies, structures, and practices to address barriers to student learning. California's RtI² framework integrates resources from general education, categorical programs, and special education through a comprehensive system of core instruction and interventions to benefit every student. For more information about RtI², please visit the CDE Response to Instruction & Intervention Web page at <http://www.cde.ca.gov/ci/cr/ri/> (accessed March 10, 2014). For more information on PBIS, please visit the CDE Positive Behavior Support Web page at <http://www.cde.ca.gov/ci/cr/ri/corecomp6.asp> (accessed March 10, 2014).

Teachers may also implement other strategies to meet the needs of students with reading difficulties, students with disabilities, advanced learners, English learners, students with culturally diverse backgrounds, and students with combinations of special instructional needs. The following strategies can be useful in planning for universal access:

- Utilize frequent progress-monitoring assessments
- Engage in careful planning and organization
- Differentiate to meet students' instructional needs
- Employ flexible grouping strategies
- Enlist help from others
- Use technology or other instructional devices

A Blueprint for Great Schools

To provide a vision of what California's education system could become, State Superintendent Tom Torlakson brought together leaders from across the state—teachers, parents and community, labor, and business leaders—to share their thinking about education in the state. The resulting report, *A Blueprint for Great Schools* (California Department of Education 2011a), identifies a direction for education with a focus on twenty-first century learning, meeting the needs of the whole child, and rebuilding the ranks of California's teachers with resources and respect. A new system of education in California encompasses the following areas: Educator Quality; Curriculum and Assessment; Higher Education and Secondary Alignment; Accountability and School Improvement; Early Childhood Education; Educator Supports; Health, Nutrition, and Physical Fitness; School Finance; and Facilities and Construction Reform. The report, which includes a wide range of recommendations to foster excellence in teaching, provide community support for families, and retool schools to make students competitive in college and the workforce, may be viewed at <http://www.cde.ca.gov/eo/in/bp/> (accessed March 10, 2014).



Statewide Testing and Accountability

As California schools transition to the CA CCSS, the statewide assessment and accountability systems are also changing. To obtain the most current information on the statewide assessment system, visit the CDE Testing Web page at <http://www.cde.ca.gov/ta/tg/> (accessed March 10, 2014). The CDE Testing Web page

includes information about the California Assessment of Student Performance and Progress (CAASPP), the new student assessment system established in January 2014, and the English language proficiency assessment. For current information regarding the state accountability system, visit the CDE Accountability Web page at <http://www.cde.ca.gov/ta/ac/> (accessed April 10, 2014).

Federal Accountability and Funding

Federal law requires all states to implement a statewide accountability system for federal reporting purposes based on challenging state standards in reading/language arts and mathematics. Annual testing of students is required as well as the identification of annual academic performance goals (as measured by student achievement on statewide, standards-aligned assessments). Assessment results are broken down according to students' race, ethnicity, disability, and proficiency in English to ensure that no group is left behind without an education. As California develops new statewide assessment and accountability systems, the way the academic performance is measured and reported for federal accountability purposes will also be modified. For information on federal accountability, refer to the CDE Accountability Web page at <http://www.cde.ca.gov/ta/ac/> (accessed March 10, 2013).

Title I and Title III of the federal Elementary and Secondary Education Act (ESEA) are major sources of federal funding for K–12 education in California. Most local education agencies (LEAs) in California receive funding from those programs. Both programs provide support for improving students' academic achievement, though the students served and the requirements of the programs differ.

Title I

Title I, Part A, federal funds help LEAs meet the educational needs of low-achieving students in California's highest-poverty schools. Funds are used to support effective, research-based educational strategies to close the achievement gap between high- and low-performing students and enable the students to meet the state's challenging academic standards. Additional information is available on the CDE Title I, Part A, Web page at <http://www.cde.ca.gov/sp/sw/t1/titleparta.asp> (accessed March 10, 2014).

Title III

Title III, Part A, is officially known as the English Language Acquisition, Language Enhancement, and Academic Achievement Act. The overarching purpose of Title III is to ensure that limited-English-proficient students (called English learners under California law) attain proficiency in English and meet the same challenging academic content and achievement standards that other students are expected to meet. LEAs must use Title III funds to implement language instruction programs designed to help English learners meet those standards. With the adoption of the California ELD Standards in November 2012, a new English language proficiency assessment system aligned to the new California ELD standards will be developed. Additional information is available on the CDE English Learners Title III Web page at <http://www.cde.ca.gov/sp/el/t3/> (accessed March 10, 2014) and the CDE California English Language Development Test (CELDT) Web page at <http://www.cde.ca.gov/ta/tg/el/> (accessed March 27, 2014).

Classroom Assessment

Customized, rigorous, and thoughtful assessment can guide instruction, improve student learning, and develop students' thinking skills in a particular discipline. The key to using assessments effectively and

efficiently in a program of instruction is to recognize that different types of assessment tools are used for different purposes.

The following assessments are crucial for measuring student mastery of the knowledge and skills outlined in the subject-area content standards. Two major forms of assessment practices are formative and summative. In addition diagnostic assessments can be used as a tool for matching instruction with student needs.

- **Formative assessment:** Are students progressing adequately toward mastery of the standards? Do they need reteaching? Is emphasis on certain instructional components or skills needed in the next series of lessons or units? Formative assessment is a systematic process to continuously gather evidence and provide feedback about learning while instruction is under way. The primary purpose of formative assessment is to improve learning, not merely to audit it. It is assessment *for* learning rather than assessment *of* learning.
- **Summative assessment:** Have students achieved the goals defined by a given standard or group of standards? Summative assessment refers to the assessment of learning at a particular time point and is meant to summarize a learner's development. Summative assessments frequently come in the form of chapter or unit tests, weekly quizzes, or end-of-term tests. In contrast to formative assessment, summative assessment represents the state of a student's skills and knowledge at a given point in time and is meant to assess the effectiveness of instruction and a student's learning progress. Summative assessments are often used for grading students.
- **Diagnostic assessment:** Do students possess the necessary prerequisite skills and knowledge expected at their grade level? Do they already know some of the material to be taught? Because diagnostic assessments can help determine the level of student readiness for a given unit or course, they should be developed after the summative assessment is designed.

Although many other purposes exist for assessment, the three named above are critical because they inform instruction. Taken together, they provide a road map to mastering the standards: the starting place, the routes to take, the points at which routes should be changed, and the destination.

Instructional Materials

Basic instructional materials are selected by the local governing board (i.e., local school district). The local governing board may adopt instructional materials from a list of materials adopted by the California State Board of Education (SBE) or purchase materials that are not state adopted. Under *Education Code (EC)* Section 60210, local governing boards that purchase instructional materials that are not adopted by the SBE are required to include a majority of classroom teachers who are assigned to the subject area or grade level of the materials in their local review process. Whether the local governing board adopts instructional materials that are state-adopted or non-adopted materials, school districts must provide for "substantial teacher involvement" in the selection of materials and promote the involvement of parents and other members of the community in the selection process (*EC* Section 60002). Governing boards of school districts may select supplemental instructional materials for use in district schools. More information about supplemental instructional materials is posted on the CDE Social Content Review Web page at <http://www.cde.ca.gov/ci/cr/cf/lc.asp> (accessed March 10, 2014).

Districts are required to provide every student with standards-aligned instructional materials in the four core academic subject areas. The materials are to be used in class and made available to take home (*EC* Section 60119). More information about instructional materials, including a link to the price list of currently

adopted materials, is posted at the CDE Curriculum Frameworks and Instructional Materials Web page at <http://www.cde.ca.gov/ci/cr/cf/> (accessed March 10, 2014).

In January 2014, the SBE adopted mathematics instructional materials for students in kindergarten through grade eight. The adopted instructional materials are aligned to the California Common Core State Standards for Mathematics and include materials for Algebra I and Mathematics I. The list of state-adopted mathematics instructional materials, as well as information about the adoption, is available on the CDE Mathematics Instructional Materials Web page at <http://www.cde.ca.gov/ci/ma/im/> (accessed April 10, 2014).

The next adoption of English language arts/English language development instructional materials is scheduled for November 2015. Current information about the adoption can be found on the CDE English Language Arts Instructional Materials Web page <http://www.cde.ca.gov/ci/rl/im/> (accessed April 10, 2014).

California Standards for the Teaching Profession

One of the most important factors in student achievement is the teacher. The U.S. Department of Education's Teacher-to-Teacher Initiative describes the importance of the teacher's role in this way:

Research confirms that teachers are the single most important factor in raising student achievement. Highly qualified teachers can maximize every child's potential to meet high academic standards. Good teachers are essential to closing the achievement gap and ensuring that no child is left behind. (U.S. Department of Education 2007)

The California Standards for the Teaching Profession (CSTP), available on the California Commission on Teacher Credentialing Web site at <http://www.ctc.ca.gov/educator-prep/standards/CSTP-2009.pdf> (accessed March 10, 2014), provide a common language and vision of the scope and complexity of teaching to enable teachers to define and develop their practice. The CSTP were revised in 2009 based on current research and expert advice pertaining to best teaching practices and are an integral part of the efforts to foster excellence in teaching and learning.

The standards are organized around the following domains of teaching practice:

- Engaging and supporting all students in learning
- Creating and maintaining effective environments for student learning
- Understanding and organizing subject matter for student learning
- Planning instruction and designing learning experiences for all students
- Assessing students for learning
- Developing as a professional educator

Although all of the categories affect teaching and learning, the "Understanding and organizing subject matter for student learning" standard directly affects curriculum. This category consists of the following key elements:

- Demonstrating knowledge of subject-matter content, academic content standards, and curriculum frameworks
- Applying knowledge of student development and proficiencies to ensure student understanding of subject matter
- Organizing curriculum to facilitate student understanding of the subject matter

- Utilizing instructional strategies that are appropriate to the subject matter
- Using and adapting resources, technologies, and standards-aligned instructional materials, including adopted materials, to make subject matter accessible to all students
- Addressing the needs of English learners and students with disabilities to provide equitable access to content

Other Resources

The following list contains Web resources from the CDE, the U.S. government, and other government agencies that may be useful to teachers, administrators, and parents. The CDE Web pages typically include a telephone number and e-mail address that can be used to seek clarification and answer questions on any of these topics.

California Common Core State Standards Resources

- **California Common Core State Standards (CA CCSS)** (<http://www.cde.ca.gov/re/cc/>) (accessed April 1, 2014).
The CDE Common Core State Standards Web page is the gateway to a wide range of information and resources for the CA CCSS. This page features a searchable collection of resources to support implementation of the CCSS. It provides links to CDE professional learning modules, sample lesson plans and classroom activities, and Web sites of key Common Core organizations. It provides direct links to the following CCSS Resource Web pages:
 - CCSS Mathematics Resources <http://www.cde.ca.gov/re/cc/mathresources.asp> (accessed April 1, 2014).
 - CCSS English Language Arts Resources <http://www.cde.ca.gov/re/cc/elaresources.asp> (accessed April 1, 2014).
 - CCSS and CA ELD Standards Resources <http://www.cde.ca.gov/re/cc/eldresources.asp> (accessed April 1, 2014).
 - CCSS Literacy Resources <http://www.cde.ca.gov/re/cc/literacyresources.asp> (accessed April 1, 2014).

California State Standards

- **Content Standards** (<http://www.cde.ca.gov/be/st/ss/index.asp>) (accessed March 6, 2014).
This Web page includes links to the California Common Core State Standards for Mathematics and for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects. Also provided are links to California standards for Career Technical Education; English Language Development; Health Education; History-Social Science; Model School Library; Physical Education; Science; Visual and Performing Arts; and World Language.

- **English Language Development Standards** (<http://www.cde.ca.gov/sp/el/er/eldstandards.asp>) (accessed March 10, 2014).

This Web page features the California English language development standards (CA ELD) and an implementation plan for integrating the new CA ELD standards into the public education system.

Universal Access

- **Clearinghouse for Specialized Media and Translations (CSMT)** (<http://www.cde.ca.gov/re/pn/sm/>) (accessed March 6, 2014).

This unit (a part of the CDE's Curriculum Frameworks and Instructional Resources Division) provides materials and information for students who need access to the core curriculum in various formats (e.g., braille, large print).

- **English Learners** (<http://www.cde.ca.gov/sp/el/>) (accessed March 6, 2014).

This Web page provides a set of links to programs and information that aim to improve the language proficiency of English learners and help them meet content standards adopted by the State Board of Education.

- **Gifted and Talented Education (GATE)** (<http://www.cde.ca.gov/sp/gt/gt/>) (March 6, 2014).

This Web page provides information about the purpose of the GATE program, requests for applications and application renewal dates, principal apportionment calculations, and Advanced Placement and International Baccalaureate programs.

- **Special Education** (<http://www.cde.ca.gov/sp/se/>) (accessed March 6, 2014).

This Web page offers information and resources to serve the unique needs of children with disabilities so that each child will meet or exceed high standards of achievement in academic and nonacademic skills.

Statewide Accountability

- **DataQuest** (<http://dq.cde.ca.gov/dataquest/>) (accessed March 6, 2014).

DataQuest is a resource for state, county, district, and school-level reports. It provides information on a variety of topics, including test scores, enrollment figures, and school staffing.

- **Smarter Balanced Assessment Consortium (Smarter Balanced)** (<http://www.cde.ca.gov/ta/tg/sa/smarterbalanced.asp>) (accessed March 6, 2014).

This Web page provides the most current information about the next generation of assessments. The Smarter Balanced Assessment Consortium is a multistate consortium working collaboratively to develop a student assessment system aligned to a common core of academic content standards for English language arts/literacy and mathematics. As a Smarter Balanced governing state, California is a decision-making member. Smarter Balanced assessments are designed to measure student progress toward college and career readiness.

- **Testing and Accountability Web Page** (<http://www.cde.ca.gov/ta/>) (accessed March 6, 2014).

This Web page provides links to information about various elements of the statewide accountability system.

Federal Accountability

- **Elementary and Secondary Education Act** (<http://www.cde.ca.gov/nclb/>) (accessed March 10, 2014).
This Web page provides links to state and federal resources about the requirements of the Elementary and Secondary Education Act.
- **Title I, Part A** (<http://www.cde.ca.gov/sp/sw/t1/titleparta.asp>) (accessed March 10, 2014).
This Web page provides information about federal requirements and the allowable uses of the funds.
- **Title III** (<http://www.cde.ca.gov/sp/el/t3/>) (accessed February 24, 2012).
This Web page provides information about language instruction for limited-English-proficient and immigrant students.

Instructional Materials

- **Instructional Materials Ordering and Distribution System (IMODS)** (<http://csmt.cde.ca.gov/index.aspx>) (accessed March 6, 2014).
Free instructional materials are provided for students with disabilities through the CDE Clearinghouse for Specialized Media and Translations in various formats such as braille, large-print, audio, digital talking books, and electronic files.
- **Social Content Review** (<http://www.cde.ca.gov/ci/cr/cf/lc.asp>) (accessed March 6, 2014).
This Web page includes a searchable CDE database of supplemental instructional materials that have passed a social content review. Although these materials are not considered state-approved or state-adopted, they have met all of the requirements in the *Education Code* for social content.
- **State-Adopted Instructional Materials Price List** (<http://www3.cde.ca.gov/impricelist/implsearch.aspx>) (accessed March 6, 2014).
This CDE Web page has a searchable list of all state-adopted instructional materials for kindergarten through grade eight. The list is updated with each new adoption of instructional materials, and publishers have the right to submit price increases for existing lists every two years.

General Resources for Teachers and Other Educators

- **A Blueprint for Great Schools** (<http://www.cde.ca.gov/eo/in/bp/>) (accessed March 6, 2014).
This Web page offers a link to Superintendent Torlakson's report, *A Blueprint for Great Schools*, which provides vision and direction for California's education system, including a focus on twenty-first century learning, meeting the needs of the whole child, and rebuilding the ranks of California's teachers with resources and respect.
- **Brokers of Expertise** (<http://www.myboe.org/>) (accessed March 6, 2014).
Brokers of Expertise is a social network that allows educators to search for and follow colleagues who have had success in teaching specific California content standards or who work with similar types of students. Users share instructional practices through links, video, pictures, or documents, allowing other teachers to replicate similar innovations in their classrooms. The Web site lists where each resource came from and provides a blog where educators may share their thoughts and feedback.

- **California CCSS Professional Learning Modules for Educators** (<http://www.cde.ca.gov/re/cc/ccssplm.asp>) (accessed April 7, 2014).
This Web site provides information about CCSS professional learning modules to support educators in delivering curriculum aligned to the CCSS to all students
- **California Commission on Teacher Credentialing** (<http://www.ctc.ca.gov/>) (accessed March 6, 2014).
This Web site provides information about credentialing requirements for California teachers. The 2009 California Standards for the Teaching Profession (CSTP) are posted at <http://www.ctc.ca.gov/educator-prep/standards/CSTP-2009.pdf> (accessed March 6, 2014).

Seventh-Grade Curriculum



What will my child learn in English language arts and mathematics in seventh grade?

In August 2010, the state adopted the California Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects and Mathematics. How will the new standards enhance seventh-grade curriculum?

This chapter contains two sections—English language arts and mathematics—that describe what students should know and be able to do by the end of seventh grade. Each section includes a brief description of the seventh-grade standards, concluding with a list of the seventh-grade standards for the California Common Core State Standards (CA CCSS), which include California additions, for English language arts/literacy and mathematics.

For additional guidance and support to implement the standards, refer to the:

- *Mathematics Framework* located on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed March 6, 2014).
- *English Language Arts/English Language Development Framework* located on the CDE ELA/ELD Curriculum Framework Web page at <http://www.cde.ca.gov/ci/rl/cf/> (accessed March 6, 2014).

English Language Arts



Overview

In seventh grade, the English language arts standards establish a higher level of communication skills and comprehension strategies. Students demonstrate a growing understanding by connecting ideas and information in two or more texts and analyzing and evaluating textual evidence more carefully. Their writing reflects both a deeper understanding of texts and the interrelationship between reading and writing as they draw evidence to support their claims and convey concepts and ideas. Seventh-grade students build on their communication and collaboration skills from earlier grades. As they engage in collaborative discussions, they are able to acknowledge and analyze new information and, when appropriate, modify their own view based on the new information. Students continue to acquire and use general academic language and domain-specific vocabulary. They also learn to use precise and concise language to express themselves in their speaking and writing.

Seventh-grade students build on their communication and collaboration skills from earlier grades.

There are many similarities between the California Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy) and the 1997 California English language arts standards, but there are also some notable differences. For instance, in the CA CCSS for ELA/Literacy, the standards in seventh grade are divided into strands: Reading, Writing, Speaking and Listening, and Language. In the 1997 California English language arts standards, the standards are organized around domains: Reading, Writing, Written and Oral English Language Conventions, and Listening and Speaking. An organizational change in the CA CCSS for ELA/Literacy for grades six through twelve is the inclusion of another set of standards: Reading and Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects. These standards are not intended to replace existing standards in those content areas; instead, they supplement instruction and provide consistency in expectations across the curriculum.

This section provides an overview of the new CA CCSS for seventh-grade English language arts (ELA) and a separate section on literacy standards for History/Social Studies, Science, and Technical Subjects (Literacy). It includes guidance to ensure success for struggling readers and English learners. A complete list of the seventh-grade CA CCSS for ELA/Literacy, which include California additions, can be found at the end of this section. A complete list of the 1997 California English language arts standards for seventh grade is located on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/finalelaccsstandards.pdf> (accessed March 6, 2014).

What Students Learn in Seventh Grade

Reading

Three important emphases of the CA CCSS for ELA in reading are text complexity, a balance between literature and informational text, and an integrated approach to instruction. The term *text complexity band* is the focus of Standard 10 in the reading standards for literature, for informational text, and in



the reading standards for literacy in history/social studies, science, and technical subjects. Standard 10 sets the expectation that students will read increasingly complex text each year from second grade through high school.¹ The text complexity band for grades six through eight sets different expectations for each grade level. In seventh grade, students are expected to read and comprehend literature and informational texts in the grades-six-through-eight text complexity band proficiently, with scaffolding as needed at the high end of the range.

Starting in the earliest elementary grades, the CA CCSS for ELA balance reading literature with reading informational text. The increased attention to informational text may lead to some significant changes in elementary instruction as California schools transition to the CA CCSS for ELA. Fewer changes may be necessary in seventh grade because the 1997 California English language arts standards focus on the comprehension and analysis of informational texts. Seventh-grade students continue to read informational texts, including textbooks, magazines, public documents, and online information, which will ease the transition to the CA CCSS for ELA.

An integrated approach to instruction is another feature of the CA CCSS for ELA. Reading is one of the four strands of the CA CCSS for ELA. The skills, concepts, and strategies that students learn in reading connect with and are reinforced by standards in the three other strands. For example, students read a text and analyze how an author structures an argument to support his or her claims and then use their knowledge of structure and organization to produce their own argumentative writing or deliver an oral argument in a formal presentation.

The following section is organized according to the two major areas of the reading standards: reading standards for literature and for informational text.

Reading Standards for Literature

In seventh grade, students read a variety of literature, including novels, dramas, and poems. The literature students read in class must be complex enough to support close reading and deep analysis, as well as thoughtful discussion. By reading a wide range of literature from and about different cultures, with varied themes and in several genres, students become familiar with literary structures and increase their vocabulary. Well-written literature also serves as a model for students' own writing. The challenge for teachers is to select texts that engage students and also support instruction in the CA CCSS reading standards for literature.

Both the 1997 California standards and the CA CCSS for ELA focus on the analysis of literature as a means of increasing students' comprehension. The development of theme, characters, point of view, and plot are explored in both sets of standards, but the CA CCSS for ELA differ in their depth and scope. In the CA CCSS for ELA, students determine the theme or central idea of a text, analyze its development throughout the text, and provide an objective summary of the text. They use multiple examples of textual evidence to support their summary and analysis of text. Students examine how the elements of a story or drama interact, such as how characters are affected by the setting or the events of a novel.

In addition to determining the meaning of figurative and connotative language as it is used in a text, students consider the impact of rhymes and other repetitions of sounds on a section of a poem, story, or drama. The level of analysis calls for a close reading of the text and for students to think about why an author chooses a particular sound, word, or phrase. Students also analyze how the form or structure of a drama or poem contributes to its meaning (e.g., how the formalized structure of a sonnet helps convey the author's message).

Under the CA CCSS for ELA, students use a compare-and-contrast strategy to analyze literature in both print and other media. For example, students may read a drama and then watch a recorded stage presentation of the same drama. As they compare and contrast the two experiences, students analyze the effects of the sounds they heard and the images seen. They reflect on their understanding of and response to the drama. Reaching

1. For more information about text complexity, see appendixes A and B of the *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*, which is available online at <http://www.corestandards.org/the-standards> (accessed March 6, 2014).

across disciplines to connect literature to history, students compare and contrast a fictional portrayal with an historical account of the same time period.

Reading Standards for Informational Text

In seventh grade, students evaluate the information, evidence, and reasons that authors provide to support their central ideas and claims. They also examine the organizational structure of text and consider how the

In seventh grade, students evaluate the information, evidence, and reasons authors provide to support their central ideas and claims.

author develops point of view. Both the 1997 California English language arts standards and the CA CCSS for ELA cover this content, but the CA CCSS for ELA require deeper analysis and evaluation. Analyzing text to comprehend its content is emphasized in seventh grade to the extent that eight of the 10 standards call explicitly for some type of analysis.

Under the CA CCSS for ELA, students analyze interactions between people, events, and ideas in a text (e.g., how ideas influence events or how events influence ideas). After they have determined an author's point of view or purpose, students analyze how the author distinguishes his or her viewpoint from that of others. Analysis at this level requires students to identify other points of view in addition to the author. This kind of multistep and multilevel analysis builds students' analytical skills and is an important feature of the CA CCSS for ELA at seventh grade.

Students also analyze the structure of text and the use of text features in informational text. For example, students analyze how major sections contribute to the development of the ideas in a text and how graphics in a public document contribute to the whole text. They examine how specific words in a text impact its meaning and tone. They also compare and contrast the impact of words spoken in an audio version of a speech to the impact of reading the words in printed text.

Students analyze how authors who write about the same topic may produce text with different points of view or conclusions by emphasizing different evidence and including different interpretations of facts. This examination of text is another example of the multistep and multilevel analysis called for in the CA CCSS for ELA that will challenge students. Carefully selected texts, teacher modeling, and ample opportunities for practice, along with feedback, will help students develop their analytical skills.

Writing

Students in seventh grade demonstrate sophisticated writing skills to produce pieces that support a clear purpose and include a more cohesive organization of ideas by using evidence from literary and informational texts. Their writing incorporates the use of technology during development, collaboration, and production. Students demonstrate a command of the conventions of the English language and experience with the stages of the writing process (e.g., prewriting, drafting, revising, editing).

Both the 1997 California English language arts standards and the CA CCSS for ELA call for students in seventh grade to write multi-paragraph texts with a central idea or theme, relevant supporting details, precise words and visual imagery, and a conclusion. The purposes of writing are similar under each set of standards. Students write responses to literature, persuasive compositions, research reports, summaries, and narratives under the 1997 California English language arts standards.

The CA CCSS for ELA writing standards identify three main types of writing applications—argument, informative/explanatory, and narrative—and set challenging expectations for students' writing. Students are expected to write routinely in both extended and short time frames for a range of discipline-specific tasks, purposes, and audiences. When writing arguments, students logically organize the reasons and relevant evidence, support claims with credible sources, and address alternate evidence or counterarguments. For informative/explanatory texts, students clearly introduce a topic or thesis and use an extended array of

organizational strategies, such as definition, classification, compare/contrast, and cause/effect in addition to graphics, and multimedia resources to aid in comprehension. In their narrative writing, students develop real or imagined events by using sensory language in descriptions to add detail and engage the reader, include well-structured events so the sequence unfolds naturally, and use transition words and phrases for sequencing and shifting from one time frame to another. Narrative techniques such as dialogue, description, and pacing to develop characters and plot are incorporated.

Technology, including the Internet, plays a larger role in the CA CCSS for ELA. Students use technology in the production of writing, to interact and collaborate with others, and to conduct short research projects to answer a specific question. They learn to gather key information and data from multiple sources and to effectively quote, paraphrase, and cite content (while avoiding plagiarism) in their writing.



Speaking and Listening

Students in seventh grade listen critically to speakers and media presentations for comprehension, identify and analyze information from a variety of media and formats, engage in collaborative discussions, and deliver arguments, narratives, and summary presentations. In their oral presentations, students include multimedia components and visual aids for clarification, use appropriate eye contact and volume, and apply the same conventions of standard English when speaking as in writing.

Both the 1997 California English language arts standards and the CA CCSS for ELA focus on students' listening and comprehension skills and their formal oral presentation skills. Students analyze logical fallacies from a media source and in a speaker's presentation or argument and, in the CA CCSS for ELA, also identify the speaker's attitude toward a subject. When students present claims for findings, they sequence ideas logically and use pertinent details and examples to support the main point or theme.

The CA CCSS for ELA emphasize collaborative discussions on seventh-grade topics and texts with diverse partners and in different groupings (one-on-one, in groups, or teacher-led). In these discussions, students come prepared to add to the discussion by referencing evidence they have read or researched and reflect on ideas being discussed. Students follow rules for collegial discussions with specific goals and deadlines and are assigned individual roles. They contribute comments to the discussion and elaborate on the remarks of others, pose or respond to questions, and, if appropriate, change their own views based on new information presented by others.

Multimedia components as sources of information and complements to oral presentations are another focus of the CA CCSS for ELA. Students in seventh grade analyze information presented in diverse media and formats (e.g., visual, quantitative, oral) and explain how the ideas clarify the topic. They also can distinguish a speaker's argument and attitude and evaluate the soundness and relevance of a speaker's reasons. They use multimedia components (e.g., graphics, images, music, sound) and visual displays to clarify claims and emphasize key points in their presentations. Students learn to adapt their speech to a variety of contexts and tasks and are able to use formal English when it is appropriate.

Language

Students in seventh grade continue to build on language skills initiated in earlier grades and are introduced to new rules for grammar, usage, and punctuation. The specific rules or conventions they learn vary between the 1997 California English language arts standards and the CA CCSS for ELA. Students use their knowledge of language and its conventions when writing, speaking, listening, and reading.

The CA CCSS for ELA are detailed and specific. For example, students explain the function of phrases and clauses as well as explain their function in specific sentences. Students expand their grammatical knowledge as they learn to choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas. Writing clear, coherent, and focused essays is emphasized in the CA CCSS for ELA as students learn to choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.

In the 1997 California English language arts standards, vocabulary development standards are found in the Reading domain. In the CA CCSS for ELA, standards for vocabulary acquisition and use are found in the Language strand. These standards cover a range of strategies for vocabulary acquisition that students use to determine the meaning of words. For example, the CA CCSS for ELA call for students to use context and a word's position or function in a sentence as a clue to determine the meaning of a word or phrase. In addition, students learn to verify their preliminary determination of the meaning of a word or phrase by checking the meaning in context or in a dictionary. Students learn to understand figurative language, word relationships, and nuances of words by distinguishing among the connotations (associations) of words with similar denotations, or definitions (e.g. *refined*, *respectful*, *polite*, *diplomatic*, and *condescending*).

The CA CCSS for ELA stress using relationships between certain words (e.g., synonym/antonym, analogy) to better understand words. Using common Greek or Latin affixes and roots for clues to word meanings is continued as part of the CA CCSS for ELA in seventh grade. The CCSS for ELA emphasize students' use of both print and digital sources and general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses) to pronounce words, clarify the precise meaning of a word or its parts of speech, or trace the etymology of words.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects

Unique to the CA CCSS for ELA/Literacy in grades six through twelve is the addition of standards for literacy in history/social studies, science, and technical subjects. (In kindergarten through grade five, the standards for literacy are embedded in the four strands of the standards.) The addition of these standards for literacy recognizes the role of English language arts teachers in developing students' literacy skills while clarifying that teachers in other content areas also share that responsibility. The standards for literacy recognize the need for students to be proficient in reading complex informational text and writing argumentative and explanatory text in a specific discipline.

In the CA CCSS for Literacy, the standards for literacy in history/social studies, science, and technical subjects focus on reading and writing and are divided into three parts—reading standards for literacy in history/social studies; reading standards for literacy in science and technical subjects; and writing standards for literacy in history/social studies, science, and technical subjects. Standards in each part are organized into grade spans (six through eight, nine and ten, and eleven and twelve) and follow the same set of anchor standards used in English language arts (see Appendix A).

The shared responsibility of developing reading and writing across all content areas is not a new topic of discussion. Over the past 15 years, California's content standards and frameworks have advocated and supported the idea that all teachers share the responsibility for developing student literacy. For example, guiding principles from the *Science Framework for California Public Schools* (California Department of Education 2004) identify what effective science programs do: (1) use standards-based connections with other core subjects to reinforce science teaching and learning; (2) develop students' command of academic language; and (3) use technology to teach students, assess their knowledge, develop information resources, and enhance computer literacy. California's history–social science standards include historical and social science analysis

The addition of these standards for literacy recognizes the role of English language arts teachers in developing students' literacy skills while clarifying that teachers in other content areas also share that responsibility.

skills. Examples of the skills from grades six through eight are as follows: (1) students frame questions that can be answered by historical study and research; (2) students distinguish fact from opinion in historical narratives and stories; and (3) students understand and distinguish cause, effect, sequence, and correlation in historical events, including the long- and short-term causal relations.

These same skills are identified in the CA CCSS for Literacy reading standards in history/social studies and science and technical subjects. The CA CCSS for Literacy require the use of specific textual evidence to support analysis of text and to compare and contrast information from different sources (i.e., primary versus secondary sources or doing an experiment versus reading about it). The CA CCSS for Literacy highlight the importance of determining the meaning of content-related or domain-specific words as used in a specific historical or scientific context.

As noted in the English language arts writing section above, the writing standards for literacy in the CA CCSS for Literacy extend the types of writing from the 1997 California standards. Students are expected to write arguments based on content in a specific discipline, supporting the topic with relevant and accurate evidence. Informative or explanatory texts may include writing about a scientific procedure or retelling a historical event. All students' writing should be well organized and developed using key facts or details. Students are expected to conduct research projects to answer a specific question, paraphrase or summarize others' work without plagiarizing, and to write consistently within both short and extended time frames.

Extra Support for Struggling Readers

By the end of seventh grade, students are expected to be fluent, independent readers who engage in the analysis of literature and informational text. Students who are not proficient in word-analysis skills are likely to experience academic difficulties. Early screening and intervention address specific areas of instruction in a timely manner. Struggling readers—any students experiencing difficulty learning to read, which may include those who use nonstandard English, English learners, and students with disabilities—should be provided with additional support to become proficient in seventh-grade reading skills. Instructional support for students should include:

Students who are not proficient in word-analysis skills are likely to experience academic difficulties.

- opportunities to preteach key skills, strategies, and concepts;
- intensive, explicit instruction in decoding and word-recognition skills, which may include materials at the reading level of students and that are age-appropriate;
- preteaching and reteaching the use of Greek and Latin affixes and roots as clues to determine the meaning of unknown words;
- preteaching and reteaching word-learning strategies such as using a word's position or function as a clue to determine the meaning of unknown words;
- additional direct, explicit instruction in using informational text to analyze the overall text structure and features;
- additional direct, explicit instruction in using informational text to cite evidence as required in text analysis;
- direct, explicit instruction in language development to address grammatical structures of oral and written standard English;

- vocabulary instruction embedded in context, including academic language and domain-specific vocabulary.

For those students whose reading achievement is two or more years below grade level, placement in an intensive intervention program in reading/language arts should be considered. These accelerated programs are designed to address the instructional needs of students in grades four through eight whose reading achievement is two or more years below grade level. For additional information on the 2008 state-adopted intensive intervention programs, see the list of adopted instructional materials on the CDE Reading/Language Arts Web page at <http://www.cde.ca.gov/ci/rl/im/rlaadoptedlist.asp> (accessed March 6, 2014).

Support for English Learners

English language development (ELD) is a critical component of the language arts program for English learners. The CA CCSS for ELA/Literacy set rigorous expectations for student learning, and ELD instruction must accommodate these enhanced expectations. The CA ELD Standards which were adopted in November 2012 provide educators with guidance on instructional planning, curriculum development, and assessment of ELD instruction. These standards reflect current research and theory to support English language development for California's English learners and correspond to the CA CCSS for ELA/Literacy in kindergarten through grade twelve. Specifically designed for instructional purposes, the CA ELD standards define three proficiency levels: Emerging, Expanding, and Bridging. For more information on the CA ELD standards, visit the CDE ELD Standards Web page at <http://www.cde.ca.gov/sp/el/er/eldstandards.asp> (accessed June 15, 2014).

Careful placement of English learners in appropriate classes is of utmost consideration. Several factors for consideration include the students' primary language and literacy background, time in the United States, English language proficiency, and progress in English language development. Such factors can help determine the appropriate program placement, whether it be an ELD class, an English language arts mainstream class, or a combination of classes. Research by Dutro and Kinsella (California Department of Education 2010b) contends that students at the more advanced levels, such as the Expanding and Bridging proficiency levels, benefit from instruction that develops complex language structures, academic vocabulary, and reading comprehension, as well as explicit guided writing instruction to strengthen students' writing abilities.

English learners develop oral and written language through Integrated and Designated ELD instruction that addresses the CA ELD standards. *Integrated ELD* instruction refers to ELD throughout the day and across the disciplines, in which all teachers with ELs in their classrooms use the CA ELD Standards *in tandem with* the focal CA CCSS for ELA/Literacy and other content standards. *Designated ELD* is a protected time during the regular school day in which teachers use the CA ELD Standards as the focal standards to build into and from content instruction as a way to develop proficiency in academic English. English learners develop oral and written language through Designated ELD instruction, including rich collaborative discussion of literary and informational text, the integration of academic and domain-specific vocabulary, and the use of increasingly complex grammatical structures.

Of equal importance is placement (or misplacement) of English learners in reading intervention classes. The aim of reading intervention classes is to support the development of basic knowledge and skills of decoding multisyllabic words, reading fluency, vocabulary-learning strategies, and comprehension strategies, not developing oral language proficiency. In *Improving Education for English Learners: Research-Based Approaches* (California Department of Education 2010b), August and Shanahan

As English learners participate and engage in collaborative discussions, they are given ample opportunities to hear and practice using vocabulary acquired from their reading. Students learn to respond to questions and elaborate on discussion topics with relevant observations and ideas as they express themselves...

suggest that the placement of English learners be carefully considered; placement in reading intervention classes alone will not provide the language development offered in structured and focused ELD classes that address the CA ELD standards.

Students in seventh grade are expected to conduct deep analysis of literature and informational text on grade-level topics in all subject areas. English learners benefit from Integrated ELD instruction as they learn how to analyze the structure of informational text and how text features contribute to the development of the ideas in text. With guided instruction, students will also learn how to cite textual evidence that most strongly supports their statements and inferences in their analysis of text.

When provided with Integrated ELD instruction using informational text, English learners can practice using academic language as well as domain-specific words in different content areas. As English learners participate and engage in collaborative discussions, they are given ample opportunities to hear and practice using vocabulary acquired from their reading. Students learn to respond to questions and elaborate on discussion topics with relevant observations and ideas as they express themselves during one-on-one, small group, or teacher-led discussions.

The CA CCSS for ELA/Literacy emphasize writing arguments and English learners will benefit from explicit, guided instruction and models of written arguments. Additional instruction in how to acknowledge and distinguish opposing claims, use credible sources, and establish and maintain a formal style of writing will ensure adequate mastery of those skills. Scaffolds such as sentence and paragraph frames for writing informative and explanatory texts will enable English learners in the early stages of learning English to improve their writing abilities. Guided instruction on developing a thesis statement, organizing ideas, and including well-chosen facts, concrete details, quotations, and a conclusion reinforces valuable skills. Because English learners are still developing proficiency in English, they benefit from teachers' positive and corrective feedback on writing and grammatical errors. English learners may need additional time and practice in writing for a variety of purposes and audiences to further their writing abilities.

Explicit instruction on the rules of grammar and the functions of phrases and clauses in sentences enables English learners to enhance their writing skills. Additional practice in placing clauses within a sentence and recognizing and correcting misplaced modifiers may strengthen the writing abilities of English learners. Students are provided with multiple opportunities to practice these skills both in speaking and writing and receive corrective teacher feedback.

For those students whose academic achievement is two or more years below grade level, use of an intensive intervention program for English learners should be considered. This intensive accelerated program is designed for English learners in grades four through eight whose academic achievement is below grade level. Additional information on the state-adopted intensive intervention program for English learners is provided in the *English Language Arts/English Language Development Framework* located on the CDE ELA/ELD Curriculum Framework Web page at <http://www.cde.ca.gov/ci/rl/cf/> (accessed March 6, 2014).

For additional resources to support the teaching of English learners, please visit the CDE English Learners Web page at <http://www.cde.ca.gov/sp/el/> (accessed March 27, 2014). The CDE has published an excellent resource, *Improving Education for English Learners: Research-Based Approaches* (2010b), with the most comprehensive and up-to-date strategies to serve English learners. Guidelines for providing ELD instruction as well as recommended instructional practices are provided. Information on the publication is available through the CDE Press Web page at <http://www.cde.ca.gov/re/pn/rc/ap/pubcat.aspx> (accessed March 26, 2014).

The Standards

The CA CCSS for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy) that follow were adopted by the California State Board of Education on August 2, 2010, and modified on March 13, 2013. Content that is unique to California and was added by California to the multistate common core standards, referred to as California additions, is in **bold typeface** and followed by **CA**.

The CA CCSS for ELA/Literacy document is available online at <http://www.cde.ca.gov/be/st/ss/documents/finaelacssstandards.pdf> (accessed March 20, 2014). The CA CCSS College and Career Readiness (CCR) Anchor Standards (Appendix A) define the literacy expectations for students entering college and careers and provide the foundation of the K–12 English language arts standards.

A complete list of the 1997 California English language arts standards for grade seven is located on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/elacontentstnds.pdf> (accessed February 29, 2012).

California Common Core State Standards for English Language Arts Grade Seven	
Reading Standards for Literature	
Key Ideas and Details	
1.	Cite several pieces of textual evidence to support 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; provide an objective summary of the text.
3.	Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
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 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. (See grade 7 Language standards 4-6 for additional expectations.) CA
5.	Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
6.	Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

Integration of Knowledge and Ideas	
7.	Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).
8.	(Not applicable to literature)
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.
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.
Reading Standards for Informational Text	
Key Ideas and Details	
1.	Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
2.	Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
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).
Craft and Structure	
4.	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone. (See grade 7 Language standards 4-6 for additional expectations.) CA
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. a. Analyze the use of text features (e.g., graphics, headers, captions) in public documents. CA
6.	Determine an author’s point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.
Integration of Knowledge and Ideas	
7.	Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium’s portrayal of the subject (e.g., how the delivery of a speech affects the impact of the words).

8.	Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.
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.
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.
Writing Standards	
Text Types and Purposes	
1.	<p>Write arguments to support claims with clear reasons and relevant evidence.</p> <ul style="list-style-type: none"> a. Introduce claim(s), acknowledge and address alternate or opposing claims, and organize the reasons and evidence logically. CA b. Support claim(s) or counterarguments with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. CA 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.
2.	<p>Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.</p> <ul style="list-style-type: none"> a. Introduce a topic or thesis statement 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. CA 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.
3.	<p>Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <ol style="list-style-type: none"> 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. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. 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.)
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. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 7.)
6.	Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
Research to Build and Present Knowledge	
7.	Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and 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.
9.	<p>Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ol style="list-style-type: none"> 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”). Apply grade 7 Reading standards to literary nonfiction (e.g. “Trace and evaluate the argument

	and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims”).
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.
Speaking and Listening Standards	
Comprehension and Collaboration	
1.	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 7 topics, texts, and issues</i> , building on others’ ideas and expressing their own clearly. <ul style="list-style-type: none"> 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. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define 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.
2.	Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.
3.	Delineate a speaker’s argument and specific claims, and attitude toward the subject , evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence. CA
Presentation of Knowledge and Ideas	
4.	Present claims and findings (e.g., argument, narrative, summary presentations), emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation. CA <ul style="list-style-type: none"> a. Plan and present an argument that: supports a claim, acknowledges counterarguments, organizes evidence logically, uses words and phrases to create cohesion, and provides a concluding statement that supports the argument presented. CA
5.	Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

6.	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grade 7 Language standards 1 and 3 for specific expectations.)
Language Standards	
Conventions of Standard English	
1.	<p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ul style="list-style-type: none"> 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.*
2.	<p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ul style="list-style-type: none"> a. Use a comma to separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie</i> but not <i>He wore an old[,] green shirt</i>). b. Spell correctly.
Knowledge of Language	
3.	<p>Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ul style="list-style-type: none"> a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*
Vocabulary Acquisition and Use	
4.	<p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 7 reading and content</i>, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> 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., <i>belligerent</i>, <i>bellicose</i>, <i>rebel</i>). c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses),

* The following skills are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking. See the chart “Language Progressive Skills, by Grade” on page 76 in the CA CCSS.

	<p>both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech or trace the etymology of words. CA</p> <p>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).</p>
5.	<p>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <p>a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.</p> <p>b. Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words.</p> <p>c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>refined</i>, <i>respectful</i>, <i>polite</i>, <i>diplomatic</i>, <i>condescending</i>).</p>
6.	<p>Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

**California Common Core State Standards
Reading Standards for Literacy in History/Social Studies, Science,
and Technical Subjects
Grades Six Through Eight**

Reading Standards for Literacy in History/Social Studies

Key Ideas and Details

1.	Cite specific textual evidence to support analysis of primary and secondary sources.
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.
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).

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.
5.	Describe how a text presents information (e.g., sequentially, comparatively, causally).
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).

Integration of Knowledge and Ideas

7.	Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
8.	Distinguish among fact, opinion, and reasoned judgment in a text.
9.	Analyze the relationship between a primary and secondary source on the same topic.
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.
Reading Standards for Literacy in Science and Technical Subjects	
Key Ideas and Details	
1.	Cite specific textual evidence to support analysis of science and technical texts.
2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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 <i>grades 6–8 texts and topics</i> .
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.
6.	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
Integration of Knowledge and Ideas	
7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
8.	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
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.
Range of Reading and Level of Text Complexity	
10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects

Text Types and Purposes

1.	<p>Write arguments focused on <i>discipline-specific content</i>.</p> <ol style="list-style-type: none"> 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. 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.	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <ol style="list-style-type: none"> a. 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. 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 and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.
3.	(See note; not applicable as a separate requirement [*])

^{*} **Note:** 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/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

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.	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 writing and present the relationships between information and ideas clearly and efficiently.
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.
8.	Gather relevant information from multiple print and digital sources (primary and secondary), 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. CA
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.

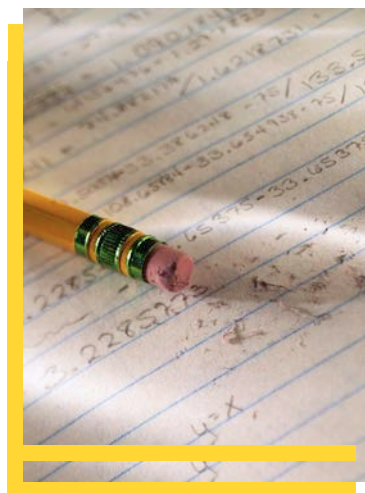
Effective mathematics education provides students with a balanced instructional program. In such a program, students become proficient in basic computational skills and procedures, develop conceptual understandings, and become adept at problem solving. Standards-based mathematics instruction starts with foundational mathematical ideas and increases in scope and content as the years progress. It is like an inverted pyramid, with the entire weight of the developing subject, including readiness for algebra, resting on the foundations built in the early grades.

In August 2010, California adopted new standards in mathematics: the California Common Core State Standards for Mathematics (CA CCSSM). The CA CCSSM comprise standards developed by the state-led CCSS Initiative and material taken from the 1997 California mathematics standards, referred to as California additions. In January 2013, the CA CCSSM were modified; in particular changes were made to the California additions. In seventh grade, there are no California additions.

There are many similarities between the CA CCSSM and the 1997 California mathematics standards, but there are also noteworthy differences. For instance, in kindergarten through grade eight the CA CCSSM are first organized by four or five “domains” (clusters of standards that address “big ideas” and support connections of topics across the grades) and then by “clusters” (groups of related standards inside domains). The domains for seventh grade are Ratios and Proportional Relationships, the Number System, Expressions and Equations, Geometry, and Statistics and Probability. Furthermore, the CA CCSSM do not include “key standards” as in the 1997 California mathematics standards. Instead, the CA CCSSM are designed to be more focused at each grade and to develop mathematics topics in greater depth. Not all content in a given grade is emphasized equally in the standards. Some clusters of standards comprise the bulk of the instructional time at the grade (“major” clusters) and other clusters of standards (“additional/supporting” clusters) reinforce topics in the major clusters. For a chart of the “Grade Seven Cluster-Level Emphases,” refer to the Grade Seven chapter of the *Mathematics Framework* located on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed March 20, 2014).

The instructional emphasis at each grade supports a coherent progression of learning across grades that develops conceptual understanding, procedural skills and fluency, and the ability to apply mathematics to solve problems and prepares students for the study of more advanced mathematics in later years. For students who excel in mathematics, the *Mathematics Framework* includes guidance on readiness and placement of students in an accelerated course sequence in middle school. For additional information refer to “Course Placement and Sequences” in the Appendix of the *Mathematics Framework* on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed March 20, 2014).

The following section provides an overview of the CA CCSSM for seventh-grade mathematics. A complete list of the CA CCSSM for seventh-grade can be found at the end of this section. A complete list of the grade-seven 1997 California mathematics standards is available on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf> (accessed March 20, 2014).



What Students Learn in Seventh Grade

The CA CCSSM call for mastery of mathematical content as well as mathematical understanding so that students can apply mathematics to solve problems. To support this goal, the CA CCSSM include two types of standards: Standards for Mathematical Practice (the same from kindergarten to grade twelve) and Standards for Mathematical Content (different for each grade level). Doing and using mathematics involves connecting these two types of standards in grade-appropriate ways.

Standards for Mathematical Practice

The mathematical practice standards support student engagement in thought-provoking questions and mathematical thinking.

The Standards for Mathematical Practice (commonly called the “practice standards”) describe attributes of mathematically proficient students that educators at all levels should develop in their students. Practice standards are integrated in grade-level tasks as students engage in thought-provoking questions and problems that support mathematical thinking. Standards for Mathematical Content (commonly called the “content standards”) that call for students to “understand” or “explain” are potential points of intersection between the content standards and the practice standards.

The following chart provides a general overview of the practice standards. The summary provided is without regard to grade level. For a more detailed explanation of each standard, see Appendix B: Standards for Mathematical Practice.

Standards for Mathematical Practice (MP)	Summary
MP.1 Make sense of problems and persevere in solving them.	<ul style="list-style-type: none">• Find meaning in problems.• Analyze, predict, and plan solution pathways.• Verify answers.• Students ask themselves the question: “Does this make sense?”
MP.2 Reason abstractly and quantitatively.	<ul style="list-style-type: none">• Make sense of quantities and their relationships in problems.• Create coherent representations of problems.
MP.3 Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none">• Understand and use information to construct arguments.• Make and explore the truth of conjectures.• Justify conclusions and respond to arguments of others.
MP.4 Model with mathematics.	<ul style="list-style-type: none">• Apply mathematics to problems in everyday life.• Identify quantities in a practical situation.• Interpret results in the context of the situation and reflect on whether the results make sense.
MP.5 Use appropriate tools strategically.	<ul style="list-style-type: none">• Consider the available tools when solving problems.• Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler, protractor, calculator, spreadsheet, computer programs, digital content located on a Web site, and other technological tools).

MP.6 Attend to precision.	<ul style="list-style-type: none"> • Communicate precisely to others. • Use clear definitions, state the meaning of symbols, and are careful about specifying units of measure and labeling axes. • Calculate accurately and efficiently.
MP.7 Look for and make use of structure.	<ul style="list-style-type: none"> • Discern patterns and structures. • Can step back for an overview and shift perspective. • See complicated things as single objects or as being composed of several objects.
MP.8 Look for and express regularity in repeated reasoning.	<ul style="list-style-type: none"> • When calculations are repeated, look for general methods, patterns, and shortcuts. • Be able to evaluate whether an answer makes sense.

Source: Adapted from the *Common Core Standards Parent Handbook* (California County Superintendents Educational Services Association 2011).

Standards for Mathematical Content

In the seventh-grade content standards, students extend their understanding of proportional relationships and solve related real-world and mathematical problems. They apply their understanding of operations with fractions to add, subtract, multiply, and divide rational numbers. They use tools strategically to solve problems with positive and negative rational numbers. Students use the properties of operations to generate equivalent expressions. They draw, construct, and describe geometric shapes and solve problems involving scale drawings, angle measure, area, and volume. Students extend their understanding of statistics and draw inferences about populations based on samples. They also investigate chance events and work with probability models.

In grade seven, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships, including percentages; (2) developing understanding of operations with rational numbers and working with expressions and 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. Students also work towards fluently solving equations of the form $px + q = r$ and $p(x + q) = r$.

Ratios and Proportional Relationships

In the seventh-grade CA CCSSM, students analyze proportional relationships and solve related real-world and mathematical problems. Students extend their understanding of ratios to compute unit rates¹ associated with ratios of fractions. For example, they find the walking speed of a person who walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour. Students identify unit rates in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.

Students recognize and represent proportional relationships between quantities. They decide if two quantities are in a proportional relationship, for example, by graphing two quantities on a coordinate plane and observing whether the graph is a straight line through the origin. They also represent proportional relationships by equations; for example, if total cost t is proportional to the number n of items purchased at a constant price p , then the relationship between the total cost and the number of items can be expressed as $t = pn$. Students use

1. The ratio A units to B units has associated with it the *rate* A/B units to 1 unit. The associated *unit rate* is the number $\frac{A}{B}$.

proportional relationships to solve multistep ratio and percent problems such as problems about simple interest, tax, markups and markdowns, tips, and percent increase and decrease.

With full implementation of the CA CCSSM, some concepts in the 1997 California mathematics standards will be covered at different grades. For example, the 1997 mathematics standards called for sixth grade students to solve problems involving discounts, interest, and tips and to represent proportional relationships with equations. These topics will be covered in seventh grade in the CA CCSSM.

The Number System

Seventh-grade students apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers, which include negative numbers. Students understand $p + q$ as the number located a distance $|q|$ from p on a number line, in the positive or negative direction, depending on whether q is positive or negative. They demonstrate that a number and its opposite have a sum of 0 (are additive inverses), and they understand subtraction of rational numbers as adding the additive inverse. Students extend multiplication of fractions to rational numbers, and they apply properties of operations as strategies to multiply and divide rational numbers. Students understand that properties of operations, such as the distributive property, apply to all rational numbers, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Students realize that each quotient of integers (with a nonzero divisor) is a rational number and if p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Ultimately, students use the four operations with rational numbers to solve real-world and mathematical problems.

With full implementation of the CA CCSSM, multiplication and division with negative integers, a sixth-grade topic in the 1997 California standards, will move to seventh grade in the CA CCSSM.

Expressions and Equations

Seventh-grade students use the properties of operations to generate equivalent expressions. Students work with complex linear expressions with rational coefficients, such as $7 - 2(3 - 8x)$. Students add, subtract, factor, and expand linear expressions, and they realize that rewriting an expression in different forms can help them solve problems. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”

Students solve multistep, real-life mathematical problems with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), and they assess the reasonableness of their answers. They use variables to represent quantities and construct simple equations and inequalities to solve problems. Students solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$ and inequalities of the form $px + q > r$ or $px + q < r$, where p , q and r are rational numbers. Students graph the solution set of the inequality and interpret it in the context of the problem.

With full implementation of the CA CCSSM, the slope of a line and graphing and interpreting linear and nonlinear functions are examples of seventh-grade topics in the 1997 California standards that will move to eighth grade.

Students solve multi-step, real-life mathematical problems with positive and negative rational numbers in any form...and they assess the reasonableness of their answers.

Geometry

Seventh-grade students work with various geometric figures. They solve problems involving scale drawings of geometric figures; they compute lengths and areas and reproduce a scale drawing at a different scale. Students work with three-dimensional figures and relate them to two-dimensional figures by examining cross-

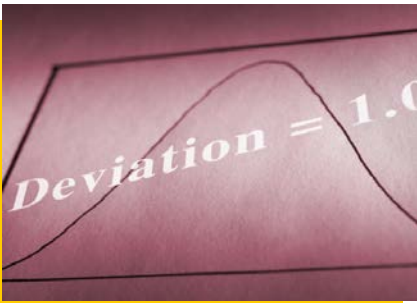
sections that result when three-dimensional figures are split. Students draw geometric shapes with given conditions (such as triangles from three measures of angles) and know and use the formulas for calculating the area and circumference of a circle.

Students use facts about supplementary, complementary, vertical, and adjacent angles in multistep problems to write and solve simple equations to find an unknown angle in a figure. Students extend their understanding of area as they solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

With full implementation of the CA CCSSM, some topics will be covered at different grades. For example, how to compute surface area and draw polygons in the coordinate plane, covered at seventh grade in the 1997 California standards, will move to sixth grade in the CA CCSSM. Also, the Pythagorean Theorem, a seventh-grade topic in the 1997 California standards, will move to eighth grade in the CA CCSSM.

Statistics and Probability

Students are introduced to statistics in sixth grade. In seventh grade, they extend their work with single data distributions to compare two data distributions and address questions about differences between populations.



Seventh-grade students begin informal work with random sampling. They use data from a random sample to draw inferences about a population with an unknown characteristic. For example, they predict the winner of a school election based on randomly sampled survey data. Students also use measures of center and variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, they 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.

Students investigate the concept of chance to develop, use, and evaluate probability models. Seventh-grade students learn that the probability of a chance event is a number between 0 and 1 (a probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event). Students collect data related to a chance process and predict the approximate relative frequency given the probability. For example, when rolling a six-sided number cube 600 times, students predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. Students develop and use probability models to find the probabilities of events. They use organized lists, tables, tree diagrams, and simulations to find the probabilities of compound events. For example, if 40 percent of donors have type A blood, what is the probability that it will take at least four donors to find one with type A blood?

Support for English Learners

Students need to develop knowledge of mathematics as a language. The linguistic complexity and unfamiliar academic language of mathematics instruction may pose particular challenges for English learners. The language of mathematics has its own precise and discipline-specific meanings. English learners need opportunities to develop their knowledge of the features of language that are used to teach mathematics, such as *semantics* (how to translate the words of a problem into a symbolic representation) and *mathematical discourse* (writing or talking about mathematical terms, concepts, and so on).

The specialized vocabulary of mathematics should be explicitly taught in context and reinforced throughout the year. *Explain, prove, justify, determine, solve, identify, analyze, compare, estimate, interpret, generate, locate, illustrate, obtain, reproduce, and summarize* are examples of verbs that are commonly used in mathematics and may pose challenges for English learners. Specialized vocabulary encountered in mathematics that may require additional explanation includes nouns such as *diagram, scale drawing, derivation, evidence,*

expression, display, measurement data, and rational and irrational numbers. Attention must also be paid to words that have a different meaning in common discourse than in mathematics—such as *set, table, digit, plane, space, round, point, and field.*

Students are expected to explain and apply concepts they encounter and procedures they use in solving real-world and mathematical problems. They construct and present well-defined, plausible arguments. Although students may use models, diagrams, or drawings to explain some concepts or present an argument, other problems will require that students produce an oral or written response. English learners can successfully engage in these learning opportunities with teacher guidance and multiple practice opportunities. Teachers should also be aware that students may have learned different symbols and procedures that could result in the same answer. In some countries, students are expected to do most steps mentally instead of writing out each step.

English learners may benefit from instructional support such as the following:

- Daily opportunities to engage in mathematical discourse by using new vocabulary and explaining the operations used in problem solving
- Opportunities to listen to or read others' arguments and decide if they are strongly supported
- Use of the students' first language to make instruction in English more effective and the vocabulary of mathematics more comprehensible
- Use of individualized or small-group instruction
- Scaffolded instruction and models for constructing arguments that include support and justification for their reasoning, responding to the arguments of others, and asking or answering clarifying questions

Integrated English language development during mathematics instruction meets the needs of English learners by developing procedural proficiency along with conceptual understanding and critical thinking skills. For additional resources to support the teaching of English learners, please visit the CDE English Learners Web page at <http://www.cde.ca.gov/sp/el/> (accessed March 26, 2014).

Use of Technology

The use of calculators and other technology plays a special role in mathematics teaching and learning. In seventh grade, students are ready to use calculators, including graphing calculators, geometry software, modeling software, and electronic resources to their advantage. Technology may be a useful tool for solving problems in various contexts, broadening students' mathematical horizons, and visually demonstrating complex mathematical problems. Technology also provides access to Internet sources for data to support solving real-world problems.

The Standards

The grade-seven CA CCSSM that follow were adopted by the California State Board of Education on August 2, 2010, and modified on January 16, 2013. Content that is unique to California and was added by California to the multistate common core standards, referred to as California additions, is in **bold typeface** and followed by **CA**; however, there are no California additions at grade seven.

The CA CCSSM document is available online at <http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandarAug2013.pdf> (accessed March 20, 2014).

A complete list of the grade-seven 1997 California mathematics standards is available on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf> (accessed March 20, 2014).

California Common Core State Standards for Mathematics Grade Seven	
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 fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</i>
2.	Recognize and represent proportional relationships between quantities. <ul style="list-style-type: none"> 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. <i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i> 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. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>
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. <ul style="list-style-type: none"> a. Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</i> b. Understand $p + q$ as the number located a distance q from p, in the positive or negative

	<p>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.</p> <p>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.</p> <p>d. Apply properties of operations as strategies to add and subtract rational numbers.</p>
2.	<p>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <p>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.</p> <p>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 and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>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.</p>
3.	Solve real-world and mathematical problems involving the four operations with rational numbers. ¹
Expressions and Equations (7.EE)	
Use properties of operations to generate equivalent expressions.	
1.	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
2.	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. <i>For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”</i>
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
3.	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 to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. <i>For</i>

1. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

	<i>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.</i>
4.	<p>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.</p> <p>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 an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i></p> <p>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. <i>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.</i></p>
Geometry (7.G)	
Draw, construct, and describe geometrical figures and describe the relationships between them.	
1.	Solve problems involving scale drawings of geometric figures, including 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 with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
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 use them to 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. <i>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.</i>
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. <i>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 absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.</i>
4.	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. <i>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.</i>
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 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 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. <i>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.</i>
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. <ul style="list-style-type: none"> a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. <i>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.</i> b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. <i>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?</i>

8.	<p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <ol style="list-style-type: none"> 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. 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 in the sample space which compose the event. Design and use a simulation to generate frequencies for compound events. <i>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?</i>
	<p>Standards for Mathematical Practice (MP)</p> <p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>

CA CCSSM Domains

The Standards for Mathematical Content are organized by domains. The following table lists all of the domains that apply to kindergarten through grade eight, and it identifies which domains are addressed in which grade level.

Domains	Kinder- garten	Grade One	Grade Two	Grade Three	Grade Four	Grade Five	Grade Six	Grade Seven	Grade Eight
Counting and Cardinality (CC)	X								
Operations and Algebraic Thinking (OA)	X	X	X	X	X	X			
Numbers and Operations in Base Ten (NBT)	X	X	X	X	X	X			
Measurement and Data (MD)	X	X	X	X	X	X			
Number and Operations-Fractions (NF)				X	X	X			
Geometry (G)	X	X	X	X	X	X	X	X	X
Ratios and Proportional Relationships (RP)							X	X	
The Number System (NS)							X	X	X
Expressions and Equations (EE)							X	X	X
Statistics and Probability (SP)							X	X	X
Functions (F)									X

Eighth-Grade Curriculum



What will my child learn in English language arts and mathematics in eighth grade?

In August 2010, the state adopted the California Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects and Mathematics. How will the new standards enhance eighth-grade curriculum?

This chapter contains two sections—English language arts and mathematics—that describe what students should know and be able to do by the end of eighth grade. Each section includes a brief description of the eighth-grade standards, concluding with a list of the eighth-grade standards for the California Common Core State Standards (CA CCSS), which include California additions, for English language arts/literacy and mathematics.

For additional guidance and support to implement the standards, refer to the:

- *Mathematics Framework* located on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed March 6, 2014).
- *English Language Arts/English Language Development Framework* located on the CDE ELA/ELD Curriculum Framework Web page at <http://www.cde.ca.gov/ci/rl/cf/> (accessed March 6, 2014).

English Language Arts



Overview

In preparation for high school and beyond, students in eighth grade must have a firm grasp of skills to be a literate person in the twenty-first century. They read and respond to significant works of literature and examine how modern works of fiction draw on traditional themes and characters. Given informational text, students read critically the arguments and specific claims in a text, assessing whether the author's evidence is reasoned and sufficient in addressing conflicting evidence and viewpoints. Students, working on their own and with others, produce clear and coherent texts appropriate to the task, purpose, and audience. Students connect their reading to their writing by drawing evidence from literary and informational texts when writing analyses or short research projects. Eighth-grade students build on the communication and collaboration skills from earlier grades. As they engage in collaborative discussions, they probe and reflect on discussion topics and are able to justify their own views in light of evidence presented by others. Students continue to acquire and accurately use general academic language and domain-specific vocabulary. They recognize when it is important to know the precise meaning of a word in order to comprehend a text and call upon a range of strategies to determine word meanings.

In preparation for high school and beyond, students in eighth grade must have a firm grasp of skills to be a literate person in the twenty-first century.

There are many similarities between the CA CCSS for ELA/Literacy and the 1997 California English language arts standards, but there are also some notable differences. For instance, in the CA CCSS, the standards in eighth grade are divided into strands: Reading, Writing, Speaking and Listening, and Language. The 1997 California standards are organized around domains: Reading, Writing, Written and Oral English Language Conventions, and Listening and Speaking. An organizational change in the CA CCSS for ELA/Literacy for grades six through twelve is the inclusion of another set of standards: Reading and Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects. They are not intended to replace existing standards in those content areas; instead, they supplement instruction and provide consistency in expectations across the curriculum. The standards also call for collaboration across disciplines and acknowledge the important role of teachers in every subject area to prepare students for college and careers.

This section provides an overview of the new CA CCSS for eighth-grade English language arts and literacy. It includes guidance to ensure success for struggling readers and English learners. A complete list of the grade-eight CCSS for ELA/Literacy, with California additions, can be found at the end of this section. A complete list of the grade-eight 1997 California English language arts standards is located on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/elacontentstnds.pdf> (accessed February 23, 2012).

What Students Learn in Eighth Grade

Reading

Three important emphases of the CA CCSS in reading are text complexity, a balance between literature and informational text, and an integrated approach to instruction. The term *text complexity band* is the focus of Standard 10 in the reading standards for literature, for informational text, and in the reading standards for literacy in history/social studies, science, and technical subjects. Standard 10 sets



the expectation that students will read increasingly complex text each year from second grade through high school.¹ The text complexity band for grades six through eight sets different expectations for each grade level. In eighth grade, students are expected to read literature and informational texts in the grades-six-through-eight text complexity band independently and proficiently.

Starting in the earliest elementary grades, the CA CCSS for ELA balance reading literature with reading informational text. The increased attention to informational text may lead to some significant changes in elementary instruction as California schools transition to the CA CCSS. Fewer changes may be necessary at eighth grade because the 1997 California standards focus on the comprehension and analysis of informational texts. Like the CA CCSS for ELA, the 1997 standards consist of an equal number of standards in each of the two components of reading. Under the 1997 standards, eighth-grade students read informational texts, including textbooks, magazines, consumer materials (warranties, product information, instruction manuals), and online information. Students also use information from consumer, workplace, and public documents to explain a situation or solve a problem. Teachers' familiarity with those standards will ease the transition to the CCSS.

An integrated approach to instruction is another feature of the CA CCSS for ELA. Reading is one of the four strands of the CCSS for English language arts. The skills, concepts, and strategies that students learn in reading connect with and are reinforced by standards in the other three strands. For example, students read a text, analyze how an author structures an argument to support his or her claims, and then use their knowledge of the structure and organization to produce their own arguments in writing or deliver an oral argument in a formal presentation.

The following section is organized according to the two major areas of the reading standards: reading standards for literature and for informational text.

Reading Standards for Literature

In eighth grade, students read and analyze a range of literary texts. The literature that students read in class must be complex enough to merit close reading and deep analysis, as well as thoughtful discussion. By reading a wide range of literature from and about different cultures, with varied themes and set in different time periods, students become familiar with different literary structures and better understand analogies or allusions used in texts. Well-written literature also serves as a model for the students' own writing. The challenge for teachers is to select texts that engage students and also support instruction in the CA CCSS for ELA reading standards for literature.

Both the 1997 standards and the new CA CCSS for ELA focus on analysis of literature as a means of increasing students' comprehension and critical thinking skills. The development of theme, characters, point of view, and plot are explored in both sets of standards, but the CCSS differ in depth and scope. As their analytical skills become more sophisticated, students in eighth grade compare and contrast structures of different texts, probe the relationships between elements of a text (e.g., characters, setting, plot) and its central theme, and analyze how modern works draw from significant works of the past.

A new eighth-grade expectation is that students will learn to cite textual evidence that *most strongly* supports their own analysis of a text. Instruction and practice in earlier grades in analyzing an author's development of a theme or central idea prepares students to evaluate the strength of the textual evidence they cite. In addition, students explore how a line of dialogue or an incident in a story or drama can propel the action, reveal something about a character, or provoke a decision. Close reading and thoughtful analysis help students understand how an author uses different points of view to create effects such as suspense or humor.

1. For more information about text complexity, see appendixes A and B of the *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*, which are available at <http://www.corestandards.org/the-standards> (accessed March 1, 2012).

Students view film versions or live presentations of stories or dramas and analyze how faithful the production is to the original text or script. As part of that analysis, they evaluate the choices made by the director or actors. Students read modern works of fiction in the context of myths, traditional stories, and religious works and look for common themes, patterns of events, or types of characters. English language arts and history–social science teachers can reach across disciplines to connect literature to history by jointly selecting significant literature from the past for students to read and compare with modern fiction.

Reading Standards for Informational Text

Eighth-grade students evaluate the information, evidence, and reasons that authors provide to support central ideas and claims. They also examine how an author responds to conflicting evidence, the organizational structure of text, and the use of text features to convey key concepts. Both the 1997 California standards and the CA CCSS for ELA cover this content, but the CCSS require deeper analysis and evaluation. Another important way that the CA CCSS for ELA differ from the 1997 standards is a focus on the different media (e.g. printed or digital text, video, audio, or multimedia) for presenting information.

Eighth-grade students evaluate the information, evidence, and reasons that authors provide to support central ideas and claims.

Under the CA CCSS for ELA, students analyze the development of the central idea over the course of a text, including its relationship to supporting ideas. Their analysis of text includes exploring how a text makes connections with and distinctions between individuals, ideas, or events. In addition to analyzing the impact of specific word choices on the meaning and tone of a text, students analyze the role of particular sentences in developing and refining key concepts in a paragraph. They also evaluate the advantages and disadvantages of using different media to present a particular topic or text.

Close and critical reading of informational text is essential for students to fully comprehend its content. Students evaluate the arguments and claims made in a text and assess the soundness of the author’s reasoning. They also assess the relevance and sufficiency of the evidence provided in a text, recognize irrelevant evidence, and analyze how the author acknowledges and responds to conflicting evidence or viewpoints. Students analyze two or more texts on the same topic but with conflicting information and learn to identify where the disagreements are matters of interpretation or fact. The ability to distinguish differences in facts from differences of interpretation is an important skill that can benefit students throughout their lives.

Writing

Students in eighth grade produce texts that demonstrate increased sophistication in writing skills and use of language—from vocabulary and syntax to a more cohesive organization of ideas addressing increasingly demanding content and sources. Their writing makes use of technology during development, collaboration, and production. Students demonstrate a command of the conventions of the English language as well as experience with strengthening their pieces through revising, editing, or trying new approaches.

Both the 1997 California standards and the CA CCSS for ELA call for students in eighth grade to write multiparagraph texts with a central idea or theme, an identified purpose, a logical organizational structure with relevant supporting details, precise words and visual imagery, and a conclusion. Under the 1997 standards, students write responses to literature, persuasive compositions, research reports, documents related to career development, technical documents, and narratives.

The CA CCSS for ELA writing standards identify three main types of writing applications—arguments, informative/explanatory texts, and narratives—and set challenging expectations for students’ writing. For all types of writing, students draw evidence from literary and informational texts to support their analyses, reflections, and research. Students write routinely in both extended and short time frames for a range of

discipline-specific tasks, purposes, and audiences. The standards for writing arguments and informative/explanatory texts establish challenging expectations. When writing arguments, students logically organize the reasons and relevant evidence, support claims with logical reasoning, and acknowledge alternate arguments or opposing claims. For informative/explanatory texts, students clearly introduce a topic or thesis and use an extended array of formatting features, graphics, or multimedia to aid in comprehension. Topics are developed with appropriate facts, details, quotations, and other examples. Both types of text use a formal writing style and provide conclusions supported by the presented information. In their narrative writing, students develop real or imagined events by incorporating description and sensory language to:

- add detail and engage the reader;
- include well-structured events so the sequence unfolds naturally; and
- use transition words and phrases to signal shifting from one time frame to another.

Narrative techniques, such as dialogue, description, and reflection, are incorporated to develop characters and plot.

Technology, including the Internet, plays a larger role in the CCSS. Students use technology to produce and publish their writing, to interact and collaborate with others, and to conduct short research projects to answer a specific question. They learn to gather key information and data from multiple print and digital sources, assess the accuracy and credibility of each source, and effectively incorporate quotations, paraphrasing, or citations (while avoiding plagiarism) in their writing.



Speaking and Listening

Students in eighth grade listen critically to speakers for comprehension; identify and analyze information from a variety of media and formats; engage in collaborative discussions; and deliver arguments, narratives, and summary presentations. In their oral presentations, students include multimedia components and visual displays for clarification and emphasis, use appropriate eye contact and volume, and apply the same conventions of standard English when

speaking as in writing.

Both the 1997 California standards and the CA CCSS for ELA focus on students' listening and comprehension skills and formal oral presentation skills. In the CA CCSS for ELA, students analyze the purpose of presented information and evaluate the motives, such as commercial or political, behind the presentation. They also evaluate the reasoning, relevance, and sufficiency of evidence, noting when irrelevant evidence is provided. When students present arguments, narratives, or summaries, they sequence and emphasize points in a focused manner and use pertinent details and examples.

The CA CCSS for ELA emphasize collaborative discussions on eighth-grade topics and texts with diverse partners and in different groupings (one-on-one, in groups, or teacher-led). In these discussions, students build on others' ideas and clearly express their own. They come prepared to add to the discussion, explicitly drawing on research material under study and reflecting on ideas being discussed. Students follow rules for collegial discussions and decision making with specific goals and deadlines and are assigned individual roles. They contribute comments to the discussion and elaborate on the remarks of others, pose questions to connect the ideas of others, and, if warranted, justify their own views based on new evidence presented.

Multimedia components, as sources of information and complements to oral presentations, are another focus of the CA CCSS for ELA. Students in eighth grade analyze the motives behind information presented in diverse media and formats (e.g., visual, quantitative, oral). They use multimedia components and visual displays to

clarify claims and emphasize key points in their presentations. Students learn to adapt their speech to a variety of contexts and tasks and are able to use formal English when it is appropriate.

Language

Students in eighth grade are introduced to new rules for grammar usage and punctuation as they continue to build on language skills introduced in earlier grades. The specific rules or conventions they learn vary between the 1997 California standards and the CA CCSS for ELA. Students use their knowledge of language and its conventions when writing, speaking, listening, and reading.

Under the CA CCSS for ELA, students explain the function of gerunds, participles, and infinitives and how they function in particular sentences. Students expand their grammatical knowledge as they learn to form and use verbs in the active and passive voice and apply this knowledge as they recognize and correct inappropriate shifts in verb voice and mood. Students learn to express their ideas more succinctly as they use verbs in the conditional, indicative, imperative, interrogative, or subjunctive mood to achieve particular effects in their writing.

The standards for vocabulary cover a range of strategies students use to determine the meaning of words. For example, the CA CCSS for ELA call for students to use context and a word's position or function in a sentence as a clue to determine the meaning of a word or phrase. In addition, students learn to verify their preliminary determination of the meaning of a word or phrase by checking the meaning in context or in a dictionary. Students learn to understand figurative language, word relationships, and nuances in words by distinguishing among the connotations (associations) of words with similar denotations (definition) (e.g. *bullheaded*, *willful*, *firm*, *persistent*, *resolute*).

The CA CCSS for ELA also stress using relationships between certain words (e.g., synonym/antonym, analogy) to better understand words. Students continue to use common Greek or Latin affixes and roots as clues for word meanings. Students use both print and digital sources and general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), to pronounce words, clarify the precise meaning or its parts of speech, or trace the etymology of words.

Standards for Literacy in History/Social Studies, Science, and Technical Subjects

Unique to the CA CCSS in ELA/Literacy in grades six through twelve is the addition of standards for literacy in history/social studies, science, and technical subjects. (In kindergarten through grade five, the standards for literacy are embedded in the four strands of the standards.) The addition of these standards for literacy recognizes the role of English language arts teachers in developing students' literacy skills while clarifying that teachers in other content areas also share that responsibility. The standards for literacy recognize the need for students to be proficient in reading complex informational text and writing persuasive and explanatory text in a specific discipline.

In the CA CCSS for Literacy, the standards for literacy in history/social studies, science, and technical subjects focus on reading and writing and are divided into three parts—reading standards for literacy in history/social studies; reading standards for literacy in science and technical subjects; and writing standards for literacy in history/social studies, science, and technical subjects. Standards in each part are organized into grade spans (six through eight, nine and ten, and eleven and twelve) and follow the same set of anchor standards used in English language arts.

The addition of these standards for literacy recognizes the role of English language arts teachers in developing students' literacy skills while clarifying that teachers in other content areas also share that responsibility.

The shared responsibility of developing reading and writing across all content areas is not a new topic of discussion. Over the past 15 years, California’s content standards and frameworks have advocated this idea of teachers sharing the responsibility to develop student literacy. For example, guiding principles from the *Science Framework for California Public Schools* (California Department of Education 2004) identify what effective science programs do: (1) use standards-based connections with other core subjects to reinforce science teaching and learning; (2) develop students’ command of academic language; and (3) use technology to teach students, assess their knowledge, develop information resources, and enhance computer literacy. California’s history–social science standards include historical and social science analysis skills. Examples of the skills from grades six through are as follows: (1) students frame questions that can be answered by historical study and research; (2) students distinguish fact from opinion in historical narratives and stories; and (3) students understand and distinguish cause, effect, sequence, and correlation in historical events, including the long- and short-term causal relations.

These same skills are identified in the CA CCSS for Literacy reading standards in history/social studies and science and technical subjects. The CA CCSS for Literacy require the use of specific textual evidence to support analysis of text and to compare and contrast information from different sources (i.e., primary versus secondary sources or doing an experiment versus reading about it). The CA CCSS for Literacy highlight the importance of determining the meaning of content-related or domain-specific words as used in a specific historical or scientific context.

As noted in the English language arts section above, the writing standards in the CA CCSS for Literacy expand the types of writing beyond the 1997 California standards. Students are expected to write arguments based on content in a specific discipline, supporting the topic with relevant and accurate evidence. Informative or explanatory text may include writing about a scientific procedure or retelling an historical event. All students’ writing should be well organized and developed using key facts or details. Students are expected to conduct research projects to answer a specific question, paraphrase or summarize others’ work without plagiarizing, and write consistently within both short and extended time frames.

Extra Support for Struggling Readers

By the end of eighth grade, students are expected to be fluent and independent readers who engage in the analysis of literature and informational text. Students who are not proficient in word-analysis skills are likely to experience academic difficulties. Early screening and intervention address specific areas of instruction in a timely manner. Struggling readers—any students experiencing difficulty learning to read, which may include those who use nonstandard English, English learners, and students with disabilities—should be provided with additional support to become proficient in eighth-grade reading skills. Instructional support for students should include:

Students who are not proficient in word-analysis skills are likely to experience academic difficulties.

- flexible groupings for differentiated instruction;
- opportunities to preteach key skills, strategies, and concepts;
- intensive, explicit instruction in decoding and word-recognition skills, which may include materials at the reading level of students and that are age-appropriate;
- preteaching and reteaching the use of Greek and Latin affixes and roots as clues to determine meaning of unknown words;

- preteaching and reteaching word-learning strategies such as using a word's position or function as clues to determine meaning of unknown words;
- additional direct, explicit instruction in using informational text to analyze overall text structure and features;
- additional direct, explicit direct instruction in using information text to cite evidence as required in text analysis;
- direct, explicit instruction in language development to address grammatical structures of oral and written standard English;
- vocabulary instruction embedded in context, including academic language and domain-specific vocabulary;
- reinforcement and extension of the regular classroom program.

For those students whose reading achievement is two or more years below grade level, placement in an intensive intervention program in reading/language arts should be considered. These accelerated programs are designed to address the instructional needs of students in grades four through eight whose reading achievement is two or more years below grade level. For additional information on the 2008 state-adopted intensive intervention programs, see the list of adopted instructional materials on the CDE Reading/Language Arts Web page at <http://www.cde.ca.gov/ci/rl/im/rlaadoptedlist.asp> (accessed March 6, 2014).

Support for English Learners

English-language development (ELD) is a critical component of the language arts program for English learners. The CA CCSS for ELA/Literacy set rigorous expectations for student learning, and ELD instruction must accommodate these enhanced expectations. The CA ELD Standards which were adopted in November 2012 provide educators with guidance on instructional planning, curriculum development, and assessment of ELD instruction. These standards reflect current research and theory to support English language development for California's English learners and correspond to the CA CCSS for ELA/Literacy in kindergarten through grade twelve. Specifically designed for instructional purposes, the CA ELD Standards define three proficiency levels: Emerging, Expanding, and Bridging. For more information on the CA ELD standards, visit the CDE ELD Standards Web page at <http://www.cde.ca.gov/sp/el/er/eldstandards.asp> (accessed June 15, 2014).

Careful placement of English learners in appropriate classes is of utmost consideration. Several factors for consideration include the students' primary language and literacy background, time in the United States, English language proficiency, and progress in English language development. Such factors can help determine the appropriate placement, whether it be an ELD class, an English language arts mainstream class, or a combination of classes. Research by Dutro and Kinsella (California Department of Education 2010b) contends that students at the more advanced levels, such as the Expanding and Bridging levels, benefit from instruction that develops complex language structures, academic vocabulary, and reading comprehension, as well as explicit guided writing instruction to strengthen students' writing abilities.

English learners develop oral and written language through *Integrated and Designated* ELD instruction that addresses the CA ELD standards. *Integrated ELD* instruction refers to ELD throughout the day and across the disciplines, in which all teachers with ELs in their classrooms use the CA ELD Standards in tandem with the focal CA CCSS for ELA/Literacy and other content standards. *Designated ELD* is a protected time during the regular school day in which teachers use the CA ELD Standards as the focal standards to build into and from

content instruction as a way to develop proficiency in academic English. English learners develop oral and written language through Designated ELD instruction, including rich collaborative discussion of literary and informational text, the integration of academic and domain-specific vocabulary, and the use of increasingly complex grammatical structures. Effective ELD instruction also integrates reading and writing applications to build reading comprehension.

Of equal importance is placement (or misplacement) of English learners in reading intervention classes. The aim of reading intervention classes is to support the development of basic knowledge and skills of decoding multisyllabic words, reading fluency, vocabulary-learning strategies, and comprehension strategies, not developing oral language proficiency. In *Improving Education for English Learners: Research-Based Approaches* (California Department of Education 2010b), August and Shanahan suggest the placement of English learners be carefully considered as placement in reading intervention classes alone will not provide the language development offered in structured and focused ELD classes that address the CA ELD standards.

Students in eighth grade are expected to conduct deep analysis of literature and informational text on grade-level topics in all subject areas. English learners benefit from Integrated ELD instruction as they learn how to analyze the structure of informational text and how text features contribute to the development of the ideas in text. With guided and scaffolded instruction, students will also learn how to cite textual evidence that most strongly supports their statements and inferences in their analysis of text.

When provided with Integrated ELD instruction using informational text, English learners can practice using academic language as well as domain-specific words in different content areas. English learners will benefit from additional explicit instruction on how to determine the meaning of words and phrases, including words that have figurative, connotative, and technical meanings. As English learners participate and engage in collaborative discussions, they are given ample opportunities to hear and practice using vocabulary acquired from their reading. Students learn to pose questions that connect the ideas of others and to respond with relevant evidence, observations, and ideas as they express themselves during one-on-one, small group, or teacher-led discussions.

As English learners participate and engage in collaborative discussions, they are given ample opportunities to hear and practice using vocabulary acquired from their reading.

The CA CCSS for ELA/Literacy emphasize writing arguments, and English learners will benefit from explicit guided instruction on understanding the structure of argumentative writing. Additional instruction in how to acknowledge and distinguish opposing claims, use credible sources, and establish and maintain a formal style of writing will ensure adequate mastery of those skills. Scaffolds such as sentence and paragraph frames for writing informative and explanatory texts will enable English learners in the early stages of learning English to improve their writing. Guided instruction on developing a thesis statement, organizing ideas, and including well-chosen facts, concrete details, quotations, and a conclusion reinforces valuable skills. Because English learners are still developing proficiency in English, they benefit from receiving positive corrective teacher feedback on writing and grammatical errors. English learners may need additional time and practice in writing for a variety of purposes and audiences to further their writing abilities.

Explicit instruction on the rules of grammar and functions of gerunds, participles, and infinitives in particular sentences will help English learners to enhance their writing skills. Additional modeling and guided practice in forming and using verbs in the declarative, interrogative, and subjunctive moods as well as the use of passive voice will assist English learners in becoming more proficient speakers and writers. Students are provided with multiple opportunities to practice these skills both in speaking and writing and receive corrective teacher feedback.

For those students whose academic achievement is two or more years below grade level, use of an intensive intervention program for English learners should be considered. This intensive accelerated program is designed for English learners in grades four through eight whose academic achievement is below grade level. Additional information on the state-adopted intensive intervention program for English learners is provided in the *English*

Language Arts/English Language Development Framework located on the CDE ELA/ELD Curriculum Framework Web page at <http://www.cde.ca.gov/ci/rl/cf/> (accessed March 6, 2014).

For additional resources to support the teaching of English learners, please visit the CDE English Learners Web page at <http://www.cde.ca.gov/sp/el/> (accessed March 27, 2014). The CDE has published an excellent resource, *Improving Education for English Learners: Research-Based Approaches* (California Department of Education 2010b), with the most comprehensive and up-to-date strategies to serve English learners. Guidelines for providing ELD instruction as well as recommended instructional practices are provided. Information on the publication is available through the CDE Press Web page at <http://www.cde.ca.gov/re/pn/rc/ap/pubcat.aspx> (accessed March 26, 2014).

The Standards

The CA CCSS for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy) that follow were adopted by the California State Board of Education on August 2, 2010, and modified on March 13, 2013. Content that is unique to California and was added by California to the multistate common core standards, referred to as California additions, is in **bold typeface** and followed by **CA**.

The CA CCSS College and Career Readiness (CCR) Anchor Standards (Appendix A) define the literacy expectations for students entering college and careers and provide the foundation of the K–12 English language arts standards.

A complete list of the 1997 California English language arts standards for grade eight is located on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/elacontentstnds.pdf> (accessed February 29, 2012).

California Common Core State Standards for English Language Arts Grade Eight	
Key Ideas and Details	
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, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
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 figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts. (See grade 8 Language standards 4-6 for additional expectations.) CA

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.	Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.
Integration of Knowledge and Ideas	
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)
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, at the high end of grades 6–8 text complexity band independently and proficiently.
Reading Standards for Informational Text	
Key Ideas and Details	
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, including its relationship to supporting ideas; provide an objective summary of the text.
3.	Analyze how a text makes connections among and distinctions between 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, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts. (See grade 8 Language standards 4-6 for additional expectations.) CA
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. a. Analyze the use of text features (e.g., graphics, headers, captions) in consumer materials. CA
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.	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, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
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.
Range of Reading and Level of Text Complexity	
10.	By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.
Writing Standards	
Text Types and Purposes	
1.	<p>Write arguments to support claims with clear reasons and relevant evidence.</p> <ul style="list-style-type: none"> 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 accurate, 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.	<p>Write informative/explanatory texts, including career development documents (e.g., simple business letters and job applications), to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. CA</p> <ul style="list-style-type: none"> a. Introduce a topic or thesis statement 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. CA 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

	<p>ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>
3.	<p>Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.</p> <p>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.</p> <p>b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters.</p> <p>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.</p> <p>d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.</p> <p>e. Provide a conclusion that follows from and reflects on the narrated experiences or events.</p>
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.)
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. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 8.)
6.	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.
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.
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.	<p>Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ul style="list-style-type: none"> 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; recognize 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.
Speaking and Listening Standards	
Comprehension and Collaboration	
1.	<p>Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 8 topics, texts, and issues</i>, building on others’ ideas and expressing their own clearly.</p> <ul style="list-style-type: none"> 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. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed. c. Pose questions that connect the ideas of several speakers 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 in light of the evidence presented.
2.	Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.
3.	Delineate a speaker’s argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.
Presentation of Knowledge and Ideas	

4.	<p>Present claims and findings (e.g., argument, narrative, response to literature presentations), emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. CA</p> <p>a. Plan and present a narrative that: establishes a context and point of view, presents a logical sequence, uses narrative techniques (e.g., dialogue, pacing, description, sensory language), uses a variety of transitions, and provides a conclusion that reflects the experience. CA</p>
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 grade 8 Language standards 1 and 3 for specific expectations.)
Language Standards	
Conventions of Standard English	
1.	<p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <p>a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.</p> <p>b. Form and use verbs in the active and passive voice.</p> <p>c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.</p> <p>d. Recognize and correct inappropriate shifts in verb voice and mood.*</p>
2.	<p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <p>a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break.</p> <p>b. Use an ellipsis to indicate an omission.</p> <p>c. Spell correctly.</p>
Knowledge of Language	
3.	<p>Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <p>a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to</p>

* The following skills are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking. See “Language Progress Chart, By Grade” in the CCSS.

	achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).
Vocabulary Acquisition and Use	
4.	<p>Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on <i>grade 8 reading and content</i>, choosing flexibly from a range of strategies.</p> <ul style="list-style-type: none"> 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., <i>precede</i>, <i>recede</i>, <i>secede</i>). 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 or trace the etymology of words. CA 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.	<p>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <ul style="list-style-type: none"> 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., <i>bullheaded</i>, <i>willful</i>, <i>firm</i>, <i>persistent</i>, <i>resolute</i>).
6.	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

**California Common Core State Standards
Reading Standards for Literacy in History/Social Studies, Science,
and Technical Subjects
Grades Six Through Eight**

Reading Standards for Literacy in History/Social Studies

Key Ideas and Details

1.	Cite specific textual evidence to support analysis of primary and secondary sources.
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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.
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).
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.
5.	Describe how a text presents information (e.g., sequentially, comparatively, causally).
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).
Integration of Knowledge and Ideas	
7.	Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
8.	Distinguish among fact, opinion, and reasoned judgment in a text.
9.	Analyze the relationship between a primary and secondary source on the same topic.
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.
Reading Standards for Literacy in Science and Technical Subjects	
Key Ideas and Details	
1.	Cite specific textual evidence to support analysis of science and technical texts.
2.	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
3.	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
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 <i>grades 6–8 texts and topics</i> .
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.

6.	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
Integration of Knowledge and Ideas	
7.	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
8.	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
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.
Range of Reading and Level of Text Complexity	
10.	By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.
Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects	
Text Types and Purposes	
1.	<p>Write arguments focused on <i>discipline-specific content</i>.</p> <ol style="list-style-type: none"> 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. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. Establish and maintain a formal style. Provide a concluding statement or section that follows from and supports the argument presented.
2.	<p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <ol style="list-style-type: none"> 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. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

	<p>a. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to inform about or explain the topic.</p> <p>e. Establish and maintain a formal style and objective tone.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>
3.	(See note; not applicable as a separate requirement)*
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.	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 writing and present the relationships between information and ideas clearly and efficiently.
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.
8.	Gather relevant information from multiple print and digital sources (primary and secondary), 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. CA
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.

* **Note:** 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/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

Mathematics



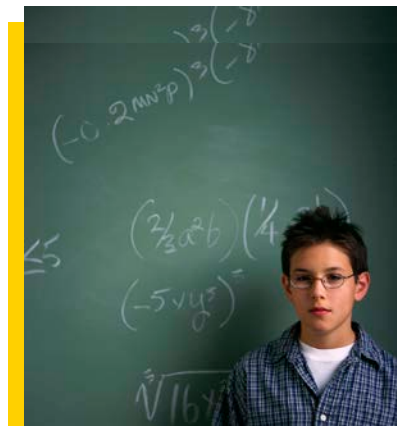
Overview

Effective mathematics education provides students with a balanced instructional program. In such a program, students become proficient in basic computational skills and procedures, develop conceptual understandings, and become adept at problem solving. Standards-based mathematics instruction starts with foundational mathematics ideas and increases in scope and content as the years progress. It is like an inverted pyramid, with the entire weight of the developing subject, including readiness for algebra, resting on the foundations built in the early grades.

In August 2010, California adopted new standards in mathematics: the California Common Core State Standards for Mathematics (CA CCSSM). The CA CCSSM comprise standards developed by the state-led CCSS Initiative and material taken from the 1997 California mathematics standards, referred to as California additions. In January 2013, the CA CCSSM were modified; in particular changes were made to the California additions. In eighth grade, there are no California additions.

A notable difference is that the CA CCSSM include rigorous grade eight standards—the 1997 California standards did not have grade-level specific standards for grade eight. The grade eight CA CCSSM address foundations of algebra, including some topics in the previous Algebra I course (based on the 1997 California standards) that many students took while in eighth grade. When the CA CCSSM were modified in January 2013, model courses in higher mathematics were also approved. These courses include Algebra I and Mathematics I (the first course in an integrated mathematics pathway). The CA CCSSM represent a progression of skills and knowledge that is inherently rigorous and designed to provide a strong foundation for success in the new, more advanced Algebra I and Mathematics I courses. For some eighth-grade students, placement in one of these courses may be appropriate based on their readiness for the mathematical concepts and content, academic goals, and interests. However, it is essential that multiple measures are used to determine a student's readiness for any accelerated sequence. For additional information, refer to “Course Placement and Sequences” in the Appendix of the *Mathematics Framework* located on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed April 14, 2014).

Unlike the 1997 California mathematics standards, the CA CCSSM are organized by four or five “domains” (clusters of standards that address “big ideas” and support connections of topics across the grades) and then by “clusters” (groups of related standards inside domains). The domains for eighth grade are the Number System, Expressions and Equations, Functions, Geometry, and Statistics and Probability. Furthermore, the CA CCSSM do not include “key standards” as in the 1997 California mathematics standards. Instead, the CA CCSSM are designed to have a greater focus at each grade and to develop mathematics topics in depth. Not all content in a given grade is emphasized equally in the standards. Some clusters of standards comprise the bulk of the instructional time at the grade (“major” clusters) and other clusters of standards (“additional/supporting” clusters) reinforce topics in the major clusters. For a chart of the “Grade Eight Cluster-Level Emphases,” refer to the Grade Eight chapter of the *Mathematics Framework* located on the CDE Mathematics Curriculum Framework Web page at <http://www.cde.ca.gov/ci/ma/cf/> (accessed June 11, 2014). The instructional emphasis at each grade supports a coherent progression of learning across grades that develops conceptual understanding, procedural skills and fluency, and the ability to apply mathematics to solve problems and continues a student's preparation for higher mathematics.



The following section provides an overview of the CA CCSSM for eighth-grade mathematics. A complete list of the CA CCSSM for eighth-grade mathematics can be found at the end of this section. A complete list of the 1997 California mathematics standards is located on the CDE Content Standards Web page at <http://www.cde.ca.gov/be/st/ss/documents/mathstandards.pdf> (accessed April 21, 2014).

What Students Learn in Eighth Grade

The CA CCSSM call for mastery of mathematical content as well as mathematical understanding so that students can apply mathematics to solve problems. To support this goal, the CA CCSSM include two types of standards: Standards for Mathematical Practice (the same from kindergarten to grade twelve) and Standards for Mathematical Content (different for each grade level). Doing and using mathematics involves connecting these two types of standards in grade-appropriate ways.

Standards for Mathematical Practice

The Standards for Mathematical Practice (commonly called the “practice standards”) describe attributes of mathematically proficient students that educators at all levels should develop in their students. Practice standards are integrated in grade-level tasks as students engage in thought-provoking questions and problems that support mathematical thinking. Standards for Mathematical Content (commonly called the “content standards”) that call for students to “understand” or “explain” are potential points of intersection between the content standards and the practice standards.

The following chart provides a general overview of the practice standards. The summary provided is without regard to grade level. For a more detailed explanation of each standard, see Appendix B: Standards for Mathematical Practice.

Standards for Mathematical Practice (MP)	Summary
MP.1 Make sense of problems and persevere in solving them.	<ul style="list-style-type: none"> • Find meaning in problems. • Analyze, predict, and plan solution pathways. • Verify answers. • Students ask themselves the question: “Does this make sense?”
MP.2 Reason abstractly and quantitatively.	<ul style="list-style-type: none"> • Make sense of quantities and their relationships in problems. • Create coherent representations of problems.
MP.3 Construct viable arguments and critique the reasoning of others.	<ul style="list-style-type: none"> • Understand and use information to construct arguments. • Make and explore the truth of conjectures. • Justify conclusions and respond to arguments of others.
MP.4 Model with mathematics.	<ul style="list-style-type: none"> • Apply mathematics to problems in everyday life. • Identify quantities in a practical situation. • Interpret results in the context of the situation and reflect on whether the results make sense.
MP.5 Use appropriate tools strategically.	<ul style="list-style-type: none"> • Consider the available tools when solving problems. • Are familiar with tools appropriate for their grade or course (pencil and paper, concrete models, ruler,

	protractor, calculator, spreadsheet, computer programs, digital content located on a Web site, and other technological tools).
MP.6 Attend to precision.	<ul style="list-style-type: none"> • Communicate precisely to others. • Use clear definitions, state the meaning of symbols, and are careful about specifying units of measure and labeling axes. • Calculate accurately and efficiently.
MP.7 Look for and make use of structure.	<ul style="list-style-type: none"> • Discern patterns and structures. • Can step back for an overview and shift perspective. • See complicated things as single objects or as being composed of several objects.
MP.8 Look for and express regularity in repeated reasoning.	<ul style="list-style-type: none"> • When calculations are repeated, look for general methods, patterns, and shortcuts. • Be able to evaluate whether an answer makes sense.

Source: Adapted from the *Common Core Standards Parent Handbook* (California County Superintendents Educational Services Association 2011).

Standards for Mathematical Content

Eighth-grade students build on their understanding of proportional relationships and solve related real-world and mathematical problems. They apply this understanding to graphing and solving linear equations and systems of linear equations. Students comprehend the concept of a function and use functions to describe quantitative relationships. They describe and analyze two- and three-dimensional figures using their knowledge of distance, angles, similarity, and congruence. Eighth-grade students understand and apply the Pythagorean Theorem. They work with irrational numbers, representing them with radical expressions and approximating them with rational numbers. Students' work with line plots in earlier grades progresses into the graphing of bivariate measurement data with scatter plots in eighth grade. Students construct and interpret scatter plots to discover associations between measured variables.

In grade eight, instructional time should focus on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and 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. Students also work towards fluency with solving simple sets of two equations with two unknowns by inspection.

The Number System

In eighth grade, students work with irrational numbers. They informally understand that every number has a decimal expansion. For rational numbers, students show that the decimal expansion repeats eventually and convert these types of decimals into rational numbers. Students learn that numbers that are not rational are called *irrational numbers*.

Students also learn that irrational numbers can be approximated by rational numbers. They use rational approximations to compare the size of irrational numbers, locate them on a number line, and estimate the value of expressions with irrational numbers. Students are familiar with the approximation for the irrational number π

that they used to determine the area or circumference of a circle in seventh grade. They will work with irrational numbers and their rational approximations when solving equations such as $x^2 = 2$ and problems involving the Pythagorean Theorem.

Expressions and Equations

The expressions and equations domain is a critical area of instruction and learning in eighth grade. Students build on their previous experiences with exponents. They apply the properties of integer exponents to generate equivalent numerical expressions. They gain experience with the properties of exponents by working with powers of 10, in the form of single-digit numbers times an integer power of 10 (e.g., 6×10^8), to estimate very large or very small quantities. They also perform operations with very large or very small numbers expressed in scientific notation. As students work with scientific notation, they learn to choose units of appropriate size for measurement of very large or very small quantities. They also learn to interpret scientific notation that has been generated by technology.

The expressions and equations domain is a critical area of instruction and learning in eighth grade.

In eighth grade, students begin to work systematically with square root and cube root symbols. They use these symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. They evaluate square roots of small perfect squares (e.g., $\sqrt{16} = 4$) and small perfect cubes (e.g., $\sqrt[3]{27} = 3$). Students make connections between their understanding of irrational numbers and radicals as they recognize that $\sqrt{2}$ is an irrational number.

Students also make the important connection between proportional relationships, lines, and linear equations. As students graph proportional relationships on a coordinate plane, they create a visual representation of the relationship between two quantities. They interpret the unit rate in a proportional relationship (e.g., r miles per hour) as the slope of the graph. They understand that the slope of a line represents a constant rate of change. Students compare two different proportional relationships presented in different ways (e.g., as a graph of the line through the origin, a table exhibiting a constant rate of change, or an equation of the form $y = kx$).

Students use similar triangles to explain why the slope m is the same between any two distinct points on a nonvertical line in the coordinate plane. Students derive the equations $y = mx$ (for a line through the origin) and $y = mx + b$ (for a line intercepting the vertical axis at b) from the fact that the slope is constant between any two points on a line.

Much of students' work in eighth grade involves analyzing and solving linear equations and pairs of simultaneous linear equations. They solve linear equations with one variable, including cases with one solution, infinitely many solutions, and no solutions. Students show examples of each of these cases by successively transforming an equation into simpler forms ($x = a$, $a = a$, and $a = b$, where a and b represent different numbers). Solving some linear equations will require students to expand expressions using the distributive property and to collect like terms.

Solving pairs of simultaneous linear equations builds on the skills and understandings students used to solve linear equations with one variable. An underlying concept that students grasp as they work with simultaneous linear equations is the understanding that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously. Students algebraically solve systems of two linear equations in two variables. They also estimate solutions by graphing the equations, which results in pairs of lines that intersect, are parallel, or are the same line. In some simple cases, students can solve the pairs of linear equations by inspection and reasoning. For example, $4x + 7y = 28$ and $4x + 7y = 32$ have no solution, because $4x + 7y$ cannot simultaneously be 28 and 32. Students also solve real-world and mathematical problems leading to two linear equations in two variables. As students gain experience with solving pairs of simultaneous linear equations, they are able to solve a greater variety of real-world problems.

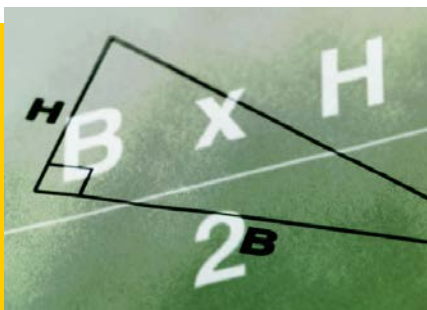
Functions

Another important area of instruction in eighth grade is the functions domain. As a starting point for working with functions, students understand the concept of a function as a rule that assigns to each input exactly one output and that functions describe situations in which one quantity determines another. Students may connect these foundational understandings about functions to their work with proportional relationships. The same kinds of tables and graphs students used in seventh grade to recognize proportional relationships between quantities are used in eighth grade when students compare the properties of two functions that are represented in different ways (e.g., numerically in tables, visually in graphs). Students also compare the properties of two functions that are represented algebraically or verbally.

Students' understanding of the equation $y = mx + b$ deepens as they learn that the equation defines a linear function whose graph is a straight line. To avoid the mistaken impression that all functional relationships are linear, students also work with nonlinear functions and provide examples of nonlinear functions. They recognize that the graph of a nonlinear function is not a straight line. One example of a nonlinear function is the function $A = s^2$ (the area of a square as a function of the length of its side), the graph of which contains the points (1, 1), (2, 4), and (3, 9) and does not result in a straight line.

Students use functions to model relationships between quantities. They construct functions to model a linear relationship between two quantities. Students determine and interpret the rate of change and initial value of the function from the two (x, y) values or a description of a relationship. Students analyze graphs and then describe qualitatively the functional relationship between two quantities (e.g., where the function is increasing or decreasing, linear or nonlinear). They are able to sketch graphs that illustrate the qualitative features of functions that are described verbally.

Geometry



Students analyze two- and three-dimensional space and figures by using ideas about distance, angle, similarity, and congruence and by understanding and applying the Pythagorean Theorem. They will learn the formulas for calculating the volumes of cones, cylinders, and spheres and use the formulas to solve real-world and mathematical problems. At the end of eighth grade, students will have developed a range of geometric measurement skills and an understanding of the Pythagorean Theorem that will support their work in high school-level geometry.

With the aid of physical models, transparencies, and geometry software, students gain an understanding of congruence and similarity. Through experimentation, students verify the properties of rotations, reflections, and translations, including discovering that these transformations change the position of a geometric figure but not its shape or size. Students can also describe the effect of dilations (which change the size but not the shape of the figure), translations, rotations, and reflections on two-dimensional figures using coordinates on a graph. They understand that two-dimensional figures are considered *congruent* if one figure can be obtained from the other by a sequence of rotations, reflections, and translations and that the figures are considered *similar* if one figure can be obtained from the other by a sequence of dilations, rotations, reflections, and translations. Students can also describe a sequence that shows the congruence or similarity between the two figures. They use informal arguments to establish facts about the angle sum and exterior angles of triangles (e.g., consecutive exterior angles are supplementary), the angles created when parallel lines are cut by a transversal (e.g., the corresponding angles are congruent), and the angle-angle criterion for similarity of

triangles (if two angles of a triangle are congruent to two angles of another triangle, the two triangles are similar).

The CA CCSSM call for students to be formally introduced to the Pythagorean Theorem in eighth grade. Under the 1997 California standards this topic is covered in seventh grade but in less depth than in the eighth-grade CA CCSSM. Students explain a proof of the Pythagorean Theorem and its converse. They apply the Pythagorean Theorem to determine the side lengths in right triangles in real-world and mathematical problems in both two and three dimensions. For example, students can determine the length of the hypotenuse of a right triangle if they know the length of the two other sides. They can also use the Pythagorean Theorem to find the distance between two points in a coordinate system.

Statistics and Probability

Building on work in earlier grades with univariate measurement data and analyzing data on line plots and histograms, eighth-grade students begin to work with bivariate measurement data and use scatter plots to represent and analyze the data. Bivariate measurement data consist of data that represent two measurements. Scatter plots can show the relationship between the two measured variables. Collecting and analyzing bivariate measurement data help students to answer questions such as how does more time spent on homework affect test grades and what is the relationship between years of education and annual income.

Students construct and interpret scatter plots to investigate patterns of association between two quantities. They describe patterns they see on the scatter plots, such as clustering, outliers, positive or negative association, and linear or nonlinear association. Students know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that appear to show a linear association, students informally fit a straight line (e.g., by drawing a line on the coordinate plane between data points) and informally assess the fit by judging the closeness of the data points to the straight line.

Students solve problems in the context of bivariate measurement data by using the equation of a linear model. They interpret the slope and the intercept. For example, in a linear model for a biology experiment, students 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 the height of the plant.

Students learn to see patterns of association in bivariate categorical data in a two-way table. They construct and interpret a two-way table that summarizes data on two categorical variables collected from the same subjects. The two-way table displays frequencies and relative frequencies. Students use relative frequencies calculated from rows or columns to describe possible association between the two variables. For example, students collect data from their classmates about whether they have a pet and whether they do chores at home. The two-way table allows students to easily see if students who have a pet also tend to do chores at home.

Support for English Learners

Students need to develop knowledge of mathematics as a language. The linguistic complexity and unfamiliar academic language of mathematics may pose particular challenges for English learners. The language of mathematics has its own precise and discipline-specific meanings. English learners need opportunities to develop their knowledge of the features of language that are used to teach mathematics, such as *semantics* (how to translate the words of a problem into a symbolic representation) and *mathematical discourse* (writing or talking about mathematical terms, concepts, and so on).

The specialized vocabulary of mathematics should be explicitly taught in context and reinforced throughout the year. *Explain, prove, justify, determine, solve, identify, analyze, compare, estimate, interpret, generate, locate, illustrate, obtain, reproduce, and summarize* are examples of verbs that are commonly used in mathematics that may pose challenges for English learners. Specialized vocabulary encountered in mathematics that may require additional explanation includes nouns such as *diagram, scale drawing, derivation, evidence,*

expression, display, measurement data, and rational and irrational numbers. Attention must also be paid to words that have a different meaning in common discourse than in mathematics—such as *set, table, digit, plane, space, round, point, and field.*

Students are expected to explain and apply concepts they encounter and procedures they use in solving real-world and mathematical problems. They construct and present well-defined, plausible arguments. Although students may use models, diagrams, or drawings to explain some concepts or present an argument, other problems will require that students produce an oral or written response. English learners can successfully engage in these learning opportunities with teacher guidance and multiple practice opportunities. Teachers should also be aware that students may have learned different symbols and procedures that could result in the same answer. In some countries, students are expected to do most steps mentally instead of writing out each step.

English learners may benefit from instructional support such as the following:

- Daily opportunities to engage in mathematical discourse by using new vocabulary and explaining the operations used in problem solving
- Opportunities to listen to or read others' arguments and decide if they are strongly supported
- Use of the students' first language to make instruction in English more effective and the specialized vocabulary of mathematics more comprehensible
- Use of individualized or small-group instruction
- Scaffolded instruction and models for constructing arguments that include support and justification for their reasoning, responding to the arguments of others, and asking or answering clarifying questions

Integrated English language development during mathematics instruction meets the needs of English learners by developing procedural proficiency along with conceptual understanding and critical thinking skills. For additional resources to support the teaching of English learners, please visit the CDE English Learners Web page at <http://www.cde.ca.gov/sp/el/> (accessed March 26, 2014).

Use of Technology

The use of calculators and other technology plays a special role in mathematics teaching and learning. In eighth grade, students are ready to use calculators, including graphing calculators, geometry software, modeling software, and electronic resources to their advantage. Technology may be a useful tool for solving problems in various contexts, broadening students' mathematical horizons, and visually demonstrating complex mathematical problems. Technology also provides access to Internet sources for data to support solving real-world problems.

The Standards

The grade-eight CA CCSSM that follow were adopted by the California State Board of Education on August 2, 2010, and modified on January 16, 2013. Content that is unique to California and was added by California to the multistate common core standards, referred to as California additions, is in **bold typeface** and followed by **CA**; however, there are no California additions at grade eight.

The CA CCSSM document is available online at <http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardsaug2013.pdf> (accessed March 20, 2014). The CA CCSSM model courses for Algebra I and Mathematics I are also available at the same website.

California Common Core State Standards for Mathematics Grade Eight

Know that there are numbers that are not rational, and approximate them by rational numbers.

1.	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
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). <i>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.</i>

Work with radicals and integer exponents.

1.	Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.</i>
2.	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.
3.	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. <i>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.</i>
4.	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.

5.	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i>
6.	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.	
7.	<p>Solve linear equations in one variable.</p> <ol style="list-style-type: none"> 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). Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
8.	<p>Analyze and solve pairs of simultaneous linear equations.</p> <ol style="list-style-type: none"> 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. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. <i>For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.</i> Solve real-world and mathematical problems leading to two linear equations in two variables. <i>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.</i>
Functions (8.F)	
Define, evaluate, and compare functions.	
1.	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. ¹
2.	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>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.</i>
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. <i>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.</i>
Use functions to model relationships between quantities.	

1. Function notation is not required in grade 8.

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 or 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 analyzing 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: <ul style="list-style-type: none"> 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 two-dimensional 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 two-dimensional figures using coordinates.
4.	Understand that a two-dimensional 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 two-dimensional 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, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.</i>
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 volumes of cones, cylinders, and spheres and use them to 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. <i>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.</i>
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. <i>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?</i>
	Standards for Mathematical Practice (MP) MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.

CA CCSSM Domains

The Standards for Mathematical Content are organized by domains. The following table lists all of the domains that apply to kindergarten through grade eight, and it identifies which domains are addressed in which grade level.

Domains	Kinder-garten	Grade One	Grade Two	Grade Three	Grade Four	Grade Five	Grade Six	Grade Seven	Grade Eight
Counting and Cardinality (CC)	X								
Operations and Algebraic Thinking (OA)	X	X	X	X	X	X			
Numbers and Operations in Base Ten (NBT)	X	X	X	X	X	X			
Measurement and Data (MD)	X	X	X	X	X	X			
Number and Operations-Fractions (NF)				X	X	X			
Geometry (G)	X	X	X	X	X	X	X	X	X
Ratios and Proportional Relationships (RP)							X	X	
The Number System (NS)							X	X	X
Expressions and Equations (EE)							X	X	X
Statistics and Probability (SP)							X	X	X
Functions (F)									X

Appendix A: CCSS College and Career Readiness Anchor Standards



The CCSS College and Career Readiness (CCR) Anchor Standards define the literacy expectations for students entering college and careers and provide the foundation of the K–12 English language arts standards. Following the recommendation of State Superintendent of Public Instruction Tom Torlakson, the SBE modified the CA CCSS for ELA/Literacy on March 13, 2013, to include the addition of the College and Career Readiness Anchor Standards.

Reading

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 in diverse media and formats, including visually and quantitatively, as well as in words.¹
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.

Writing

Text Types and Purposes²

-
1. 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.
 2. These broad types of writing include many subgenres. See Appendix A of the CCSS for definitions of key writing types at http://www.corestandards.org/assets/Appendix_A.pdf (accessed February 29, 2012).

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.
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.

Speaking and Listening

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
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.

Language

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

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 words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Appendix B: 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 first of these are the NCTM [National Council of Teachers of Mathematics] process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are 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.

2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that

take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments. **Students build proofs by induction and proofs by contradiction. CA 3.1** (for higher mathematics only).

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.

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, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a 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.

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.

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 being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

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 curricula, assessments, 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 the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

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