California's COMMON CORE

Content Standards Seventh Grade

California's COMMON CORE

Content Standards for ELA and Mathematics Seventh Grade

TABLE OF CONTENTS

READING STANDARDS	2 - 5
LITERATURE	<u> </u>
WRITING STANDARDS	6 - 10
SPEAKING & LISTENING	11 - 12
LANGUAGE STANDARDS	13 - 15
VISUAL DATA	16 - 18
MATHEMATICS STANDARDS	19 - 24
RATIOS & PORPORTIONAL RELATIONSHIPS	19-24
THE NUMBER SYSTEM	25
EXPRESSIONS & EQUATIONS	26
GEOMETRY	77 70
STATISTICS & PROBABLITY	<u> </u>

The following standards offer a focus for instruction each year and help ensure that students gain adequate exposure to a range of texts and tasks. Rigor is also infused through the requirement that students read increasingly complex texts through the grades. Students advancing through the grades are expected to meet each year's gradespecific standards and retain or further develop skills and understandings mastered in preceding grades.

LITERATURE

Key Ideas and Details

6тн

- 1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.

7TH

- 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)

8тн

- Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
- 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.
- Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke adecision.
- Anchor R.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.
- Anchor R.2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

 Anchor R.3 Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

- 4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.
- Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
- 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.
- Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
- 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.
- 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.

6тн

6. Explain how an author develops the point of view of the narrator or speaker in a text

7TH

6. Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

8тн

- 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.
- Anchor R.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.
- Anchor R.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.
- Anchor R.6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

- 7. Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including\ contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch
- 8. (Not applicable to literature)
- Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.
- 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)
- 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.
- 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)
- 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.
- Anchor R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.¹
- Anchor R.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.
- Anchor R.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 & Level of Text Complexity

- 10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
- 10. By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
- 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.

Anchor R.10 Read and comprehend complex literary and informational texts independently and proficiently.

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.

INFORMATIONAL TEXT

Key Ideas and Details

6тн

- Cite textual evidence to support analysis
 of what the text says explicitly as well as
 inferences drawn from the text.
- Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- 3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).

7TH

- Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 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).

8тн

- Cite the textual evidence that most strongly supports an analysis of what the text saysexplicitly 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).
- Anchor R.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.
- Anchor R.2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

 Anchor R.3 Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

- Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
- Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas
- a. Analyze the use of text features (e.g., graphics, headers, captions) in popular media.
- Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- Anchor R.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.
- Anchor R.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.
- Anchor R.6 Assess how point of view or purpose shapes the content and style of a text.

Integration of Knowledge and Ideas

6тн

- 7. Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue..
- Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
- Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

7TH

- 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.
- 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

8тн

- 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.
- 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.
- Anchor R.7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.²
- Anchor R.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.
- Anchor R.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 & Level of Text Complexity

- 10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
- 10. By the end of the year, read and comprehend literary nonfiction in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.
- 10. By the end of the year, read and comprehend literary nonfiction at the high end of the grades 6–8 text complexity band independently and proficiently.

Anchor R.10 Read and comprehend complex literary and informational texts independently and proficiently.

² 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.

The following standards for K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Each year in their writing, students should demonstrate increasing sophistication in all aspects of language use, from vocabulary and syntax to the development and organization of ideas, and they should address increasingly demanding content and sources. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. The expected growth in student writing ability is reflected both in the standards themselves and in the collection of annotated student writing samples in Appendix C.

WRITING

Text Types & Purposes

6тн

- 1. Write arguments to support claims with clear reasons and relevant evidence.
- a. Introduce claim(s) and organize the reasons and evidence clearly.
- b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
- c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
- d. Establish and maintain a formal style.
- e. Provide a concluding statement or section that follows from the argument presented.

7TH

- 1. Write arguments to support claims with clear reasons and relevant evidence.
- a. Introduce claim(s), acknowledge
 and address alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) <u>or</u> <u>counterarguments</u> 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), 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.

8тн

- 1. Write arguments to support claims with clear reasons and relevant evidence.
- a. Introduce claim(s), acknowledge and distinguishthe 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 ortext.
- 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.

6тн

- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- a. Introduce a topic <u>or thesis statement</u>; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
- c. Use appropriate transitions to clarify them relationships among ideas and concepts.
- d. Use precise language and domainspecific vocabulary to inform about or explain the topic.
- e. Establish and maintain a formal style.
 f. Provide a concluding statement
 or section that follows from the
 information or explanation presented.

7тн

- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- a. Introduce a topic 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.
- 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 domainspecific 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.

8TH

- 2. 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.
 - a. Introduce a topic <u>or thesis statement</u> 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.
 - Develop the topic with relevant, well chosen facts, definitions, concrete details, quotations, or other information and examples.
 - c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
 - d. Use precise language and domain specific vocabulary to inform about or explain the topic.
 - e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

6тн

- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
- a. Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
- Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
- c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
- d. Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events.
- e. Provide a conclusion that follows rom the narrated experiences or events.

7TH

- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
- a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/ or characters; organize an event sequence that unfolds naturally and logically.
- Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
- c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
- d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.
- e. Provide a conclusion that follows from and reflects on the narrated experiences or events.

8TH

- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
 - a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/ or characters; organize an event sequence that unfolds naturally and logically.
 - Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters.
 - c. Use a variety of transition words, phrases, and clauses to convey sequence, signal shifts from one time frame or setting to another, and show the relationships among experiences and events.
 - d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.
 - e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
- Anchor W.1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
- Anchor W.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.
- Anchor W.3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production & 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.
- 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Gradespecific 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.
- 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.

6тн

6. Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.

7TH

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.

8тн

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.

Anchor W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Anchor W.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

Anchor W.6 Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build & Present Knowledge

- 7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
- 8. Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
- Draw evidence from literary or informational texts to support analysis, reflection, and research.
- a. Apply grade 6 Reading standards to literature (e.g., "Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics").
- b. Apply grade 6 Reading standards to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not").

- 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..
- Draw evidence from literary or informational texts to support analysis, reflection, and research.
- a. Apply grade 7 Reading standards to literature (e.g., "Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fictionuse or alter history").
- b. 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").

- 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.
- Draw evidence from literary or informational texts to support analysis, reflection, and research.
 - a. Apply grade 8 Reading standards to literature (e.g., "Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new").
- b. Apply grade 8 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced").

Anchor W.7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Anchor W.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.

Anchor W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

6тн

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.

7TH

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.

8тн

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.

Anchor W.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 & LISTENING

The following standards offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades.

Comprehension & Collaboration

6тн

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
 - a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
- c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
- Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

7TH

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
- a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- Follow rules for collegial discussions, set 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 bringthe discussion back on topic as needed.
- d. Acknowledge new information expressed by others and, when warranted, modify their own views.
- 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.

8тн

- 1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on *grade 8 topics, texts, and issues*, building on others' ideas and expressing their own clearly.
- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- 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.
- 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.
- Anchor SL.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.
- Anchor SL.2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
- Anchor SL.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

SPEAKING & LISTENING

Presentation of Knowledge & Ideas

6тн

- 4. Present claims and findings (e.g., argument, narrative, informative, response to literature presentations), sequencing ideas logically and using pertinent descriptions, facts, and details and nonverbal elements to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- a. Plan and deliver an informative/
 explanatory presentation that:
 develops a topic with relevant facts,
 definitions, and concrete details;
 uses appropriate transitions to clarify
 relationships; uses precise language
 and domain specific vocabulary; and
 provides a strong conclusion.
- Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
- Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

7TH

- 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.
- 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.
- Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.
- Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

8тн

- 4. 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.
 - 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.
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
- Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

- Anchor SL.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.
- Anchor SL.5 Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
- Anchor SL.6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

LANGUAGE STANDARDS

The following standards for grades K–5 offer a focus for instruction each year to help ensure that students gain adequate mastery of a range of skills and applications. Students advancing through the grades are expected to meet each year's grade-specific standards and retain or further develop skills and understandings mastered in preceding grades. Beginning in grade 3, skills and understandings that are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking are marked with an asterisk (*).

Conventions of Standard English

6тн

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- a. Ensure that pronouns are in the proper case (subjective, objective, possessive).
- b. Use <u>all pronouns, including</u> intensive pronouns (e.g., *myself*, *ourselves*), <u>correctly</u>.
- c. Recognize and correct inappropriate shifts in pronoun number and person.*
- d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).*
- e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.*
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/ parenthetical elements.*
- b. Spell correctly.

7TH

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- a. Explain the function of phrases and clauses in general and their function in specific sentences.
- b. Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.
- c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*
- 2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- a. Use a comma to separate coordinate adjectives (e.g., It was a fascinating, enjoyable movie but not He wore an old[,] green shirt).
- b. Spell correctly.

8TH

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- a. Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.
- b. Form and use verbs in the active and passive voice.
- c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.
- d. Recognize and correct inappropriate shifts in verb voice and mood.*
- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- a. Use punctuation (comma, ellipsis, dash) to indicate a pause or break.
- b. Use an ellipsis to indicate an omission.
- c. Spell correctly.

Anchor L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Anchor L.2 Demonstrate command of the conventions of standard English capitalization, and spelling when writing

LANGUAGE STANDARDS

Knowledge of Language

6тн

- 3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- a. Vary sentence patterns for meaning, reader/listener interest, and style.*
- b. Maintain consistency in style and tone.*

7TH

- 3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*

8тн

- 3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.
 - a. Use verbs in the active and passive voice and in the conditional and subjunctive mood to achieve particular effects (e.g., emphasizing the actor or the action; expressing uncertainty or describing a state contrary to fact).

And 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 based on *grade 6 reading and content*, choosing flexibly from a range of strategies.
- a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
- b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).
- c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

- 4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 7 reading and content*, choosing flexibly from a range of strategies.
- a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or
- b. Use common, grade-appropriate
 Greek or Latin affixes and roots as clues to the meaning of a word (e.g., belligerent, bellicose, rebel).
- c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech or trace the etymology of words.
- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

- 4. Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on *grade 8 reading and content*, choosing flexibly from a range of strategies.
- a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
- Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede).
- c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech or trace the etymology of words.
- 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).

LANGUAGE STANDARDS

6тн

- 5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- a. Interpret figures of speech (e.g., personification) in context.
- b. Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.
- c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., stingy, scrimping, economical, unwasteful, thrifty).
- 6. Acquire and use accurately gradeappropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

7TH

- Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- a. Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.
- b. Use the relationship between particular words (e.g., synonym/ antonym, analogy) to better understand each of the words.
- c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., refined, respectful, polite, diplomatic, condescending).
- Acquire and use accurately gradeappropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

8тн

- 5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- a. Interpret figures of speech (e.g. verbal irony, puns) in context.
- b. Use the relationship between particulary words to better understand each of the words.
- c. Distinguish among the connotationsv (associations) of words with similar denotations (definitions) (e.g., bullheaded, willful, firm, persistent, resolute).
- 6. Acquire and use accurately gradeappropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Anchor L.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.

Anchor L.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

Anchor L.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.

LANGUAGE PROGRESSIVE SKILLS, BY GRADE

The following skills, marked with an asterisk (*) in Language standards 1-3, are particularly likely to require continued attention in higher grades as they are applied to increasingly sophisticated writing and speaking.

			Gra	Grade(s)	5,440		Π
Standard	3	4 5	9	7	8	9-10	11-12
L.3.1f. Ensure subject-verb and pronoun-antecedent agreement.							
L.3.3a. Choose words and phrases for effect.							
L.4.1f. Produce complete sentences, recognizing and correcting inappropriate fragments and run-ons.							
L.4.1g. Correctly use frequently confused words (e.g., to/too/two; there/their).							
L.4.3a. Choose words and phrases to convey ideas precisely.							
L.4.3b. Choose punctuation for effect.							
L.5.1d. Recognize and correct inappropriate shifts in verb tense.							
L.5.2a. Use punctuation to separate items in a series.'							
L.6.1c. Recognize and correct inappropriate shifts in pronoun number and person.							
L.6.1d. Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).							
L.6.1e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.							
L.6.2a. Use punctuation (commas, parentheses, dashes) to set off nonrestrictive/parenthetical elements.							
L.6.3a. Vary sentence patterns for meaning, reader/listener interest, and style.							
L.6.3b. Maintain consistency in style and tone.							
L.7.1c. Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.							
L.7.3a. Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.							
L.8.1d. Recognize and correct inappropriate shifts in verb voice and mood.							
L.9-10.1a. Use parallel structure.							

STANDARD 10: RANGE, QUALITY, AND COMPLEXITY OF STUDENT READING 6-12

Measuring Text Complexity: Three Factors



Qualitative evaluation of the text: Levels of meaning, structure, language conventionality and clarity,

and knowledge demands

Quantitative evaluation of the text: Readability measures and other scores of text complexity

Reader variables (such as motivation, knowledge, and experiences) Matching reader to text and task:

and task variables (such as purpose and the complexity generated by the task assigned and the questions posed)

Note: More detailed information on text complexity and how it is measured is contained in Appendix A

Range of Text Types for 6-12

Students in grades 6-12 apply the Reading standards to the following range of text types, with texts selected from a broad range of cultures and periods.

	Literature		Informational Text
Stories	Drama	Poetry	Literary Nonfiction
Includes the subgenres of	Includes <u>classical through</u>	Includes <u>classical through</u>	Includes the subgenres of exposition, argument, and
adventure stories, historical	contemporary one-act and multi-act	contemporary works and the	functional text in the form of personal essays,
fiction, mysteries, myths,	plays, both in written form and on	subgenres of narrative poems, lyrical	speeches, opinion pieces, essays about art or literature,
science fiction, realistic fiction,	film, and works by writers	poems, free verse poems, sonnets,	biographies, memoirs, journalism, and historical,
allegories, parodies, satire, and	representing a broad range of	odes, ballads, and epics by writers	scientific, technical, or economic accounts (including
graphic novels	literary periods and cultures.	representing a broad range of	digital sources) written for a broad audience
		literary periods and cultures.	

TEXT ILLUSTRATING THE COMPLEXITY, QUALITY, AND RANGE OF STUDENT READING 6-12

		Literature: Stories, Dramas, Poetry		Informational Texts: Literary Nonfiction
	•	Little Women by Louisa May Alcott (1869)	•	"Letter on Thomas Jefferson" by John Adams (1776)
		The Adventures of Tom Sawyer by Mark Twain (1876) "The Road Not Taken" by Robert Frost (1915)	•	Narrative of the Life of Frederick Douglass, an American Slave by Frederick Douglass (1845)
8-9	• •	The Dark Is Rising by Susan Cooper (1973)	•	"Blood, Toil, Tears and Sweat: Address to Parliament on May 13th, 1940" by Winston Churchill (1940)
	•	Pragoriwings by Laurence 1 ep (1973) Roll of Thunder, Hear My Cry by Mildred Taylor (1976)	•	Harriet Tubman: Conductor on the Underground Railroad by Ann Petry (1955)
			•	Travels with Charley: In Search of America by John Steinbeck (1962)
	•	The Tragedy of Macbeth by William Shakespeare (1592)	•	"Speech to the Second Virginia Convention" by Patrick Henry
	•	"Ozymandias" by Percy Bysshe Shelley (1817)	•	(1773) "Farewell Address" by George Washington (1796)
	•	"The Kaven" by Edgar Allen Poe (1845)	•	"Gettychira Address" by Abraham Lincoln (1883)
9-10	•	"The Gitt of the Magi" by O. Henry (1906)		detry sound address by Abraham Emboni (1903)
) -)	•	The Grapes of Wrath by John Steinbeck (1939)	•	"State of the Union Address" by Franklin Delano Roosevelt (1941)
	٠	Fahrenheit 451 by Ray Bradbury (1953)		
	٠	The Killer Angels by Michael Shaara (1975)	•	"Letter from Birmingham Jail" by Martin Luther King, Jr. (1964)
			•	"Hope, Despair and Memory" by Elie Wiesel (1997)
	•	"Ode on a Grecian Urn" by John Keats (1820)	•	Common Sense by Thomas Paine (1776)
	•	Jane Eyre by Charlotte Brontë (1848)	•	Walden by Henry David Thoreau (1854)
	٠	"Because I Could Not Stop for Death" by Emily Dickinson (1890)	•	"Society and Solitude" by Ralph Waldo Emerson (1857)
	٠	The Great Gatsby by F. Scott Fitzgerald (1925)	•	"The Fallacy of Success" by G. K. Chesterton (1909)
۲ ۲ ۲	٠	Their Eyes Were Watching God by Zora Neale Hurston (1937)	•	Black Boy by Richard Wright (1945)
	٠	A Raisin in the Sun by Lorraine Hansberry (1959)	•	"Politics and the English Language" by George Orwell (1946)
	•	The Namesake by Jhumpa Lahiri (2003)	•	"Take the Tortillas Out of Your Poetry" by Rudolfo Anaya
				(0881)

Note: Given space limitations, the illustrative texts listed above are meant only to show individual titles that are representative of a range of topics and genres. (See Appendix B for excerpts of these and other texts illustrative of grades 6–12 text complexity, quality, and range.) At a curricular or instructional level, within and across grade levels, texts need to be selected around topics or themes that generate knowledge and allow students to study those topics or themes in depth.

INTRODUCTION

Toward greater focus and coherence

Mathematics experiences in early childhood settings should concentrate on (1) number (which includes whole number, operations, and relations) and (2) geometry, spatial relations, and measurement, with more mathematics learning time devoted to number than to other topics. Mathematical process goals should be integrated in these content areas.

—National Research Council, 2009

The composite standards [of Hong Kong, Korea and Singapore] have a number of features that can inform an international benchmarking process for the development of K–6 mathematics standards in the U.S. First, the composite standards concentrate the early learning of mathematics on the number, measurement, and geometry strands with less emphasis on data analysis and little exposure to algebra. The Hong Kong standards for grades 1–3 devote approximately half the targeted time to numbers and almost all the time remaining to geometry and measurement.

— Ginsburg, Leinwand and Decker, 2009

Because the mathematics concepts in [U.S.] textbooks are often weak, the presentation becomes more mechanical than is ideal. We looked at both traditional and non-traditional textbooks used in the US and found this conceptual weakness in both.

— Ginsburg et al., 2005

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

- Steen, 2007

For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on the promise of common standards, the standards must address the problem of a curriculum that is "a mile wide and an inch deep." These Standards are a substantial answer to that challenge.

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

Assessing the coherence of a set of standards is more difficult than assessing their focus. William Schmidt and Richard Houang (2002) have said that content standards and curricula are coherent if they are:

articulated over time as a sequence of topics and performances that are logical and reflect, where appropriate, the sequential or hierarchical nature of the disciplinary content from which the subject matter derives. That is, what and how students are taught should reflect not only the topics that fall within a certain academic discipline, **but also the key ideas** that determine how knowledge is organized and generated within that discipline. This implies that "to be coherent," a set of content standards must evolve from particulars (e.g., the meaning and operations of whole numbers, including simple math facts and routine computational procedures associated with whole numbers and fractions) to deeper structures inherent in the discipline. These deeper structures then serve as a means for connecting the particulars (such as an understanding of the rational number system and its properties). (emphasis added)

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

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

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 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.

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 + 1), and (x - 1)(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.

Understanding mathematics

These Standards define what students should understand and be able to do in their study of mathematics. Asking a student to understand something means asking a teacher to assess whether the student has understood it. But what does mathematical understanding look like? One hallmark of mathematical understanding is the ability to justify, in a way appropriate to the student's mathematical maturity, why a particular mathematical statement is true or where a mathematical rule comes from. There is a world of difference between a student who can summon a mnemonic device to expand a product such as (a + b)(x + y) and a student who can explain where the mnemonic comes from. The student who can explain the rule understands the mathematics, and may have a better chance to succeed at a less familiar task such as expanding (a + b + c)(x + y). Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

The Standards set grade-specific standards but do not define the intervention methods or materials necessary to support students who are well below or well above grade-level expectations. It is also beyond the scope of the Standards to define the full range of supports appropriate for English language learners and for students with special needs. At the same time, all students must have the opportunity to learn and meet the same high standards if they are to access the knowledge and skills necessary in their post-school lives. The Standards should be read as allowing for the widest possible range of students to participate fully from the outset, along with appropriate accommodations to ensure maximum participation of students with special education needs. For example, for students with disabilities reading should allow for use of Braille, screen reader technology, or other assistive devices, while writing should include the use of a scribe, computer, or speech-to-text technology. In a similar vein, speaking and listening should be interpreted broadly to include sign language. No set of grade-specific standards can fully reflect the great variety in abilities, needs, learning rates, and achievement levels of students in any given classroom. However, the Standards do provide clear signposts along the way to the goal of college and career readiness for all students.

K	1	2	3	4	5	6	7	8	HS
Counting & Cardinality									
Number & Operations Base Ten Ratios & Proportional Relationships							Number & Quantity		
			Num	ber & Oper Fractions		The	Number Sy	stem	& Quantity
Expressions Operations & Equations							Algebra		
& Algebraic Thinking							Functions	Functions	
Geometry						Geometry			
Measurement & Data Statistics & Probability						Statistics & Probability			

Findell & Foughty (2011)

College and Career-Readiness through the Common Core State Standards for Mathematics

GRADE 7 - OVERVIEW

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and 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.

- 1. Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.
- 2. Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.
- 3. Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. 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.
- 4. Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.

RATIOS & PROPORTIONAL RELATIONSHIPS

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. For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.
- 2. Recognize and represent proportional relationships between quantities.
 - a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
 - b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
 - c. Represent proportional relationships by equations. For example, 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.
 - d. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.
- 3. Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

THE NUMBER SYSTEM

APPLY AND EXTEND PREVIOUS UNDERSTANDINGS OF MULTIPLICATION AND DIVISION TO DIVIDE FRACTIONS BY FRACTIONS.

- Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
 - a. Describe situations in which opposite quantities combine to make 0. For example, a hydrogenatom has 0 charge because its two constituents are oppositely charged.
 - b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing realworld contexts.
 - c. Understand subtraction of rational numbers as adding the additive inverse, $p-q=p+(\neg q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
 - d. Apply properties of operations as strategies to add and subtract rational numbers
- 2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
 - a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
 - b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $^-(p/q) = (^-p)/q = p/(^-q)$. Interpret quotients of rational numbers by describing real world contexts.
 - c. Apply properties of operations as strategies to multiply and divide rational numbers.
 - d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
- 3. Solve real-world and mathematical problems involving the four operations with rational numbers.

EXPRESSIONS & EQUATIONS

USE PROPERTIES OF OPERATIONS TO GENERATE FOULVALENT EXPRESSIONS

- 1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions withrational 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. For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."

SOLVE REAL-LIFE AND MATHEMATICAL PROBLEMS USING NUMERICAL AND ALGEBRAIC EXPRESSIONS AND EOUATIONS.

- 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. For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
- 4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
 - a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
 - b. Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.

GEOMETRY

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.
- 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.
- 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.

STATISTICS & PROBABLITY

USE RANDOM SAMPLING TO DRAW INFERENCES ABOUT A POPULATION

- Understand that statistics can be used to gain information about a population by examining a sample of the
 population; generalizations about a population from a sample are valid only if the sample is representative of that
 population. Understand that random sampling tends to produce representative samples and support valid inferences.
- 2. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.

DRAW INFORMAL COMPARATIVE INFERENCES ABOUT TWO POPULATIONS

- Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
- 4. Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.

INVESTIGATE CHANCE PROCESSES AND DEVELOP, USE, AND

- 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. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
- 7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
 - a. Develop a uniform probability model by assigning equal probability to all outcomes, and use themodel to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.
 - b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?

INVESTIGATE CHANCE PROCESSES AND DEVELOP, USE, AND EVALUATE PROBABILITY MODELS

- 8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
 - a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
 - b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
 - c. Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?