



Sixth Grade
Curriculum Standards

READING STANDARDS FOR LITERATURE

Key Ideas and Details

- 1: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 2: 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.
- 3: Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.

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 choice on meaning and tone.
- 5: Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
- 6: Explain how an author develops the point of view of the narrator or speaker in 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" or "hear" when reading the text to what they perceive when they listen or watch.
- 8: N/A
- 9: Compare and contrast text 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.

Range of Reading and Level of Text Complexity

- 10: By the end of the year, read and comprehend literature, including stories, dramas, and poetry, in the grades 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 textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 2: 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).

Craft and Structure

- 4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
- 5: Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
- 6: Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

Integration of Knowledge and Ideas

- 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.
- 8: 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.
- 9: Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

READING STANDARDS FOR INFORMATIONAL TEXT (cont.)**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: Write arguments to support claims with clear reasons and relevant evidence.
 - a: Introduce claim(s) and organize the reasons and evidence clearly.
 - b: Support claims(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.
- 2: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
 - a: Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
 - b: Develop the topic with relevant facts, definitions, concrete details, quotation, or other information and examples.
 - c: Use appropriate transitions to clarify the relationships among ideas and concepts.
 - d: Use precise language and domain-specific vocabulary to inform about or explain the topic.
 - e: Establish and maintain a formal style.
 - f: Provide a concluding statement or section that follows from the information or explanation presented.
- 3: Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
 - a: Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
 - b: Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
 - c: Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
 - d: Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events.
 - e: Provide a conclusion that follows from the narrated experiences or events.

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.
- 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.

Research to Build and Present Knowledge

- 7: Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
- 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.
- 9: Draw evidence from literary or informational texts to support analysis, reflection, and research.
 - a: Apply *grade 6 Reading standards* to literature (e.g., Compare and contrast texts in different forms or genres [e.g., stories and poems; historical novels and fantasy stories] in terms of their approaches to similar themes and topics).
 - b: Apply *grade 6 Reading standards* to literary nonfiction (e.g., 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).

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 *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.
- 2: 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.
- 3: Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

Presentation of Knowledge and Ideas

- 4: Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
- 5: Include multimedia components (e.g., graphics, images, music sound) and visual displays in presentations to clarify information.
- 6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

LANGUAGE STANDARDS**Conventions of Standard English**

- 1: 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 intensive pronouns (e.g., *myself*, *ourselves*).
 - c: Recognize and correct inappropriate shifts in pronoun number and person.
 - d: Recognize and correct vague pronouns (i.e., ones with unclear or ambiguous antecedents).
 - e: Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.

LANGUAGE STANDARDS (cont.)**Conventions of Standard English**

- 2: 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.

Knowledge of Language

- 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.

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 and 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).
- 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) or words with similar denotation (definitions) (e.g., *stingy, scrimping, economical, unwasteful, thrifty*).
- 6: Acquire and use accurately grade-appropriate conversational, general academic, and domain-specific words and phrases, gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.

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).

READING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES (cont.)**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 *grades 6-8 texts and topics*.
- 5: Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
- 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: Write arguments focused on *discipline-specific content*.
 - a: Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
 - b: Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
 - 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.

WRITING STANDARDS FOR LITERACY IN HISTORY/SOCIAL STUDIES, SCIENCE, AND TECHNICAL SUBJECTS**Text Types and Purposes (cont.)**

- 2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
- 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: N/A

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, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- 9: Draw evidence from 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.

MATHEMATICS**RATIOS AND PROPORTIONAL RELATIONSHIPS****Understand ratio concepts and use ratio reasoning to solve problems.**

- 1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
Ex: The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak. Ex: For every vote candidate A received, candidate C received nearly three votes.
- 2: Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. *Ex: This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $\frac{3}{4}$ cup of flour for each cup of sugar. Ex: We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.*
- 3: Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
 - a: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b: Solve unit rate problems including those involving unit pricing and constant speed. *Ex: If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*
 - c: Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part and the percent.
 - d: Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

THE NUMBER SYSTEM**Apply and extend previous understandings of multiplication and division to divide fractions by fractions.**

- 1: Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, (e.g., by using visual fraction model and equations to represent the problem). *Ex: Create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. Ex: How much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How wide is a rectangular strip of land with length $3/4$ miles and area $1/2$ square mile?*

Compute fluently with multi-digit numbers and find common factors and multiples.

- 2: Fluently divide multi-digit numbers using the standard algorithm.
- 3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- 4: Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum or two whole numbers with no common factor.
Ex: Express $36 + 8$ as $4(9 + 2)$.

Apply and extend previous understandings of numbers to the system of rational numbers.

- 5: Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 6: Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
 - a: Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself (e.g., $-(-3) = 3$) and that 0 is its own opposite.
 - b: Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

THE NUMBER SYSTEM (cont.)**Apply and extend previous understandings of numbers to the system of rational numbers.**

- c: Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 7: Understand ordering and absolute value of rational numbers.
 - a: Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *Ex: Interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
 - b: Write, interpret, and explain statements of order for rational numbers in real-world contexts. *Ex: Write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C .*
 - c: Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *Ex: For an account balance of -30 dollars, write $|-30| = 30$ to describe the size of the debt in dollars.*
 - d: Distinguish comparisons of absolute value from statements about order. *Ex: Recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.*
- 8: Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
- 9: Convert between expressions for positive rational numbers.

EXPRESSIONS AND EQUATIONS**Apply and extend previous understandings of arithmetic to algebraic expressions.**

- 1: Write and evaluate numerical expressions involving whole-number exponents.
- 2: Write, read, and evaluate expressions in which letters stand for numbers.
 - a: Write expressions that record operations with numbers and with letters standing for numbers. *Ex: Express the calculation "Subtract y from 5" as $5 - y$.*
 - b: Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entry. *Ex: Describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.*
 - c: Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents in the conventional order when there are no parentheses to specify a particular. *Ex: Use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.*
- 3: Apply the properties of operations to generate equivalent expression. *Ex: Apply the distributive property to the expression $3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$.*
- 4: Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *Ex: The expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.*

Reason about and solve one-variable equations and inequalities.

- 5: Understand solving an equation or inequality as a process of answering a question; which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6: Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 7: Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.
- 8: Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

EXPRESSIONS AND EQUATIONS (cont.)**Represent and analyze quantitative relationships between dependent and independent variables.**

- 9: Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity; thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *Ex: In a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d=65t$ to represent the relationship between distance and time.*

GEOMETRY**Solve real-world and mathematical problems involving area, surface area, and volume.**

- 1: Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 2: Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V=lwh$ and $V=bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- 3: Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- 4: Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Develop understanding of statistical variability.

- 1: Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *Ex: "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.*
- 2: Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- 3: Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

Summarize and describe distributions.

- 4: Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 5: Summarize numerical data sets in relation to their context, such as by:
 - a: Reporting the number of observations.
 - b: Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
 - c: Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
 - d: Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Mathematical Practices

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

SCIENCE**INQUIRY PROCESS****Observations, Questions, and Hypotheses**

Differentiate among a question, hypothesis, and prediction.

Formulate questions based on observations that lead to the development of a hypothesis.

Locate research information, not limited to a single source, for use in the design of a controlled investigation.

Scientific Testing (Investigating and Modeling)

Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.

Design an investigation to test individual variables using scientific processes.

Conduct a controlled investigation using scientific processes.

Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).

Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.

Analysis and Conclusions

Analyze data obtained in a scientific investigation to identify trends.

Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).

Evaluate the observations and data reported by others.

Analyze the results from previous and/or similar investigations to verify the results of the current investigation.

Formulate new questions based on the results of a completed investigation.

Communication

Choose an appropriate graphic representation for collected data: line graph, double bar graph, stem and leaf plot, histogram.

Display data collected from a controlled investigation.

Communicate the results of an investigation with appropriate use of qualitative and quantitative information.

Create a list of instructions that others can follow in carrying out a procedures (without the use of personal pronouns).

Communicate the results and conclusion of the investigation.

HISTORY AND NATURE OF SCIENCE**History of Science as a Human Endeavor**

Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Jacques Cousteau [inventor, marine explorer], William Beebe [scientist], Thor Heyerdahl [anthropologist]).

Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., Cell Theory, sonar, SCUBA, underwater robotics).

Analyze the impact of a major scientific development occurring within the past decade.

Describe the use of technology in science-related careers.

Nature of Scientific Knowledge

Describe how science is an ongoing process that changes in response to new information and discoveries.

Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.

Apply the following scientific processes to other problem solving or decision making situations:

observing, questioning, communicating, comparing, measuring, classifying, predicting, organizing data, inferring, generating hypotheses, identifying variables.

SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES**Changes in Environments**

Evaluate the effects of the following natural hazards: sandstorm, hurricane, tornado, ultraviolet light, lightning-caused fire.

Describe how people plan for, and respond to, the following natural disasters: drought, flooding, tornadoes.

Science and Technology in Society

Propose viable methods of responding to an identified need or problem.

Compare possible solutions to best address an identified need or problem.

Design and construct a solution to an identified need or problem using simple classroom materials.

Describe a technological discovery that influences science.

LIFE SCIENCE**Structure and Function in Living Systems**

Explain the importance of water to organisms.

Describe the basic structure of a cell, including: cell wall, cell membrane, nucleus.

Describe the function of each of the following cell parts: cell wall, cell membrane, nucleus.

Differentiate between plant and animal cells.

Explain the hierarchy of cells, tissues, organs, and systems.

Relate the following structures of living organisms to their functions:

Animals:	respiration – gills, lungs
	digestion – stomach, intestines
	circulation – heart, veins, arteries, capillaries
	locomotion – muscles, skeleton
Plants:	transportation – stomata, roots, xylem, phloem
	absorption – roots, xylem, phloem
	response to stimulus (phototropism, hydrotropism, geotropism) – roots, xylem, phloem.

Describe how the various systems of living organisms work together to perform a vital function:

respiratory and circulatory, muscular and skeletal, digestive and excretory.

Populations of Organisms in an Ecosystem

Explain that sunlight is the major source of energy for most ecosystems.

Describe how the following environmental conditions affect the quality of life: water quality, climate, population density, smog.

PHYSICAL SCIENCE**Transfer of Energy**

Identify various ways in which electrical energy is generated using renewable and nonrenewable resources (e.g., wind, dams, fossil fuels, nuclear reactions).

Identify several ways in which energy may be stored.

Compare the following ways in which energy may be transformed: mechanical to electrical, electrical to thermal.

Explain how thermal energy (heat energy) can be transferred by: conduction, convection, radiation.

EARTH AND SPACE SCIENCE**Structure of the Earth**

Describe the properties and the composition of the layers of the atmosphere.

Explain the composition, properties, and structure of the earth's lakes and rivers.

Explain the composition, properties, and structures of the oceans' zones and layers.

Analyze the interactions between the Earth's atmosphere and the Earth's bodies of water (water cycle).

Describe ways scientists explore the Earth's atmosphere and bodies of water.

EARTH AND SPACE SCIENCE (cont.)**Earth's Processes and Systems**

Explain how water is cycled in nature.

Identify the distribution of water within or among the following: atmosphere, lithosphere, hydrosphere.

Analyze the effects that bodies of water have on the climate of a region.

Analyze the following factors that affect climate: ocean currents, elevation, location.

Analyze the impact of large-scale weather systems on the local weather.

Create a weather system model that includes: the Sun, the atmosphere, bodies of water.

SOCIAL STUDIES**AMERICAN HISTORY****Research Skills for History**

Construct charts, graphs, and narratives using historical data.

Interpret historical data displayed in graphs, tables, and charts.

Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).

Formulate questions that can be answered by historical study and research.

Describe the difference between primary and secondary sources.

Determine the credibility and bias of primary and secondary sources.

Analyze cause and effect relationships between and among individuals and/or historical events.

Describe how archaeological research adds to our understanding of the past.

Early Civilizations

Describe the characteristics of hunting and gathering societies in the Americas.

Describe how farming methods and domestication of animals led to the development of cultures and civilizations from hunting and gathering societies.

Describe the cultures of the Mogollon, Ancestral Puebloans (Anasazi), and Hohokam:

location, agriculture, housing, arts, and trade networks.

how these cultures adapted to and altered their environment.

Describe the Adena, Hopewell, and Mississippian mound-building cultures:

Location, agriculture, housing, arts, and trade networks.

How these cultures adapted to and altered the environment.

Describe the Mayan, Aztec, and Incan/Inkan civilizations:

Location, agriculture, housing, and trade networks.

Achievements (e.g., math, astronomy, architecture, government, social structure, arts and crafts)

How these cultures adapted to and altered their environment

Contemporary United States

Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

Identify the connection between current and historical events and issues studied at this grade level using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

Describe how key political, social, and economic events of the late 20th century and early 21st century affected, and continue to affect, the United States.

WORLD HISTORY**Research Skills for History**

- Construct charts, graphs, and narratives using historical data.
- Interpret historical data displayed in graphs, tables, and charts.
- Construct timelines of the historical era being studied (e.g., presidents/world leaders, key events, people).
- Formulate questions that can be answered by historical study and research.
- Describe the difference between primary and secondary sources.
- Determine the credibility and bias of primary and secondary sources.
- Analyze cause and effect relationships between and among individuals and/or historical events.
- Describe how archaeological research adds to our understanding of the past.

Early Civilizations

- Describe the lifestyles of humans in the Paleolithic and Neolithic Ages.
- Determine how the following factors influenced groups of people to develop into civilizations in Egypt, India, Mesopotamia, and China:
 - Farming methods
 - Domestication of animals
 - Division of labor
 - Geographic factors
- Describe the importance of the following river valleys in the development of ancient civilizations:
 - Tigris and Euphrates – Mesopotamia
 - Nile – Egypt
 - Huang He – China
 - Indus – India
- Compare the forms of government of the following ancient civilizations:
 - Mesopotamia – laws of Hammurabi
 - Egypt – theocracy
 - China – dynasty
- Describe the religious traditions that helped shape the culture of the following ancient civilizations:
 - Sumeria, India (i.e., polytheism)
 - Egypt (i.e. belief in an afterlife)
 - China (i.e. ancestor worship)
 - Middle East (i.e. monotheism)
- Analyze the impact of cultural and scientific contributions of ancient civilizations on later civilizations:
 - Mesopotamia (i.e., laws of Hammurabi)
 - Egypt (i.e. mummification, hieroglyphs, papyrus)
 - China (i.e. silk, gun powder/fireworks, compass)
 - Central and South America (i.e., astronomy, agriculture)
- Describe the development of the following types of government and citizenship in ancient Greece and Rome: democracy, republics/empires.
- Describe scientific and cultural advancements (e.g., networks of roads, aqueducts, art and architecture, literature and theatre, mathematics, philosophy) in ancient civilizations.
- Identify the roles and contributions of individuals in the following ancient civilizations:
 - Greece and Greek empires (i.e. Socrates, Plato, Aristotle, Sophocles, Euripides, Pericles, Homer, Alexander the Great).
 - Rome (i.e., Julius Caesar, Augustus)
 - China (i.e., Qin Shi Huan Di, Confucius)
 - Egypt (i.e., Hatshepsut, Ramses, Cleopatra)
- Describe the transition from the Roman Empire to the Byzantine Empire:
 - Decline and fall of the Roman Empire
 - Empire split in eastern and western regions
 - Capital moved to Byzantium/Constantinople
 - Germanic invasions

WORLD HISTORY (cont.)**World in Transition**

Describe aspects (e.g., geographic origins, founders and their teachings, traditions, customs, beliefs) of Hinduism, Buddhism, Judaism, Christianity, and Islam.

Describe the development of the Medieval kingdoms of Ghana, Mali, and Songhai:

Islamic influences; Mining of gold and salt; Centers of commerce

Describe the culture and way of life of the Arab Empire:

Muslim religion (i.e., Mohammad, Mecca); Extensive trade and banking network.

Interest in science (i.e., medicine, astronomy)

Translation and preservation of Greek and Roman literature.

Describe the Catholic Church's role in the following activities during the Middle Ages: Crusades, Inquisition, education, government, spread of Christianity.

Describe the transition from feudalism to nationalism at the end of the Middle Ages.

Describe the trade routes that established the exchange of goods (e.g., silk, salt, spices, gold) between eastern and western civilizations during the 15th and 16th centuries.

Describe how trade routes led to the exchange of ideas (e.g., religion, scientific advances, literature) between Europe, Asia, Africa and the Middle East during the 15th and 16th centuries.

Renaissance and Reformation

Describe how the Renaissance was a time of renewal and advancement in Europe:

Rebirth of Greek and Roman ideas.

New ideas and products as a result of trade

The arts

Science

Describe the contributions or accomplishments of the following individuals during the Renaissance and Reformation: Leonardo da Vinci, Michelangelo, Gutenberg, Martin Luther.

Encounters and Exchange

Describe how new ways of thinking in Europe during the enlightenment fostered the following changes in society:

Scientific Revolution (i.e., Copernicus, Galileo, Newton)

Natural rights (i.e., life, liberty, property)

Governmental separation of powers vs. monarchy

Religious freedom

Magna Carta

Contemporary World

Describe current events using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

Identify the connection between current and historical events and issues using information from class discussions and various resources (e.g., newspapers, magazines, television, Internet, books, maps).

CIVICS/GOVERNMENT**Foundations of Government**

Discuss the important ideas of the Enlightenment Period (e.g., Natural Rights, separation of powers, religious freedom) that fostered the creation of the United States government.

Functions of Government

Describe the impact of the Laws of Hammurabi on the lives of ancient people and how it relates to current laws.

Describe the impact of the Greek democracy on ancient Greeks and how it relates to current forms of government.

Describe the impact of the Roman republic on ancient Romans and how it relates to current forms of government.

CIVICS/GOVERNMENT (cont.)**Rights, Responsibilities, and Roles of Citizenship**

Describe ways an individual can contribute to a school or community.

Discuss the character traits (i.e. respect, responsibility, fairness, involvement) that are important to the preservation and improvement of constitutional democracy in the United States.

Describe the importance of citizens being actively involved in the democratic process (e.g., voting, student government, involvement in political decision making, analyzing issues, petitioning public officials).

Government Systems of the World

Describe the structure of the following governments: theocracy, dictatorship, republic, monarchy, democracy, anarchy.

GEOGRAPHY**The World in Spatial Terms**

Construct maps, charts, and graphs to display geographic information.

Identify purposes of, and differences among, maps, globes, aerial photographs, charts, and satellite images.

Interpret maps, charts, and geographic databases using geographic information.

Locate physical and human features (e.g., significant waterways, mountain ranges, cities, countries) in the United States and in regions of the world on a map.

Interpret thematic maps, graphs, charts, and databases depicting various aspects of world regions.

Places and Regions

Identify regions studied in Strand 2 using a variety of criteria (e.g., climate, landforms, culture, vegetation).

Describe the factors that cause regions and places to change.

Describe the interactions of people in different places and regions.

Explain why places and regions serve as cultural symbols such as Jerusalem being a sacred place for Jews, Christians, and Muslims.

Describe the physical and human characteristics of places and regions of a Middle Eastern country studied.

Physical Systems

Identify the physical processes that influence the formation and location of resources such as oil, coal, diamonds, and copper.

Human Systems

Interpret the demographic structure of places and regions using a population pyramid.

Describe the environmental, economic, cultural and political effects of human migrations and cultural diffusion on places and regions.

Analyze the cause and effects of settlement patterns.

Identify how factors such as river/coastal civilizations and trade influenced the location, distribution, and interrelationships of economic activities over time and in different regions.

Identify cultural norms that influence different social, political, and economic activities of men and women.

Environment and Society

Describe ways that human dependence on natural resources influences economic development, settlement, trade, and migration.

Describe the intended and unintended consequences of human modification (e.g., irrigation, aqueducts, canals) on the environment.

Explain how changes in the natural environment (e.g., flooding of the Nile) can increase or diminish its capacity to support human activities.

Identify the way humans respond to/prepare for natural hazards (i.e., lightning, flash floods, dust storms, tornadoes, hurricanes, floods, earthquakes) in order to remain safe.

GEOGRAPHY (cont.)**Geographic Applications**

Describe ways geographic features and conditions influenced settlement in various locations (e.g., near waterways, on high terrain, with adequate fresh water, on good land for farming, in temperate climates) throughout different periods of time, places, and regions.

Use geographic knowledge and skills (e.g. recognizing patterns, mapping, graphing) when discussing current events.

ECONOMICS**Foundations of Economics**

Identify how limited resources and unlimited human wants cause people to choose some things and give up others.

Determine how scarcity, opportunity costs, and trade-offs influence decision-making.

Explain why specialization improved standards of living.

Compare how money, as opposed to barter, facilitates trade.

Explain how trade promoted economic growth throughout the world regions.

Personal Finance

Compare the cost and benefits of using credit.

Explain how interest is the price paid to borrow money.

Describe the factors lenders consider before lending money.