

Attachment 6.1: 6th Grade Learning Standards

Math

CCS Standards: Ratios and Proportional Relationships
<p>6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”</i></p>
<p>6.RP.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. <i>For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”¹</i></p>
<p>6.RP.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.</p> <ol style="list-style-type: none"> 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. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i> 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.
CCS Standards: The Number System
<p>6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$-cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi? Compute fluently with multi-digit numbers and find common factors and multiples.</i></p>
<p>6.NS.2. Fluently divide multi-digit numbers using the standard algorithm.</p>
<p>6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</p>

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6.NS.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 of two whole numbers with no common factor. *For example, express $36 + 8$ as $4(9 + 2)$. Apply and extend previous understandings of numbers to the system of rational numbers.*

6.NS.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.NS.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.
- 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.

6.NS.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. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
- b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ 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. *For example, 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. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.*

6.NS.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.

CCS Standards: Expressions and Equations

6.EE.1. Write and evaluate numerical expressions involving whole-number exponents.

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6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers.

- a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation “Subtract y from 5” as $5 - y$.*
- b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.*
- c. Evaluate expressions 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 order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.*

6.EE.3. Apply the properties of operations to generate equivalent expressions. *For example, 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 $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.*

6.EE.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for. Reason about and solve one-variable equations and inequalities.*

6.EE.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.EE.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.

6.EE.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.

6.EE.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.

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

CCS Standards: Geometry

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<p>6.G.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.</p>
<p>6.G.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 $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</p>
<p>6.G.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.</p>
<p>6.G.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.</p>
<p>CCS Standards: Statistics and Probability</p>
<p>6.SP.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.</i></p>
<p>6.SP.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.</p>
<p>6.SP.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.</p>
<p>6.SP.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</p>
<p>6.SP.5. Summarize numerical data sets in relation to their context, such as by:</p> <ul style="list-style-type: none">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.

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CCS Standards: Reading - Literature
RL.6.1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RL.6.2. 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.
RL.6.3. 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.
RL.6.4. 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.
RL.6.5. 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.
RL.6.6. Explain how an author develops the point of view of the narrator or speaker in a text.
RL.6.7. 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.
RL.6.9. Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.
RL.6.10. 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.
CCS Standards: Reading – Informational Text
RI.6.1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RI.6.2. 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.
RI.6.3. Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).
RI.6.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
RI.6.5. 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.
RI.6.6. Determine an author’s point of view or purpose in a text and explain how it is conveyed in the text.
RI.6.7. 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.
RI.6.8. 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.
RI.6.9. Compare and contrast one author’s presentation of events with that of another (e.g., a memoir written by

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and a biography on the same person).
RI.6.10. 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.
Standards: Writing
W.6.1. 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.
W.6.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented.
W.6.3. 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.
W.6.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
W.6.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by

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planning, revising, editing, rewriting, or trying a new approach.
W.6.6. 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.
W.6.7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
W.6.8. 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.
W.6.9. Draw evidence from literary or informational texts to support analysis, reflection, and research. a. Apply <i>grade 6 Reading standards</i> 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 <i>grade 6 Reading standards</i> 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”).
W.6.10. 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.
CCS Standards: Speaking & Listening
SL.6.1. 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.
SL.6.2. 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.
SL.6.3. Delineate a speaker’s argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
SL.6.4. 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.

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SL.6.5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.
SL.6.6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.
CCS Standards: Language
L.6.1. 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., <i>myself</i> , <i>ourselves</i>). 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.*
L.6.2. 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.
L.6.3. 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.*
L.6.4. 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., <i>audience</i> , <i>auditory</i> , <i>audible</i>). 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).
L.6.5. 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.

<p>c. Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>stingy</i>, <i>scrimping</i>, <i>economical</i>, <i>unwasteful</i>, <i>thrifty</i>).</p>
<p>L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

Science

<p>Standard 4: Earth in Space</p>
<p>Our Solar System is a collection of gravitationally interacting bodies that include Earth and the Moon. Universal principles of gravitation allow predictions regarding the motions of objects within the Galaxy and beyond. Earth’s motion, position, and posture account for a variety of cyclic events observable from Earth. While the composition of planets vary considerably, their components and the applicable laws of science are universal. The motions and interactions of objects within the Solar System are consistent with the hypothesis that it emerged from a large disk of gas and dust. Our Solar System is part of the Milky Way Galaxy, which, in turn, is one of many galaxies in the known Universe.</p>
<p>The Earth/Moon/Sun System</p>
<p>A. The Sun is a star that gives off radiant energy that drives Earth systems and is essential for life. The amount of radiant energy Earth receives from the Sun throughout the year is nearly constant.</p>
<p>B. The tilt of Earth’s axis of rotation as it orbits the Sun points in the same direction with respect to the stars. The tilt and the orbital motion of Earth around the Sun cause variation in the amount of solar radiation striking a location on the Earth’s surface which results in variation in the length of day/night and seasons.</p>
<p>C. Moon phases occur because the relative positions of Earth, Moon, and Sun change, thereby enabling us to see different amounts of the Moon’s surface.</p>
<p>D. The Moon is a natural satellite of Earth and is different than the Earth in size, atmosphere, gravity, and surface features.</p>
<p>E. Tides are caused by the gravitational interactions of the Sun, Moon and Earth. The Moon has a greater impact on tides because of its proximity to Earth.</p>
<p>The Solar System</p>
<p>A. The Sun is by far the most massive object in the Solar System, therefore gravitationally dominating all other members of the Solar System.</p>
<p>B. The Solar System consists of comets, asteroids, planets, and their respective satellites, most of which orbit the Sun on a plane called the ecliptic. The planets in our Solar System revolve in the same direction around the Sun in elliptical orbits that are very close to being in the same plane. Most planets rotate in the same direction with respect to the Sun.</p>
<p>C. Planets can be categorized as inner or outer planets according to density, diameter and surface features.</p>
<p>D. Planets and their moons have been shaped over time by common processes such as cratering, volcanism, erosion, and tectonics. The presence of life on a planet can contribute to its unique development.</p>
<p>Technology and Applications</p>
<p>A. Technology, including humans landing on the Moon, robot landers and other space probes, satellites, and radio telescopes, allow scientists to investigate conditions on Earth and on other objects in the Solar System.</p>

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B. The technology used in space exploration expands our knowledge of the Universe and has many spin-offs related to everyday applications.
Standard 5: Earth's Dynamic Systems
Earth's dynamic systems are made up of the solid earth (geosphere), the oceans, lakes, rivers, glaciers and ice sheets (hydrosphere), the atmosphere, and organisms (biosphere). Interactions among these spheres have resulted in ongoing changes to the system. Some of these changes can be measured on a human time scale, but others occur so slowly, that they must be inferred from geological evidence.
Components of Earth
A. Water exists on the Earth in reservoirs (on or within the Earth's surface and atmosphere). The total amount of water in these reservoirs does not change, however, the ratio of water in solid, liquid, or gaseous form varies over time and location.
B. The movement of water among the geosphere, hydrosphere and atmosphere affects such things as weather systems, ocean currents, and global climate.
C. The formation of sediment and soil requires a long period of time as rocks are weathered, eroded and deposited.
D. The atmosphere is a mixture having as its principle components a fixed ratio of nitrogen and oxygen and, depending on the location, variable amounts of carbon dioxide, water vapor, and dust particles.
Interactions Throughout Earth's Systems
A. Water cycles from one reservoir to another through the processes of evaporation, transpiration, condensation and precipitation. Energy transfers and/or transformations are associated with each of these processes.
B. Water within a watershed travels over and through the land at various speeds based on the rate of change in elevation and the permeability and porosity of the soil. Water carries with it products of human activity.
C. Surface water always flows downhill. Areas of higher elevation separate watersheds. In Delaware, this water eventually reaches the Delaware River, the Delaware Bay, the Atlantic Ocean or the Chesapeake Bay.
D. Constructive processes that build up the land and the destructive processes of weathering and erosion shape and reshape the land surface. The height of Earth landforms is a result of the difference between the rate of uplift and the rate of erosion at a particular location.
E. Some Earth events such as El Nino, volcanism and global warming can affect the entire Earth system and are likely the result of complex interactions among Earth spheres.
F. The atmosphere has properties that can be observed, measured, and used to predict changes in weather and to identify climatic patterns.
G. The climate at a location on Earth is the result of several interacting variables such as latitude, altitude and/or proximity to water.
H. Energy from the Sun heats the Earth unevenly causing pressure differences and air movements (convection currents) resulting in changing weather patterns.
I. Ocean currents, global winds, and storm systems, redistribute heat energy on Earth's surface and therefore affect weather and long-term climatic patterns of a region.
J. Uneven heating and cooling of the Earth's surface produce air masses that differ in density, humidity and temperature. The interaction of these air masses results in significant weather changes.
K. Past geological events and environments can be reconstructed by interpreting fossilized remains and successive layering of sedimentary rocks.
L. The fit of continental coastlines, the similarity of rock types and fossilized remains provide evidence that today's continents were once a single land mass. The continents moved to their current positions on plates driven by energy from Earth's interior.
M. Heat energy stored in the oceans and transferred by currents influence climate. A disruption of the

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circulation and temperature of the world's oceans would foster climate change and have environmental and economic consequences.
Technology and Applications
A. Global weather data from ground measurements, satellites and radar are recorded on maps, analyzed, and used to predict local weather.
B. Water from some natural sources is unfit to drink and requires the use of specialized technology to analyze and purify it.

Social Studies

Geography
Geography Standard One: Students will develop a personal geographic framework, or "mental map," and understand the uses of maps and other geo-graphics [MAPS].
6-8a: Students will demonstrate mental maps of the world and its sub-regions which include the relative location and characteristics of major physical features, political divisions, and human settlements.
Geography Standard Two: Students will develop a knowledge of the ways humans modify and respond to the natural environment [ENVIRONMENT].
6-8a: Students will apply a knowledge of the major processes shaping natural environments to understand how different peoples have changed and been affected by, physical environments in the world's sub-regions.
Geography Standard Three: Students will develop an understanding of the diversity of human culture and the unique nature of places [PLACES].
6-8a: Students will identify and explain the major cultural patterns of human activity in the world's sub-regions.
Geography Standard Four: Students will develop an understanding of the character and use of regions and the connections between and among them [REGIONS].
6-8a: Students will understand the processes affecting the location of economic activities in different world regions.
History
History Standard One: Students will employ chronological concepts in analyzing historical phenomena [Chronology].
6-8a: Students will examine historical materials relating to a particular region, society, or theme; analyze change over time, and make logical inferences concerning cause and effect.
History Standard Four: Students will develop historical knowledge of major events and phenomena in world, United States, and Delaware history [Content].
6-8a: Students will develop an understanding of pre-industrial United States history and its connections to Delaware history, including: <ul style="list-style-type: none"> -- Three worlds meet (Beginnings to 1620) -- Colonization and Settlement (1585-1763) -- Revolution and the New Nation (1754-1820s) -- Expansion and Reform (1801-1861)

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-- Civil War and Reconstruction (1850-1877)
6-8b: Students will develop an understanding of ancient and medieval world history, and the continuing influence of major civilizations, including: <ul style="list-style-type: none">-- The beginnings of human society-- Early civilizations and pastoral peoples (4,000-1,000 BC)-- Classical traditions, major religions, and great empires (1,000 BC--300 AD)-- Expanding zones of exchange and encounter (300-1,000 AD)-- Intensified hemispheric interactions (1,000-1,500 AD)
Civics
Civics Standard One: Students will examine the structure and purposes of governments with specific emphasis on constitutional democracy [Government].
6-8a: Students will understand that governments have the power to make and enforce laws and regulations, levy taxes, conduct foreign policy, and make war.
Economics
Economics Standard Three: Students will understand different types of economic systems and how they change [Economic systems].
6-8a: Students will demonstrate the ways in which the means of production, distribution, and exchange in different economic systems have a relationship to cultural values, resources, and technologies.

Physical Education

Standard 1: Demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activities.
Standard 2: Demonstrates understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities.
Standard 3: Participates regularly in physical activity.
Standard 4: Achieves and maintains a health-enhancing level of physical fitness
Standard 5: Exhibits responsible personal and social behavior that respects self and others in physical activity settings.
Standard 6: Creates opportunity for health, enjoyment, challenge, self expression and/or social interaction through physical activity.

Health & Nutrition

Standard 1: Students will understand essential health concepts in order to transfer knowledge into healthy
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actions for life.
Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.
Standard 3: Students will demonstrate the ability to access information, products and services to enhance health.
Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.
Standard 6: Students will demonstrate the ability to use goal-setting skills to enhance health.
Standard 7: Students will demonstrate the ability to practice health enhancing behaviors and avoid or reduce health risks.
Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Technology

Students will be able to use Microsoft Word to publish a piece of writing.
Students will be able to identify and use major functions and actions for each Microsoft menu.
Students will be able to use Power Point to present information.
Students will demonstrate their ability to give an effective oral presentation.
Students will demonstrate their ability to use MS Excel.
Students will demonstrate their ability to use Excel to organize personal finances.

Attachment 6.2: 7th Grade Learning Standards

Math

CCS Standards: Ratios and Proportional Relationships
Analyze proportional relationships and use them to solve real-world and mathematical problems.
7RP1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</i>
7.RP2. Recognize and represent proportional relationships between quantities. <ol style="list-style-type: none"> 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. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. Represent proportional relationships by equations. <i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i> 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.
7.RP3. Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>
CCS Standards: The Number System
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
7.NS1. 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. <ol style="list-style-type: none"> Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged. Understand $p + q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. Apply properties of operations as strategies to add and subtract rational numbers.
7.NS2. Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. <ol style="list-style-type: none"> 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. 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.

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<p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p>
7.NS3. Solve real-world and mathematical problems involving the four operations with rational numbers.1
CCS Standards: Expressions and Equations
Use properties of operations to generate equivalent expressions.
7.EE1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
7.EE2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. For example, $a + 0.05a = 1.05a$ means that “increase by 5%” is the same as “multiply by 1.05.”
Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
7.EE3. 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 $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ 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.
7.EE4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
<p>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?</p> <p>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. 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.</p>
CCS Standards: Geometry
Draw, construct, and describe geometrical figures and describe the relationships between them.
7.G1. 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.
7.G2. 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.
7.G3. 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.
7.G4. 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.
7.G5. 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.

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7.G6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
CCS Standards: Statistics and Probability
Use random sampling to draw inferences about a population.
7.SP1. 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.
7.SP2. 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.
7.SP3. 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.
7.SP4. 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.
CCS Standards: Investigate chance processes and develop, use, and evaluate probability models.
7.SP5. 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.
7.SP6. 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.SP7. Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected. b. Develop a 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?
7.SP8. 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.

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- 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?

English Language Arts

CCS Standards: Reading - Literature
RL.7.1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RL.7.2. 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.
RL.7.3. Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).
RL.7.4. 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.
RL.7.5. Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.
RL.7.6. Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.
RL.7.7. 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).
RL.7.9. Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.
RL.7.10. 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.
CCS Standards: Reading – Informational Text
RI.7.1. Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
RI.7.2. Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.
RI.7.3. 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).
RI.7.4. 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.
RI.7.5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.
RI.7.6. Determine an author's point of view or purpose in a text and analyze how the author distinguishes

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his or her position from that of others.
RI.7.7. 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).
RI.7.8. 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.
RI.7.9. Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.
RI.7.10. 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.
Standards: Writing
W.7.1. Write arguments to support claims with clear reasons and relevant evidence. a. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant evidence, 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.
W.7.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.
W.7.3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences. a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically. b. Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters. c. Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another. d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events. e. Provide a conclusion that follows from and reflects on the narrated experiences or events.
W.7.4. 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.)

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<p>W.7.5. 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.</p>
<p>W.7.6. Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.</p>
<p>W.7.7. Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.</p>
<p>W.7.8. 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.</p>
<p>W.7.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ol style="list-style-type: none">Apply <i>grade 7 Reading standards</i> to literature (e.g., “Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history”).Apply <i>grade 7 Reading standards</i> 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”).
<p>W.7.10. 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.</p>
<p>CCS Standards: Speaking & Listening</p>
<p>SL.7.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p> <ol style="list-style-type: none">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, track progress toward specific goals and deadlines, and define individual roles as needed.Pose questions that elicit elaboration and respond to others’ questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.Acknowledge new information expressed by others and, when warranted, modify their own views.
<p>SL.7.2. Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.</p>
<p>SL.7.3. Delineate a speaker’s argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.</p>
<p>SL.7.4. Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.</p>
<p>SL.7.5. Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.</p>
<p>SL.7.6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.</p>
<p>CCS Standards: Language</p>

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<p>L.7.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ol style="list-style-type: none">Explain the function of phrases and clauses in general and their function in specific sentences.Choose among simple, compound, complex, and compound-complex sentences to signal differing relationships among ideas.Place phrases and clauses within a sentence, recognizing and correcting misplaced and dangling modifiers.*
<p>L.7.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ol style="list-style-type: none">Use a comma to separate coordinate adjectives (e.g., <i>It was a fascinating, enjoyable movie</i> but not <i>He wore an old[,] green shirt</i>).Spell correctly.
<p>L.7.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ol style="list-style-type: none">Choose language that expresses ideas precisely and concisely, recognizing and eliminating wordiness and redundancy.*
<p>L.7.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grade 7 reading and content</i>, choosing flexibly from a range of strategies.</p> <ol style="list-style-type: none">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., <i>belligerent, bellicose, rebel</i>).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.Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
<p>L.7.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <ol style="list-style-type: none">Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.Use the relationship between particular words (e.g., synonym/antonym, analogy) to better understand each of the words.Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>refined, respectful, polite, diplomatic, condescending</i>).
<p>L.7.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

Science

Science Standard 6: Life Processes

The natural world is defined by organisms and life processes which conform to principles regarding conservation and transformation of matter and energy. Living organisms use matter and energy to build their structures and conduct their life processes, have mechanisms and behaviors to regulate their internal environments and to respond to changes in their surroundings. Knowledge about life processes can be applied to improving human health and well being.

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<u>Matter and Energy Transformations</u>
A. All organisms require energy. A general distinction among organisms is that plants use solar energy to make their own food (sugar) and animals acquire energy directly or indirectly from plants.
B. Plants use the energy from sunlight, carbon dioxide, and water to produce sugars (photosynthesis). Plants can use the food (sugar) immediately or store it for later use.
C. Most living things use sugar (from food) and oxygen to release the energy needed to carry out life processes (cellular respiration). Other materials from food are used for building and repairing cell parts.
<u>Structure/Function Relationship</u>
A. Living organisms share common characteristics that distinguish them from non-living, dead, and dormant things. They grow, consume nutrients, exchange gases, respond to stimuli, reproduce, need water, eliminate waste, and are composed of cell(s).
B. Living systems in all kingdoms demonstrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, tissues, organs, organ systems, and organisms.
C. Most organisms are single celled while others are multi-cellular. Multi-cellular organisms consist of individual cells that cannot survive independently, while single-celled organisms are composed of one cell that can survive independently.
D. The cell is the fundamental unit of life. Cells have basic needs for survival. They use energy, consume materials, require water, eliminate waste, and reproduce.
E. Most cells contain a set of observable structures called organelles which allow them to carry out life processes. Major organelles include vacuoles, cell membrane, nucleus, and mitochondria. Plant cells have a cell wall and chloroplasts.
F. The human body has systems that perform functions necessary for life. Major systems of the human body include the digestive, respiratory, reproductive, and circulatory systems.
<u>Life Processes and Technology Application</u>
A. Technological advances in medicine and improvements in hygiene have helped in the prevention and treatment of illness.
B. The functioning and health of organisms are influenced by many factors (i.e., heredity, diet, lifestyle, bacteria, viruses, parasites, and the environment). Certain body structures and systems function to protect against disease and injury.
C. The environment may contain dangerous levels of substances in the water and soil that are harmful to organisms. Careful monitoring of these is important for healthy life processes
<u>Regulation and Behavior</u>
Regulation of an organism's internal environment involves sensing external changes in the environment and responding physiologically to keep conditions within the range required for survival (e.g., increasing heart rate with exertion).
<u>Science Standard 7: Diversity and Continuity of Living Things</u>
The natural world consists of a diversity of organisms that transmit their characteristics to future generations. Living things reproduce, develop, and transmit traits, and theories of evolution explain the unity and diversity of species found on Earth. Knowledge of genetics, reproduction, and development is applied to improve agriculture and human health.

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<i>Reproduction, Heredity and Development</i>
C. Some organisms reproduce sexually involving two parents. Sexual reproduction results in offspring that have greater genetic diversity than those resulting from asexual reproduction. One-half of the offspring's genetic information comes from the "male" parent and one-half comes from the "female" parent. These genetic differences help to ensure the survival of offspring in varied environments.
D. In sexual reproduction after the egg is fertilized, each of the new cells in the developing organism receives an exact copy of the genetic information contained in the nucleus of a fertilized egg.
E. Organisms have different reproductive strategies to ensure their offspring's survival. Some organisms produce many offspring and provide little parental care. Other organisms produce few offspring and invest much time and energy in care of their offspring.
F. Chromosomes are found in the nucleus of the cell and contain genes that are made of DNA. Inherited traits of individuals are controlled by genes.
G. Chromosomes can be arranged in pairs (one-half of each pair from each parent). These pairs are approximately the same size and shape, and have similar sequences of genes. Humans have 23 pairs (46) of chromosomes. Other organisms may have different numbers of chromosomes.
H. In humans, gender is determined by a pair of sex chromosomes. Females possess two X chromosomes; males an X and a Y chromosome. The sex of an embryo is determined by the sex chromosome found in the sperm cell.
I. Alternative versions of genes (different alleles) account for variations in inherited characteristics (i.e., flower color). Pairs of chromosomes that have the same allele present on both chromosomes are homozygous. Pairs of chromosomes with different alleles are heterozygous.
J. A dominant trait will be expressed if the organism is heterozygous or homozygous for the trait. A recessive trait will only be expressed if the organism is homozygous for the trait.
K. Mendelian genetics can be used to predict genotypes and phenotypes of offspring resulting from sexual reproduction.
<i>Diversity and Evolution</i>
A. The Earth's present day species evolved from earlier, distinctly different species. Many thousands of layers of sedimentary rock provide evidence for the long history of the Earth and for the long history of changing life forms whose remains are found in the rocks. More recently deposited rock layers are more likely to contain fossils resembling existing species.
B. Natural selection is the process by which some individuals with certain traits are more likely to survive and produce greater numbers of offspring than other organisms of the same species. Competition for resources and mates and conditions in the environment can affect which individuals survive, reproduce and pass their traits on to future generations.
C. Small genetic differences between parents and offspring accumulate over many generations, and ultimately new species may arise.
D. Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival. Most of the species that have lived on Earth no longer exist.
E. There is a wide diversity of organisms on Earth. These organisms may be classified in a number of ways. One classification system places organisms into five kingdoms (monera, protista, fungi, plantae, animalia) based on similarities in structure.
F. The great variety of body forms and structures found in different species enable organisms to survive in diverse environments.

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<i>Technology Applications</i>
A. Selective breeding is used to cultivate plants and domesticated animals with desirable traits.
B. Knowledge gained from research in genetics is being applied to areas of human health. Geneticists and genetic counselors may use pedigrees and Punnett squares to help predict the possibility of genetic disorders in future generations.
<i>Science Standard 8: Ecology</i>
Organisms are linked to one another in an ecosystem by the flow of energy and the cycling of materials. Humans are an integral part of the natural system and human activities can alter the stability of ecosystems.
<i>Interactions within the Environment</i>
A. All populations living together (biotic factors) and the physical factors with which they interact (abiotic factors) compose an ecosystem.
B. Ecosystems do not have precise boundaries. All ecosystems ultimately exchange materials with one another and all influence one another.
C. The Delaware Estuary is a semi-enclosed tidal body of water with a free connection to the ocean. This richly productive system, including the associated marshes, provides a variety of habitats for diverse species. This system is biologically and economically important.
D. A population consists of all individuals of a species that occur together at a given place and time. A species is a distinct biological grouping of organisms whose members interbreed in nature and produce fertile offspring
E. The size of populations may change as a result of the interrelationships among organisms. These may include predator/prey ratios, availability of resources, and habitat changes.
F. In all environments organisms with similar needs may compete with one another for resources including food, water, air, space and shelter. This competition results in natural population fluctuations.
G. Overpopulation can lead to depletion of resources and potential extinction of species.
H. Organisms within an ecosystem may interact symbiotically through mutualism, parasitism, and commensalism.
<i>Energy Flow and Material Cycles in the Environment</i>
A. In most ecosystems, energy enters as sunlight and is transformed by producers into a biologically usable form of matter through photosynthesis. That matter and energy then passes from organism to organism through food webs. Some energy is released from the system as heat.
B. Over time, matter is transferred repeatedly from one organism to another and between organisms and their physical environment. As in all material systems, the total amount of matter remains constant, even though its form and location change.
C. All organisms, including humans, are part of and depend on food webs. Food webs recycle matter continuously as organisms are decomposed after death to return food materials to the environment where it re-enters a food web.

Social Studies

Geography
Geography Standard Two: Students will develop knowledge of the ways humans modify and respond to

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the natural environment [Environment].
6-8a: Students will apply knowledge of the major processes shaping natural environments to understand how different peoples have changed and been affected by, physical environments in the world's sub-regions.
Geography Standard Three: Students will develop an understanding of the diversity of human culture and the unique nature of places [Places].
6-8a: Students will identify and explain the major cultural patterns of human activity in the world's sub-regions.
Geography Standard Four: Students will develop an understanding of the character and use of regions and the connections between and among them.
6-8b: Students will explain how conflict and cooperation among people contributes to the division of the Earth's surface into distinctive cultural regions and political territories.
History
History Standard Two: Students will gather, examine, and analyze historical data [Analysis].
6-8a: Students will master the basic research skills necessary to conduct an independent investigation of historical phenomena.
6-8b: Students will examine historical documents, artifacts, and other materials, and analyze them in terms of credibility, as well as the purpose, perspective, or point of view for which they were constructed.
Civics
Civics Standard Two: Students will understand the principals and ideals underlying the American political system [Politics].
6-8a: Students will understand that the concept of majority rule does not mean that the rights of minorities may be disregarded and will examine and apply the protections accorded those minorities in the American political system.
Civics Standard Three: Students will understand the responsibilities, rights, and privileges of United States citizens [Citizenship].
6-8a: Students will understand that civil rights secure political freedom while property rights secure economic freedom and that both are essential protects for the United States.
Civics Standard Four: Students will develop and employ the civic skills necessary for effective, participatory citizenship [Participation].
6-8a: Students will follow the actions of elected officials, and understand and employ the mechanisms for communicating with them while in office.
Economics
Economics Standard Four: Students will examine the patterns and results of international trade [International trade].
6-8a: Students will examine how nations with different economic systems specialize and become interdependent through trade and how government policies allow either free or restricted trade.

Attachment 6.2: 7th Grade Learning Standards

Physical Education

Standard 1: Demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activities.
Standard 2: Demonstrates understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities.
Standard 3: Participates regularly in physical activity.
Standard 4: Achieves and maintains a health-enhancing level of physical fitness
Standard 5: Exhibits responsible personal and social behavior that respects self and others in physical activity settings.
Standard 6: Creates opportunity for health, enjoyment, challenge, self expression and/or social interaction through physical activity.

Health & Nutrition

Standard 1: Students will understand essential health concepts in order to transfer knowledge into healthy actions for life.
Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other factors on health behaviors.
Standard 3: Students will demonstrate the ability to access information, produces and services to enhance health.
Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.
Standard 6: Students will demonstrate the ability to use goal-setting skills to enhance health.
Standard 7: Students will demonstrate the ability to practice health enhancing behaviors and avoid or reduce health risks.
Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Spanish I

1.1 Students introduce themselves and others, name objects, places and action in response to teacher questions.
1.2 Students understand isolate words and memorized chunks used by their teacher and their friends. They react to comments, questions and storytelling.
1.3 Presentational Communication: Students recite, sing and role play
2.1 Cultural Practices and Perspectives: Students recognize cultural practices in school routines and family activities.
2.2 Cultural Products: Students recognize cultural products relating to school, family and community.
3.1 Connections to other Disciplines: Students demonstrate an understanding about concepts learned in other subject areas in the target language, including weather, math facts, measurements, animals, insects, geographical concepts, etc.
3.2 Access to Information: Students read, listen to and talk about age-appropriate school content,

Attachment 6.2: 7th Grade Learning Standards

folktales, short stories, poems, internet sites and songs written for native speakers of the target language.
4.1 Language Comparisons: Students recognize and group together cognates and those that are false cognates.
4.2 Cultural Comparisons: Students become aware of culture similarities and difference in school routines and family activities.
5.1 Transfer to Communities: Students perform for the school community during special school events.
5.2 Enjoyment/Lifelong Learning: Students have fun learning to dance, sing, play games and respond in the target language.

Attachment 6.3: 8th Grade Learning Standards

Math

CCS Standards: The Number System
Know that there are numbers that are not rational, and approximate them by rational numbers.
8.NS1. Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\sqrt{2}$). <i>For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.</i>
CCS Standards: Expressions and Equations
Work with radicals and integer exponents.
8.EE1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. <i>For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.</i>
8.EE2. Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
8.EE3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. <i>For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.</i>
8.EE4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
Understand the connections between proportional relationships, lines, and linear equations.
8.EE5. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. <i>For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.</i>
8.EE6. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and

the equation $y = mx + b$ for a line intercepting the vertical axis at b .
Analyze and solve linear equations and pairs of simultaneous linear equations.
<p>8.EE7. Solve linear equations in one variable.</p> <p>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).</p> <p>b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p>
<p>8.EE8. Analyze and solve pairs of simultaneous linear equations.</p> <p>a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.</p> <p>b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. <i>For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.</i></p> <p>c. Solve real-world and mathematical problems leading to two linear equations in two variables. <i>For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.</i></p>
CCS Standards: Functions
Define, evaluate, and compare functions.
8.F1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. ¹
8.F2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i>
8.F3. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.</i>
Use functions to model relationships between quantities.
8.F4. Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
8.F5. Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

CCS Standards: Geometry
Understand congruence and similarity using physical models, transparencies, or geometry software.
8.G1. Verify experimentally the properties of rotations, reflections, and translations: <ol style="list-style-type: none"> Lines are taken to lines, and line segments to line segments of the same length. Angles are taken to angles of the same measure. Parallel lines are taken to parallel lines.
8.G2. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
8.G3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G4. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
8.G5. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. <i>For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.</i>
Understand and apply the Pythagorean Theorem.
8.G6. Explain a proof of the Pythagorean Theorem and its converse.
8.G7. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8.G8. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
8.G9. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
CCS Standards: Statistics and Probability
Investigate patterns of association in bivariate data.
8.SP1. Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.SP2. Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
8.SP3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. <i>For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.</i>
8.SP4. Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use

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relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

English Language Arts

CCS Standards: Reading - Literature
RL.8.1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
RL.8.2. Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary of the text.
RL.8.3. Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
RL.8.4. 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.
RL.8.5. Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.
RL.8.6. 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.
RL.8.7. 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.
RL.8.9. Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.
RL.8.10. 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.
CCS Standards: Reading – Informational Text

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<p>RI.8.1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.</p>
<p>RI.8.2. 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.</p>
<p>RI.8.3. Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).</p>
<p>RI.8.4. 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.</p>
<p>RI.8.5. Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.</p>
<p>RI.8.6. 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.</p>
<p>RI.8.7. Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.</p>
<p>RI.8.8. 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.</p>
<p>RI.8.9. Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.</p>
<p>RI.8.10. 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.</p>
<p>Standards: Writing</p>
<p>W.8.1. Write arguments to support claims with clear reasons and relevant evidence.</p> <ol style="list-style-type: none">Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.Establish and maintain a formal style.Provide a concluding statement or section that follows from and supports the argument presented.

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W.8.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

- a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

W.8.3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

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

W.8.4. 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.)

W.8.5. 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.

W.8.6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.

W.8.7. 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.

W.8.8. 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

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conclusions of others while avoiding plagiarism and following a standard format for citation.
<p>W.8.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <ol style="list-style-type: none">Apply <i>grade 8 Reading standards</i> 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”).Apply <i>grade 8 Reading standards</i> 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”).
<p>W.8.10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two).</p>
CCS Standards: Speaking & Listening
<p>SL.8.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p> <ol style="list-style-type: none">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.Pose questions that connect the ideas of several speakers and respond to others’ questions and comments with relevant evidence, observations, and ideas.Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.
<p>SL.8.2. 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.</p>
<p>SL.8.3. Delineate a speaker’s argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.</p>
<p>SL.8.4. Present claims and findings, 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.</p>
<p>SL.8.5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.</p>
<p>SL.8.6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.</p>

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CCS Standards: Language
<p>L.8.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</p> <ol style="list-style-type: none">Explain the function of verbals (gerunds, participles, infinitives) in general and their function in particular sentences.Form and use verbs in the active and passive voice.Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.Recognize and correct inappropriate shifts in verb voice and mood.*
<p>L.8.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.</p> <ol style="list-style-type: none">Use punctuation (comma, ellipsis, dash) to indicate a pause or break.Use an ellipsis to indicate an omission.Spell correctly.
<p>L.8.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.</p> <ol style="list-style-type: none">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).
<p>L.8.4. Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on <i>grade 8 reading and content</i>, choosing flexibly from a range of strategies.</p> <ol style="list-style-type: none">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., <i>precede</i>, <i>recede</i>, <i>secede</i>).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.Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
<p>L.8.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.</p> <ol style="list-style-type: none">Interpret figures of speech (e.g. verbal irony, puns) in context.Use the relationship between particular words to better understand each of the words.Distinguish among the connotations (associations) of words with similar denotations (definitions) (e.g., <i>bullheaded</i>, <i>willful</i>, <i>firm</i>, <i>persistent</i>, <i>resolute</i>).
<p>L.8.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.</p>

Science

Science Standard 1: Nature and Application of Science and Technology
<p>Science is a human endeavor involving knowledge learned through inquiring about the natural world. Scientific claims are evaluated and knowledge changes as a result of using the abilities and understandings of inquiry. The pursuit of scientific knowledge is a continuous process involving diverse people throughout history. The practice of science and the development of technology are critical pursuits of our society.</p>
<p><u>Understandings and Abilities of Scientific Inquiry</u></p>
<p>A. Understand that: Scientific investigations involve asking testable questions. Different kinds of questions suggest different scientific investigations. The current body of scientific knowledge guides the investigation. Be able to: Frame and refine questions that can be investigated scientifically, and generate testable hypotheses.</p>
<p>B. Understand that: A valid investigation controls variables. Different experimental designs and strategies can be developed to answer the same question. Be able to: Design and conduct investigations with controlled variables to test hypotheses.</p>
<p>C. Understand that: In a scientific investigation, data collection involves making precise measurements and keeping accurate records so that others can replicate the experiment. Be able to: Accurately collect data through the selection and use of tools and techniques appropriate to the investigation construct tables, diagrams and graphs, showing relationships between two variables, to display and facilitate analysis of data. Compare and question results with and from other students.</p>
<p>D. Understand that: There is much experimental and observational evidence that supports a large body of knowledge. The scientific community supports known information until new experimental evidence arises that does not match existing explanations. This leads to the evolution of the scientific body of knowledge. Be able to: Form explanations based on accurate and logical analysis of evidence. Revise the explanation using alternative descriptions, predictions, models and knowledge from other sources as well as results of further investigation.</p>
<p>E. Understand that: Evaluating the explanations proposed by others involves examining and comparing evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. Conflicting data or conflicting interpretations of the same data suggest the need for further investigation. Continued investigation can lead to greater understanding and resolution of the conflict. Be able to: Communicate scientific procedures, data, and explanations to enable the replication of results. Use computer technology to assist in communicating these results. Critical review is important in the analysis of these results.</p>
<p>F. Understand that: Scientific habits of mind and other sources of knowledge and skills are essential to scientific inquiry. Habits of mind include tolerance of ambiguity, skepticism, openness to new ideas, and objectivity. Other knowledge and skills include mathematics, reading, writing, and technology. Be able to: Use mathematics, reading, writing, and technology when conducting scientific inquiries.</p>
<p><u>Science, Technology, and Society</u></p>
<p>A. Advances in technology can expand the body of scientific knowledge. Technological tools allow people to observe objects and phenomena that otherwise would not be possible. Technology enhances the quality, accuracy, speed and analysis of data gathered.</p>

<p>B. Science and technology in society are driven by the following factors: economical, political, cultural, social, and environmental. Increased scientific knowledge and technology create changes that can be beneficial or detrimental to individuals or society through impact on human health and the environment.</p>
<p><u>History and Context of Science</u></p>
<p>A. Over the course of human history, contributions to science have been made by different people from different cultures. Studying some of these contributions and how they came about provides insight into the expansion of scientific knowledge.</p>
<p>Science Standard 2: Materials and Their Properties</p>
<p>Materials exist throughout our physical world. The structures of materials influence their physical properties, chemical reactivity and use.</p>
<p><u>Properties and Structure of Materials</u></p>
<p>A. All matter consists of particles too small to be seen with the naked eye. The arrangement, motion, and interaction of these particles determine the three states of matter (solid, liquid, and gas). Particles in all three states are in constant motion. In the solid state, tightly packed particles have a limited range of motion. In the liquid state, particles are loosely packed and move past each other. In the gaseous state, particles are free to move.</p>
<p>B. A phase change may occur when a material absorbs or releases heat energy. Changes in phase do not change the particles but do change how they are arranged.</p>
<p>C. Some physical properties, such as mass and volume, depend upon the amount of material. Other physical properties, such as density and melting point, are independent of the quantity of material. Density and melting point are unique physical properties for a material. Tools such as microscopes, scales, beakers, graduated cylinders, Celsius thermometers, and metric rulers are used to measure physical properties.</p>
<p>D. An important property of materials is their ability to conduct heat. Some materials, such as certain metals, are excellent conductors of heat while other materials, such as glass, are poor conductors (good thermal insulators).</p>
<p>E. Exposure to energy, such as light and heat, may change the physical properties of materials.</p>
<p><u>Mixtures and Solutions</u></p>
<p>A. Mixtures can be homogeneous or heterogeneous. Mixtures may be solids, liquids, and/or gases. Most materials are physical mixtures consisting of different components in varying concentrations. The individual components can be separated using the components' unique physical properties.</p>
<p>B. Solutions are homogenous mixtures of two or more components. The properties of a solution depend on the nature and concentration of the solute(s) and the nature of the solvent(s).</p>
<p>C. The rate of solubility is influenced by temperature and the surface area of the solute.</p>
<p>D. Temperature of the solvent can affect the saturation point of the solution.</p>
<p>E. In mixtures, individual components move from areas of higher concentration to areas of lower concentration to eliminate concentration differences. Diffusion is the movement of individual components.</p>
<p><u>Conservation of Matter</u></p>
<p>A. The total mass of the mixture is equal to the sum of the masses of the components. Total mass is conserved when different substances are mixed.</p>
<p><u>Material Technology</u></p>

A. Synthetic materials and/or modified natural materials are produced to make products used in everyday life.
B. The production of new materials has social, environmental, and other implications that require analyses of the risks and benefits.
Standard 3: Energy and Its Effects
The flow of energy drives processes of change in all biological, chemical, physical, and geological systems. Energy stored in a variety of sources can be transformed into other energy forms, which influence many facets of our daily lives. The forms of energy involved and the properties of the materials involved influence the nature of the energy transformations and the mechanisms by which energy is transferred. The conservation of energy is a law that can be used to analyze and build understandings of diverse physical and biological systems.
The Forms and Sources of Energy
A. Energy from the Sun takes the form of electromagnetic waves such as infrared, visible, and ultraviolet electromagnetic waves. The radiation from the sun consists of a range of energies in the electromagnetic spectrum.
B. Mechanical energy comes from the motion (kinetic energy) and position (potential energy) of objects. Gravitational potential energy and elastic potential energy are important forms of potential energy that contribute to the mechanical energy of objects.
C. Sound energy is the energy that takes the form of mechanical waves passing through objects or substances. The energy delivered by a wave in a given unit of time is determined by the amplitude and frequency of the wave.
D. Heat energy comes from the random motion of the particles in an object or substance. Temperature is a measure of the motion of the particles. The higher the temperature of the material, the greater the motion of the particles.
E. Electrical energy is a form of energy that can be transferred by moving charges through a complete circuit.
Forces and The Transfer of Energy
A. When the forces acting on an object are balanced, its motion will not change. Unbalanced forces will cause the object's motion to change. Changes in motion depend upon the size and direction of the total unbalanced force exerted on the object.
B. Gravity is a force that acts between masses over very large distances. Near the Earth's surface, gravity pulls objects and substances vertically downward.
C. Forces can be used to transfer energy from one object to another. Simple machines are used to transfer energy in order to simplify difficult tasks.
D. When energy from the sun is transferred to objects and substances, it can be transformed into a variety of energy forms.
E. Light energy radiates from a source and travels in straight lines. Light is reflected, refracted, transmitted, and absorbed differently by different materials. To see an object, light energy emitted or reflected from the object must enter the eye.
F. The addition or removal of heat energy from a material changes its temperature or its physical state.
G. Heat energy is transported by conduction, convection, and radiation. Heat energy transfers from warmer substances to cooler substances until they reach the same temperature.
H. Electrical systems can be designed to perform a variety of tasks. Series or parallel circuits can be used

to transfer electrical energy to devices. Electrical circuits require a complete loop through which the electrical charges can pass.
I. Moving electric charges produce magnetic fields.
<u>Energy Interacting With Materials; the Transformation and Conservation of Energy</u>
A. Energy can be transformed from one form into another. Energy transformations often take place while energy is being transferred to another object or substance. Energy transformations and energy transfers can be used to explain how energy flows through a physical system (e.g., photosynthesis, weathering, electrical circuits).
B. When a substance absorbs heat energy, or when a different form of energy is absorbed by the substance and is transformed into heat energy, the substance usually expands. The particles within the substance do not expand but the space between the particles increases.
C. Materials may absorb some frequencies of light but not others. The selective absorption of different wavelengths of white light determines the color of most objects.
<u>The Production, Consumption and Application of Energy</u>
A. Energy sources can be renewable or finite. Most energy used by industrial societies is derived from fossil fuel sources. Such sources are inherently limited on the Earth and are unevenly distributed geographically. Renewable energy sources vary in their availability and ease of use.
B. Technological advances throughout history have led to the discovery and use of different forms of energy, and to more efficient use of all forms of energy. These technological advances have led to increased demand for energy and have had both beneficial and detrimental effects on society.
C. Responsible use of energy requires consideration of energy availability, efficiency of its use, the environmental impact, and possible alternate sources.

Social Studies

History
History Standard One: Students will employ chronological concepts in analyzing historical phenomena.
6-8a: Students will examine historical materials relating to particular region, society, or theme; analyze change over time, and make logical inferences concerning cause and effect.
History Standard Three: Students will interpret historical data [Interpretation].
6-8a: Students will compare different historians' descriptions of the same societies in order to examine how the choice of questions and use of sources may affect their conclusions.
History Standard Four: Students will develop historical knowledge of major events and phenomena in world, United States, and Delaware history [Content].
6-8a: Students will develop an understanding of pre-industrial United States history and its connections to Delaware history, including: <ul style="list-style-type: none"> - Three worlds meets(Beginnings to 1620) - Colonization and Settlement (1585-1763) - Revolution and the New Nation(1754-1820s) - Expansions and Reform(1801-1861) - Civil War and Reconstruction (1850-1877)
Civics
Civics Standard One: Students will examine the structure and purposes of governments with specific emphasis on constitutional democracy [Government].
6-8a: Students will understand that governments have the power to make and enforce laws and

Attachment 6.3: 8th Grade Learning Standards

regulations, levy taxes, conduct foreign policy, and make war.
6-8b: Students will analyze the different functions of federal, state, and local governments in the United States and examine the reasons for the different organizational structures each level of government employs.
Civics Standard Two: Students will understand the principles and ideals underlying the American political system [Politics].
6-8b: Students will understand the principles and content of major American state papers such as the Declaration of Independence; United States Constitution (including the Bill of Rights); and the Federalist Papers.
Economics
Economics Standard One: Students will analyze the potential costs and benefits of personal economic choices in a market economy.
6-8a: students will analyze how changes in technology, costs, and demand interact in competition markets to determine or change the price of goods and services.
Economic Standard Two: Students will examine the interaction of individuals, families, communities, businesses, and governments in a market economy [Macroeconomics].
6-8a: Students will analyze the role of money and banking in the economy, and the ways in which government taxes and spending affect the functioning of market economies.

Physical Education

Standard 1: Demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activities.
Standard 2: Demonstrates understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities.
Standard 3: Participates regularly in physical activity.
Standard 4: Achieves and maintains a health-enhancing level of physical fitness
Standard 5: Exhibits responsible personal and social behavior that respects self and others in physical activity settings.
Standard 6: Creates opportunity for health, enjoyment, challenge, self expression and/or social interaction through physical activity.

Health & Nutrition

Standard 1: Students will understand essential health concepts in order to transfer knowledge into healthy actions for life.
Standard 2: Students will analyze the influence of family, peers, culture, media, technology and other

Attachment 6.3: 8th Grade Learning Standards

factors on health behaviors.
Standard 3: Students will demonstrate the ability to access information, produces and services to enhance health.
Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.
Standard 6: Students will demonstrate the ability to use goal-setting skills to enhance health.
Standard 7: Students will demonstrate the ability to practice health enhancing behaviors and avoid or reduce health risks.
Standard 8: Students will demonstrate the ability to advocate for personal, family and community health.

Spanish II

1.1: Interpersonal Communication: Students introduce their classmates, name, objects, places and actions and respond to commands and questions.
1.2 Students understand isolated words and memorized chunks used by their teacher and their friends. They recognize and understand some written words.
1.3 Students recite, sing, dance, role play and perform skits.
2.1: Cultural Practices and Perspectives: Students recognize cultural practices in holidays and traditions.
2.2 Cultural Products and Perspectives: Students recognize cultural artifacts relating to holidays and traditions.
3.1 Connections to other Disciplines: Students demonstrate an understanding about concepts learned in other subject areas in the target language, including weather, math facts, measurements, animals, insects or geographical concepts.
3.2 Access to Information: Students participate in cultural traditions and use authentic materials to access information about the target-language cultures.
4.1 Language Comparisons: Students recognize and group together cognates and those that are false cognates.
4.2 Students become aware of cultural similarities and difference in holidays and traditions.
5.1 Students make posters about holidays and traditions and display them in their school or the community library.
5.2: Enjoyment/Lifelong Learning: Students make choices to present information based on their personal interest.

Attachment 6: Exit Standards

To graduate, students at PCC must demonstrate that they are on a college trajectory and that they are prepared to be service-oriented leaders who can address complex academic and community issues. In addition to demonstrating a minimum of 75% proficiency in the core content areas of ELA, Math, Social Studies and Science, students graduating from 8th grade must complete the following projects as part of their graduation requirements.

Content	Sample 8 th Grade Exit Standards
English Language Arts and Social Studies	Capstone Research Paper PCC 8th Graders will complete and receive a passing grade on an 8-page research paper on a topic related to their Capstone Service Project. The paper will <ul style="list-style-type: none"> • Clearly communicate a research topic or thesis with supporting evidence • Be clearly organized and logically sequenced with each paragraph including a main idea and supporting evidence • Use research from multiple credible sources (including newspaper articles, internet journals, books, primary resources and interviews.) • Include a works cited • Visual representations
Math	PCC 8th grade students will pass a rigorous algebra exam that will demonstrate that they are prepared for math course in a college-preparatory high school program.
Science	Professional Scientific Report PCC 8th grade students will complete and receive a passing grade on an original scientific project focused on health and/or fitness. Students will define a question related to their topic and collect and analyze data. The report will be presented to an audience that includes board members, teachers, community members, students and parents. PCC staff members will give feedback that will be incorporated into the final grade.
Physical Education/Health and Nutrition	Final Project PCC 8th Graders will complete and receive a passing grade on a three part project related to Physical Education. The project will include: Part A: Interview a community member about their physical activity levels and create a 6 month activity plan for them to increase their physical activity.

	<p>Part B: Conduct a statistical study of their fitness over the course of 6th-8th grade.</p> <p>Part C: Study a sports team of your choice and revise their team strategy for success.</p>
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Capstone Service Project: During their 8th grade year, PCC students are expected to design, plan and lead a service project at school or in the broader community. Students will work in a team to identify an area of need in the community and propose a project to address it. Once their Crew Advisor approves their proposal, students will be responsible for organizing and implementing the project, recruiting 6th and 7th grader to help carry it out. Student teams will give an oral presentation about their work, reflecting on growth in leadership and commitment to service.

Path to College Plan: Starting in 7th grade, students at PCC will attend weekend college visits (approximately 3-5) and get advice from current college students who have overcome tremendous odds to succeed in a 4-year college. By the end of 8th grade, students will complete a Path to College plan that includes descriptions of colleges they would like to attend and their criteria for selecting them, as well as a description of the high school they plan to attend and the courses they will need to take to ensure that they will gain admission into a selective college. In addition, students will conduct and present research on the costs of college, the types of funding available and the ways in which students can access these resources.