Sixth Grade Curriculum at a Glance for Parents

Grade Six Religion

The students will...

- Identify Jesus as the central character of the Bible.
- Confess their faith in the promise of forgiveness, life, and salvation that Jesus gives with His body and blood.
- Determine when and how to apply Law or Gospel in various situations.
- Recognize that God's faithfulness to His covenant people is the unifying theme of all the historical books.
- Identify and appreciate various themes and moods found in the poetry and wisdom literature of the Old Testament books of Job through Ecclesiastes.
- Describe the themes found in the prophetic books in terms of Law and Gospel.
- Identify the purpose and primary theme of each of the four gospels and Acts.
- Recognize that through His Word God strengthens their faith in time of danger and testing.
- Identify the work of the Holy Spirit in inspiring the biblical books and preserving Holy Scripture for them.
- Confess that the Bible is divinely inspired, inerrant, and the infallible Word of God.
- Recognize that Baptism's power to forgive sins and create faith comes from the Holy Spirit working through the Word of God that accompanies the water.
- Use the power the Holy Spirit offers them through their Baptism daily to put to death their sinful selves and live God-pleasing lives.
- Recognize the real presence of Christ's body and blood in, with, and under the bread and wine in the Lord's Supper.
- Plan for their own personal devotional use of Scripture.
- Explain that God offers all people peace through the forgiveness and salvation that Jesus won on the cross.
- Regularly study God's Word so that their life-preserving faith might be strengthened.
- Daily remember their Baptism as they repent of their sin and receive the full assurance of God's forgiveness.
- Acknowledge that God seeks to redeem all people and values each person as one for whom Christ has died.
- Describe Jesus' willingness to suffer humiliation, excruciating pain, and death at the hand of earthly rulers in order to earn our forgiveness, life, and salvation.
- Identify key Scripture passages that affirm God's message of justification by grace through faith.
- Acknowledge God's Word as the source and norm by which all matters of faith and Christian life should be measured.
- Describe how cultural barriers can separate and hinder the sharing of the Gospel.
- Seek opportunities to share their faith in Christ Jesus.

Grade Six English & Language Arts

Literature

The student will...

- Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.
- Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.
- Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone
- Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
- Explain how an author develops the point of view of the narrator or speaker in a text.
- 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.
- Compare and contrast texts in different forms or genres in terms of their approaches to similar themes and topics.
- 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.

Informational Text

- Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct
- Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text.
- Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.
- Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
- Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.
- Integrate information presented in different media or formats as well as in words to develop a coherent understanding of a topic or issue.
- Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
- Compare and contrast one author's presentation of events with that of another.
- 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

Grade Six English & Language Arts

Writing Standards

- Write arguments to support claims with clear reasons and relevant evidence.
    - Introduce claim(s) and organize the reasons and evidence clearly.
    - Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
    - Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
    - Establish and maintain a formal style.
    - Provide a concluding statement or section that follows from the argument presented.
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
    - Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting, graphics, and multimedia when useful to aiding comprehension.
    - Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples.
    - Use appropriate transitions to clarify the relationships among ideas and concepts.
    - Use precise language and domain-specific vocabulary to inform about or explain the topic.
    - Establish and maintain a formal style.
    - Provide a concluding statement or section that follows from the information or explanation presented.
- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
    - Engage and orient the reader by establishing a context and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.
    - Use narrative techniques, such as dialogue, pacing, and description, to develop experiences, events, and/or characters.
    - Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
    - Use precise words and phrases, relevant descriptive details, and sensory language to convey experiences and events.
    - Provide a conclusion that follows from the narrated experiences or events.
- Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- 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.
- 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.

- Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
- Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.
- Draw evidence from literary or informational texts to support analysis, reflection, and research.
    - Apply grade 6 Reading standards to literature
    - Apply grade 6 Reading standards to literary nonfiction
- Write routinely over extended time frames and shorter time frames for a range of discipline-specific tasks, purposes, and audiences.

Speaking and Listening Standards

- Engage effectively in a range of collaborative discussions with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
    - Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
    - Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
    - Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
    - Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.
- Interpret information presented in diverse media and formats and explain how it contributes to a topic, text, or issue under study.
- Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
- 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.
- Include multimedia components and visual displays in presentations to clarify information.
- Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

Language Standards

- Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
    - Ensure that pronouns are in the proper case.
    - Use intensive pronouns.
    - Recognize and correct inappropriate shifts in pronoun number and person.

  - Recognize and correct vague pronouns.
  - Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.

- Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
  - Use punctuation to set off non-restrictive / parenthetical elements.
  - Spell correctly.
- Use knowledge of language and its conventions when writing, speaking, reading, or listening.
  - Vary sentence patterns for meaning, reader / listener interest, and style.
  - Maintain consistency in style and tone.
- 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.
  - Use context 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.
  - Consult reference materials, 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.
- Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
  - Interpret figures of speech in context.
  - Use the relationship between particular words to better understand each of the words.
  - Distinguish among the connotations of words with similar denotations.
- 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.

Grade Six Mathematics

Ratios and Proportional Relationships

The students....

- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- 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.
- Use ratio and rate reasoning to solve real-world and mathematical problems.
    - 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.
    - Solve unit rate problems including those involving unit pricing and constant speed.
    - Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, given a part and the percent.
    - Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

The Number System

- Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions.
- Fluently divide multi-digit numbers using the standard algorithm.
- Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- 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.
- Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 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.
    - 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 and that 0 is its own opposite.
    - 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.

  - 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.
- Understand ordering and absolute value of rational numbers.
  - Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
  - Write, interpret, and explain statements of order for rational numbers in real-world contexts.
  - 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.
  - Distinguish comparisons of absolute value from statements about order.
- 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.

Expressions and Equations

- Write and evaluate numerical expressions involving whole-number exponents.
- Write, read, and evaluate expressions in which letters stand for numbers.
  - Write expressions that record operations with numbers and with letters standing for numbers.
  - 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.
  - 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).
- Apply the properties of operations to generate equivalent expressions.
- 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.
- 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.
- 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.
- 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.

- 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.
- 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.

Geometry

- Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or de-composing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 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.
- 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.
- Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Statistics and Probability

- Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- 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.
- 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.
- Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- Summarize numerical data sets in relation to their context, such as by:
    - Reporting the number of observations.
    - Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
    - 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.
    - 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.

Grade Six Social Studies

Early River Civilizations (approx. 7000 BCE –approx. 500 CE)

The student...

- In this unit students will begin with a brief overview of the developments, particularly in agriculture, necessary for the beginnings of what are defined as "civilizations." Students will explore the concept and attributes of civilizations. They will analyze the impact of geographic location and resources in terms of water and rivers on the development of early civilizations. Students will compare and contrast the government, culture, and ideas of Mesopotamia and the Fertile Crescent, Egypt, China, and India. Students will trace the development of city-states and early government. They will investigate the causes and consequences of the rise and decline of empires through conquest and expansion. They will examine the growth and effects of barter and trade across these regions, including the diffusion of cultures and ideas. Students will compare and contrast polytheism and monotheism and analyze the impact of religion on the early river civilizations.

Ancient Greece (approx. 2000 BCE – approx. 70 CE)

- In this unit students will recognize the beliefs and ideas of the ancient Greeks as the foundation of western ideas that shape the world today. Students will recognize and evaluate the role of geography in shaping Greek civilization. They will trace the development of city-states in Greece and compare and contrast Sparta and Athens in terms of the rights and responsibilities of citizens. Students will examine the influence of Greek mythology, literature, philosophy, and architecture on the modern world. They will analyze continuity and change in the context of the growth of the Persian Empire, and the empire of Alexander the Great. Students will explore the spread of the Hellenistic culture during the reign of Alexander the Great.

Ancient Rome (approx. 753 BCE – approx. 1453 CE)

- In this unit students will trace the rise and fall of the Roman Republic and the Roman Empire and recognize the differences between the two. Students will examine the enduring achievements of the Romans in engineering, architecture and government. They will examine the origins of Christianity and its impact as it spread throughout the Roman Empire. They will understand how the Pax Romana shaped the world at the time. Students will understand the connections between economics, military, and engineering and how they worked together to shape the world. They will analyze how economic choices and corruption led to loss of government stability and the eventual decline of the Roman Empire.

African Civilizations and the Islamic World (approx. 500 BCE – approx. 1500 CE)

- In this unit students will explore the impact and accomplishments of the early empires of West Africa. They will examine the role of trade, particularly in West Africa's resources of gold and iron, in connecting people, cultures, and ideas. Students will analyze the factors leading to decline in early African empires. They will explore the impact of geography and climate on the culture and development of civilizations in Africa. Students will examine the origins of Islam in Southwest Asia. They will trace the expansion of Islam and its role in preserving intellectual and cultural traditions while acting as a bridge between eastern and western worlds. Students will analyze the role of trade in the spread of Islamic beliefs. Students will investigate Islamic contributions in art, architecture, science, and mathematics.

Grade Six Social Studies

Asian Empires (approx. 500 CE – approx. 1600 CE)

- In this unit students will compare and contrast the strengths and weaknesses of China's dynasties. They will investigate new inventions and technology in China and their impact on society. They will investigate the growth of Buddhism and its increasing influence on life in China during the Sui and Tang dynasties. Students will analyze the impact of trade on China and other nations, including their exports of tea, rice, silk, spices, and jade. They will examine the influence of Confucianism on the government. Students will evaluate dynastic cycles in China.

Early Americas (approx. 500 BCE – approx. 537 CE)

- In this unit students will compare and contrast the civilizations of the Mayas, Aztecs, and Incas in the Americas. Students will examine the impact of geography on the culture and way of life of these civilizations. They will investigate religion, family and social structure, government, trade, and innovations of the Mayas, Aztecs, and Incas. They will examine the causes of the decline and conquest of these civilizations.

Middle Ages in Europe

- In this unit students will recognize the influence of the Christian church on the small kingdoms of Europe after the fall of the Roman Empire. They will investigate the invasion of Europe by Muslims, Magyars, and Vikings. Students will examine the conflicts between religious and political leaders and how they shaped society and culture. Students will draw conclusions about the causes and effects of the Crusades. They will investigate changing views on rights as expressed in the Magna Carta and through the development of Parliament in England. They will evaluate the impact of the Black Death on European society.

Middle School Science

Matter and Its Interactions

The Student:

- Develop models to describe the atomic composition of simple molecules and extended structures.
- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
- Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
- Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Motion and Stability: Forces and Interactions

- Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.
- Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
- Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

Energy

- Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
- Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
- Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
- Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.
- Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

Middle School Science

Waves and Their Applications in Technologies for Information Transfer

- Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
- Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
- Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.

From Molecules to Organisms: Structures and Processes

- Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
- Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
- Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
- Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.
- Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

Ecosystems: Interactions, Energy, and Dynamics

- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

Middle School Science

Heredity: Inheritance and Variation of Traits

- Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.

Biological Evolution: Unity and Diversity

- Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
- Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
- Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
- Analyze how natural selection may lead to increases and decreases of specific traits in populations over time.

Earth & Space

- Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
- Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- Analyze and interpret data to determine scale properties of objects in the solar system.

Middle School Science

Earth's Systems

- Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
- Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

Earth and Human Activity

- Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
- Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
- Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Engineering Design

- Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific
- Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.