Textbook Information

Name of Textbook: Science A Closer Look

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Unit	State Standards	Outcomes	Essential Questions	Essential Skills	Assessments	Faith Integration
1st Quarter						
Science an Overview *(updated 7/14/20)*	SCI.CC4.6-8(I) Students understand systems may interact with other systems: they may have sub-systems and be a part of larger complex systems. They use models to represent systems and their interactions—such as inputs, processes, and outputs—and energy, matter, and information flows within systems. They also learn that models are limited in that they only represent certain aspects of the system under study. SCI.SEP1.A.6-8(I) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP3.A.6-8(I) Students plan and carry out investigations that use multiple variables and provide evidence to support explanations or solutions. This includes the following: •Individually and collaboratively plan an investigation, identifying: independent and dependent variables and controls, tools needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. •Conduct an investigation. Evaluate and revise the experimental design to produce data that serve as the basis for evidence to meet the goals of the investigation. •Evaluate the accuracy of various methods for collecting data. •Collect data under a range of conditions that serve as the basis for evidence to answer		How does science apply to us in our daily lives? How can I use the scientific method to solve a problem? What are the most important science words that I will need to know?	Knowledge: Be able to recite and describe the steps of the scientific method Understand the uses for and use scientific tools Comprehend the content and uses of different science words Define science and data according to Trinity guidelines Learn to take notes in science notebook SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations Science Skills and Tols Lab	God designed creation in an orderly and specific fashion. Compare His creation to the scientific method and the correlation between the two.

	scientific questions or test design solutions. •Collect data about the performance of a proposed object, tool, process, or system under a range of conditions. SCI.SEP4.A.6-8(I) Students extend quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. This includes the following: •Construct, analyze, or interpret graphical displays of data and large data sets to identify linear and nonlinear relationships. •Use graphical displays (e.g., maps, charts, graphs, and tables) of large data sets to identify temporal and spatial relationships. •Distinguish between causal and correlational relationships in data. •Analyze and interpret data to provide evidence for explanations of phenomena. •Apply concepts of statistics and probability (including mean, median, mode, and variability) to analyze and characterize data, using digital tools when feasible. •Consider limitations of data analysis (e.g., measurement error), and seek to improve precision and accuracy of data with better technological tools and methods (e.g., multiple trials). •Analyze and interpret data to determine similarities and differences in findings. •Analyze data to define an optimal operational range for a proposed object, tool, process, or system that best meets criteria for success. SCI.ETS2.A.6(I) Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems SCI.ETS2.A.7(I) Science and technology drive each other forward SCI.ETS2.B.6(I) All human activity draws on natural resources and has both short and longterm consequences, positive as well as negative, for the health of people and the natural environment. SCI.ETS2.B.7(I) The uses of technologies are driven by people's needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions SCI.ETS2.B.8(I) Technology use varies over time and from region to region. SCI.ETS3.A.7(I) Scientists and engineers are persistent, use creativity, reasoning, and skepticism, and remain open to new ideas. SCI.ETS3.A.8(I) Science and engineering are influenced by what is valued in society. SCI.ETS3.B.8(I) Science and engineering have direct impacts on the quality of life for all people. Therefore, scientists and engineers need to pursue their work in an ethical manner that requires honesty, fairness and dedication to public health, safety and welfare.					

Classifying Living Things *(updated 7/14/20)*	SCI.SEP1.A.6-8(I) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP4.A.6-8(I) Students extend quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. This includes the following: •Construct, analyze, or interpret graphical displays of data and large data sets to identify linear and nonlinear relationships. •Use graphical displays (e.g., maps, charts, graphs, and tables) of large data sets to identify temporal and spatial relationships. •Distinguish between causal and correlational relationships in data. •Analyze and interpret data to provide evidence for explanations of phenomena. •Apply concepts of statistics and probability (including mean, median, mode, and variability) to analyze and characterize data, using digital tools when feasible. •Consider limitations of data analysis (e.g., measurement error), and seek to improve precision and accuracy of data with better technological tools and methods (e.g., multiple trials). •Analyze and interpret data to determine similarities and differences in findings. •Analyze data to define an optimal operational range for a proposed object, tool, process, or system that best meets criteria for success. SCI.LS1.A.8(I) All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions. SCI.LS2.A.8(I) Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared. SCI.LS2.D.8(I) Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on		What are different types of living things? What are the structures and functions of plants? How are different types of animals grouped? What are the functions of the different animal systems? How do adaptations help organisms to survive in their environments?	Knowledge: Classify different organisms Explain scientific system for classifying organisms Describe plant reproduction Trace life cycles of different plants Summarize vertebrates and invertebrates Identify the structure and function of organ systems Compare the organ systems of vertebrates and invertebrates Identify and describe plant adaptations Describe how animals are adapted for their surroundings. SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations How can living things be classified Lab Classification Lab How does the large intestine help with digestion Lab	Look at the days of creation in the Book of Genesis. Look at how God created each of the different living organisms in their own way, including humans in His image.

	-- for example, water purification and recycling. SCI.LS4.A.8(I) The fossil record documents the existence, diversity, extinction, and change of many life forms and their environments through Earth's history. The fossil record and comparisons of anatomical similarities between organisms enables the inference of lines of evolutionary descent. SCI.LS4.C.8(I) Species can change over time in response to changes in environmental conditions through adaptation by natural selection acting over generations. Traits that support successful survival and reproduction in the new environment become more common.					
Cells *(updated 7/14/20)*	SCI.LS1.A.8(A) All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions. SCI.CC1.6-8(I) Students recognize macroscopic patterns are related to the nature of microscopic and atomic-level structure. They identify patterns in rates of change and other numerical relationships that provide information about natural and human-designed systems. They use patterns to identify cause and effect relationships and use graphs and charts to identify patterns in data. SCI.SEP2.A.6-8(I) Students develop, use, and revise models to describe, test, and predict more abstract phenomena and design systems. This includes the following: •Evaluate limitations of a model for a proposed object or tool. •Develop or modify a model—based on evidence – to match what happens if a variable or component of a system is changed. •Use and develop a model of simple systems with uncertain and less predictable factors. •Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. •Develop and use a model to predict and describe phenomena. •Develop a model to describe unobservable mechanisms. •Develop and use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales. SCI.SEP7.A.6-8(I) Students construct a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. This includes the following. •Compare and critique two arguments on the same topic. Analyze whether they emphasize similar or different evidence and interpretations of facts. •Respectfully provide and receive critiques about one's explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail. •Construct, use, and present oral and written		How are the bodies organized? How do cells carry out life processes? How do cells reproduce? How are microorganisms similar and different?	Knowledge: Understand that cells are the basic units that make up all living organisms Explain how cells, tissues, organs, and organ systems work to perform basic life functions Distinguish between plant and animal cells Discuss photosynthesis and respiration in cells Summarize the cell cycle Compare organism reproduction Compare different types of microorganisms Explain how microorganisms live and reproduce SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations What do cells look like Lab How do plant and animal cells differ Lab	Explain how the cell theory disapproves the argument for evolution, and talk about creation as the only viable option for human existence.

	arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. •Make an oral or written argument that supports or refutes the advertised performance of a device, process, or system. Based the argument on empirical evidence concerning whether or not the technology meets relevant criteria and constraints. •Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. SCI.LS1.C.8(I) Plants use the energy from light to make sugars through photosynthesis. Within individual organisms, food is broken down through a series of chemical reactions that rearrange molecules and release energy. SCI.LS1.D.8(I) Each sense receptor responds to different inputs, transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain resulting in immediate behavior or memories.					
Unit	**State Standards**	**Outcomes**	**Essential Questions**	**Essential Skills**	**Assessments**	**Faith Integration**
2nd Quarter						
Genetics *(updated 7/14/20)*	SCI.CC1.6-8(A) Students recognize macroscopic patterns are related to the nature of microscopic and atomic-level structure. They identify patterns in rates of change and other numerical relationships that provide information about natural and human-designed systems. They use patterns to identify cause and effect relationships and use graphs and charts to identify patterns in data. SCI.CC6.6-8(A) Students model complex and microscopic structures and systems and visualize how their function depends on the shapes, composition, and relationships among their parts. They analyze many complex natural and designed structures and systems to determine how they function. They design structures to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used. SCI.SEP1.A.6-8(A) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles.		How are traits passed on from parents to offspring? How do humans inherit traits? How does DNA determine an organism's traits? How does genetic variation help organisms survive?	Compare dominant and recessive traits Summarize the importance of Mendel's work Explain how the sex of an offspring is determined Summarize how a pedigree shows patterns of inheritance Explain the structure of a DNA molecule Summarize the process of genetic engineering Explain how variation helps animals survive over time Summarize the process of natural selection SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations Which inherited traits are dominant Lab Punnet Square Lab What are some common inherited traits Lab How do scientists genetically engineer bacteria to produce insulin Lab How do variations help animals survive Lab	Discuss Adam and Eve, looking at the inherited traits that have passed on from them, generation to generation. Discuss how Jesus DNA would be configured with only one earthly parent.

	•Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.LS1.B.8(A) Animals engage in behaviors that increase the odds of reproduction. An organism's growth is affected by both genetic and environmental factors. SCI.LS1.D.8(A) Each sense receptor responds to different inputs, transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain resulting in immediate behavior or memories. SCI.LS2.A.8(A) Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared. SCI.LS2.B.8(A) The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. Food webs model how matter and energy are transferred among producers, consumers, and decomposers as the three groups interact within an ecosystem. SCI.LS2.C.8(A) Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. SCI.LS2.D.8(A) Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on -- for example, water purification and recycling. SCI.LS3.A.8(A) Genes chiefly regulate a specific protein, which affect an individual's traits. SCI.LS3.B.8(A) In sexual reproduction, each parent contributes half of the genes acquired by the offspring resulting in variation between parent and offspring. Genetic information can be altered because of mutations, which may result in beneficial, negative, or no change to proteins in or traits of an organism. SCI.LS4.A.8(A) The fossil record documents the existence, diversity, extinction, and change of many life forms and their environments through Earth's history. The fossil record and comparisons of anatomical similarities between organisms enables the inference of lines of evolutionary descent. SCI.LS4.D.8(A) Changes in biodiversity can influence humans' resources and ecosystem services they rely on.					
Ecosystems *(updated 7/14/20)*	SCI.LS2.A.8(A) Organisms and populations are dependent on their environmental interactions both with other living things and with nonliving factors, any of which can limit their growth. Competitive, predatory, and mutually beneficial interactions vary across ecosystems but the patterns are shared.		What relationships and cycles exist in an ecosystem? How does energy flow between organisms in an ecosystem?	Knowledge: Describe how abiotic factors cycle in an ecosystem Explain and describe symbiosis Compare producers, consumers, and decomposers Describe how energy is	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets	Discuss the abiotic and biotic factors of the Garden of Eden. Where does God fit in?

	SCI.LS2.B.8(A) The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. Food webs model how matter and energy are transferred among producers, consumers, and decomposers as the three groups interact within an ecosystem. SCI.LS2.C.8(A) Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. SCI.LS2.D.8(A) Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on -- for example, water purification and recycling. SCI.LS4.B.8(A) Both natural and artificial selection result from certain traits giving some individuals an advantage in surviving and reproducing, leading to predominance of certain traits in a population. SCI.LS4.C.8(A) Species can change over time in response to changes in environmental conditions through adaptation by natural selection acting over generations. Traits that support successful survival and reproduction in the new environment become more common. SCI.LS4.D.8(A) Changes in biodiversity can influence humans' resources and ecosystem services they rely on. SCI.CC7.6-8(I) Students explain stability and change in natural or designed systems by examining changes over time, and considering forces at different scales, including the atomic scale. They understand changes in one part of a system might cause large changes in another part, systems in dynamic equilibrium are stable due to a balance of feedback mechanisms, and stability might be disturbed by either sudden events or gradual changes that accumulate over time.		What are the characteristics of different biomes and aquatic ecosystems? How do ecosystems change over time?	transferred in food chains and food webs Explain how climate change affects organisms Compare climate conditions of various biomes Summarize changes in ecosystems caused by humans and nature Describe evidence that shows how environments have changed over time SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Chapter Exams Tri-weekly Homework Assignments Explorations How does a flood affect an ecosystem Lab. How can you model a food chain Lab How do volcanic eruptions affect habitat Lab	
Matter *(updated 7/14/20)*	SCI.SEP1.A.6-8(A) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP1.B.6-8(A)		How can we measure and describe the properties of matter? How do elements combine to form all types of matter? How do energy and pressure affect the properties of matter? How are mixtures formed and seperated?	Knowledge: Measure the density of a given substance Classify the different states of matter Compare protons, neutrons, and electrons Compare atoms, molecules, elements, and compounds Explain boiling point and melting point Understand the relation of temperature, pressure, and volume Classify different mixtures Explain solutions and solubility SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations What is the density of water Lab Density Column Lab Can marker ink be separated Lab How can you separate a mixture Lab	Everything in God's universe is made up of matter. Discuss how certain elements and minerals can be millions of years old, yet live on an earth that is only about 8000 years old.

	SCI.SEP1.B.6-8(A) Students define a design problem that can be solved through the development of an object, tool, process, or system, and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. SCI.SEP6.B.6-8(A) Students design solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following: •Apply scientific ideas or principles to design, construct, and test a design of an object, tool, process, or system. •Undertake a design project, engaging in the design cycle, to construct and implement a solution that meets specific design criteria and constraints. •Optimize performance of a design by prioritizing criteria, making trade-offs, testing, revising, and retesting. SCI.SEP7.A.6-8(A) Students construct a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. This includes the following. •Compare and critique two arguments on the same topic. Analyze whether they emphasize similar or different evidence and interpretations of facts. •Respectfully provide and receive critiques about one's explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail. •Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. •Make an oral or written argument that supports or refutes the advertised performance of a device, process, or system. Based the argument on empirical evidence concerning whether or not the technology meets relevant criteria and constraints. •Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. SCI.PS1.A.8(A) The fact that matter is composed of atoms and molecules can be used to explain the properties of substances, diversity of materials, states of matter, phase changes, and conservation of matter. SCI.ETS1.B.8(A) Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. SCI.ETS1.B.9(A) Models of all kinds are important for testing solutions. SCI.ETS1.C.7(A) Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. SCI.ETS2.A.7(A) Science and technology drive each other forward SCI.CC5.6-8(I) Students understand matter is conserved because			interpreting data, inferring, graphing,		

	atoms are conserved in physical and chemical processes. They also understand that within a natural or designed system the transfer of energy drives the motion and cycling of matter. Energy may take different forms (e.g. energy in fields, thermal energy, and energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system.					
Chemistry *(updated 7/14/20)*	SCI.CC4.6-8(A) Students understand systems may interact with other systems: they may have sub-systems and be a part of larger complex systems. They use models to represent systems and their interactions—such as inputs, processes, and outputs—and energy, matter, and information flows within systems. They also learn that models are limited in that they only represent certain aspects of the system under study. SCI.SEP1.A.6-8(A) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP2.A.6-8(A) Students develop, use, and revise models to describe, test, and predict more abstract phenomena and design systems. This includes the following: •Evaluate limitations of a model for a proposed object or tool. •Develop or modify a model—based on evidence – to match what happens if a variable or component of a system is changed. •Use and develop a model of simple systems with uncertain and less predictable factors. •Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. •Develop and use a model to predict and describe phenomena. •Develop a model to describe unobservable mechanisms. •Develop and use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales. SCI.SEP5.A.6-8(A) Students identify patterns in large data sets and use mathematical concepts to support		How does matter change chemically? What properties determine how substances react with each other? How are carbon compounds important? What kinds of energy come from atoms?	Knowledge: Describe the 3 types of chemical reactions Compare exothermic and endothermic reactions Describe the periodic table Explain how to test for an acid or a base Discuss the uses of organic compounds Describe organic compounds in food Compare nuclear fission and fusion Explain how radioactivity can be used SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations Form and Test Hypothesis Lab What are acids and bases Lab How can you model radioactive decay Lab	Look at the periodic table and identify the elements mentioned throughout Biblical history. What other elements were present without having a name yet?

	explanations and arguments. This includes the following: •Decide when to use qualitative vs. quantitative data. •Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. •Use mathematical representations to describe and support scientific conclusions and design solutions. •Create algorithms (a series of ordered steps) to solve a problem. •Apply mathematical concepts and processes (such as ratio, rate, percent, basic operations, and simple algebra) to scientific and engineering questions and problems. •Use digital tools and mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem. SCI.PS1.B.8(A) Reacting substances rearrange to form different molecules, but the number of atoms is conserved. Some reactions release energy and others absorb energy. SCI.ETS3.C.6(A) A theory is an explanation of some aspect of the natural world. Scientists develop theories by using multiple approaches. Validity of these theories and explanations is increased through a peer review process that tests and evaluates the evidence supporting scientific claims. SCI.ETS3.C.7(A) Theories are explanations for observable phenomena based on a body of evidence developed over time. A hypothesis is a statement that can be tested to evaluate a theory. Scientific laws describe cause and effect relationships among observable phenomena. SCI.ETS3.C.8(A) Engineers develop solutions using multiple approaches and evaluate their solutions against criteria such as cost, safety, time and performance. This evaluation often involves trade-offs between constraints to find the optimal solution.					
Exploring Forces *(updated 7/14/20)*	SCI.CC5.6-8(A) Students understand matter is conserved because atoms are conserved in physical and chemical processes. They also understand that within a natural or designed system the transfer of energy drives the motion and cycling of matter. Energy may take different forms (e.g. energy in fields, thermal energy, and energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system. SCI.CC7.6-8(A) Students explain stability and change in natural or designed systems by examining changes over time, and considering forces at different scales, including the atomic scale. They understand changes in one part of a system might cause large changes in another part, systems in dynamic equilibrium are stable due to a balance of feedback mechanisms, and stability might be disturbed by either sudden events or gradual changes that accumulate over time. SCI.SEP1.A.6-8(A) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation		How are forces and motion related? What causes motions to change? What are work, energy, and power? How do simple machines help us do work?	Knowledge: Explain that motion can be described by position, direction, and speed Summarize how forces affect motion Describe how force and mass affect acceleration Explain that gravitational force pulls objects toward Earth's center Calculate work and express its formula Compare the ways energy can be transferred Describe types of simple machines Identify types of levers SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations How can you tell how fast things move Lab Predict how fast a balloon can move Lab How does inertia apply to passengers in a moving vehicle Lab What is work Lab	Calculate the amount of work Jesus did when He carried His cross to Golgatha.

	of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP1.B.6-8(A) Students define a design problem that can be solved through the development of an object, tool, process, or system, and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. SCI.SEP2.A.6-8(A) Students develop, use, and revise models to describe, test, and predict more abstract phenomena and design systems. This includes the following: •Evaluate limitations of a model for a proposed object or tool. •Develop or modify a model—based on evidence – to match what happens if a variable or component of a system is changed. •Use and develop a model of simple systems with uncertain and less predictable factors. •Develop and/or revise a model to show the relationships among variables, including those that are not observable but predict observable phenomena. •Develop and use a model to predict and describe phenomena. •Develop a model to describe unobservable mechanisms. •Develop and use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales. SCI.SEP3.A.6-8(A) Students plan and carry out investigations that use multiple variables and provide evidence to support explanations or solutions. This includes the following: •Individually and collaboratively plan an investigation, identifying: independent and dependent variables and controls, tools needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim. •Conduct an investigation. Evaluate and revise the experimental design to produce data that serve as the basis for evidence to meet the goals of the investigation. •Evaluate the accuracy of various methods for collecting data. •Collect data under a range of conditions that serve as the basis for evidence to answer scientific questions or test design solutions. •Collect data about the performance of a			interpreting data, inferring, graphing,	What is work Lab How is a ramp a simple machine Lab	

	proposed object, tool, process, or system under a range of conditions. SCI.SEP4.A.6-8(A) Students extend quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. This includes the following: •Construct, analyze, or interpret graphical displays of data and large data sets to identify linear and nonlinear relationships. •Use graphical displays (e.g., maps, charts, graphs, and tables) of large data sets to identify temporal and spatial relationships. •Distinguish between causal and correlational relationships in data. •Analyze and interpret data to provide evidence for explanations of phenomena. •Apply concepts of statistics and probability (including mean, median, mode, and variability) to analyze and characterize data, using digital tools when feasible. •Consider limitations of data analysis (e.g., measurement error), and seek to improve precision and accuracy of data with better technological tools and methods (e.g., multiple trials). •Analyze and interpret data to determine similarities and differences in findings. •Analyze data to define an optimal operational range for a proposed object, tool, process, or system that best meets criteria for success. SCI.PS2.A.6(A) Motion and changes in motion can be qualitatively described using concepts of speed, velocity, and acceleration (including speeding up, slowing down, and/or changing direction). SCI.PS2.A.7(A) The role of the mass of an object must be qualitatively accounted for in any change of motion due to the application of a force (Newton's first and second law). SCI.PS2.A.8(A) For any pair of interacting objects, the force exerted by the first object on the second object is equal in strength to the force that the second object exerts on the first, but in the opposite direction (Newton's third law). SCI.PS2.B.8(A) Forces that act at a distance involve fields that can be mapped by their relative strength and effect on an object SCI.PS3.A.8(A) Kinetic energy can be distinguished from the various forms of potential energy.					
Unit	**State Standards**	**Outcomes**	**Essential Questions**	**Essential Skills**	**Assessments**	**Faith Integration**
3rd Quarter						
Exploring Energy *(updated 7/14/20)*	SCI.SEP1.A.6-8(A) Students ask questions to specify relationships between variables and clarify arguments and models. This includes the following: •Ask questions that arise from careful observation of phenomena, models, or unexpected results, to clarify or seek additional information. •Ask questions to identify and clarify evidence and the premise(s) of an argument. •Ask questions to determine relationships		How do waves cause sound? How does light move and change? What are the types of electromagnetic radiation? What are heat and thermal energy?	Knowledge: Explain how wave motion is quantified and measured Describe how sound energy is transferred Explain the way in which light travels Describe how light acts with mirrors and lenses	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly	How is it possible to see the farthest away stars (100's of 1000's light year away) when the earth is only around 8000 years old?

	between independent and dependent variables and relationships in models. •Ask questions to clarify or refine a model, an explanation, or an engineering problem. •Ask questions that require sufficient and appropriate empirical evidence to answer. •Ask questions that can be investigated within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources and, when appropriate, frame a hypothesis based on observations and scientific principles. •Ask questions that challenge the premise(s) of an argument or the interpretation of a data set. SCI.SEP5.A.6-8(A) Students identify patterns in large data sets and use mathematical concepts to support explanations and arguments. This includes the following: •Decide when to use qualitative vs. quantitative data. •Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. •Use mathematical representations to describe and support scientific conclusions and design solutions. •Create algorithms (a series of ordered steps) to solve a problem. •Apply mathematical concepts and processes (such as ratio, rate, percent, basic operations, and simple algebra) to scientific and engineering questions and problems. •Use digital tools and mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem. SCI.PS3.A.8(A) Kinetic energy can be distinguished from the various forms of potential energy. SCI.PS4.A.8(A) A simple wave model has a repeating pattern with a specific wavelength, frequency, and amplitude, and mechanical waves need a medium through which they are transmitted. This model can explain many phenomena including sound and light. Waves can transmit energy. SCI.PS4.B.8(A) The construct of a wave is used to model how light interacts with objects. SCI.PS4.C.4(A) Waves can be used to transmit digital information. Digitized information is comprised of a pattern of 1s and 0s. SCI.CC3.6-8(I) Students observe time, space, and energy phenomena at various scales using models to study systems that are too large or too small. They understand phenomena observed at one scale may not be observable at another scale, and the function of natural and designed systems may change with scale. They use proportional relationships (e.g., speed as the ratio of distance traveled to time taken) to gather information about the magnitude of properties and processes. They represent scientific relationships through the use of algebraic expressions and equations.		How do we use electricity and magnetism?	Explain that color depends on light it absorbs and reflects Describe the electromagnetic spectrum Contrast heat and temperature Explain conduction, convection, and radiation Describe electricity and identify the roles that static electricity and current play SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Homework Assignments Explorations Can skin detect heat flow Lab Can you measure heat flow Lab	

Changes Over Time *(updated 7/14/20)*	SCI.CC3.6-8(A) Students observe time, space, and energy phenomena at various scales using models to study systems that are too large or too small. They understand phenomena observed at one scale may not be observable at another scale, and the function of natural and designed systems may change with scale. They use proportional relationships (e.g., speed as the ratio of distance traveled to time taken) to gather information about the magnitude of properties and processes. They represent scientific relationships through the use of algebraic expressions and equations. SCI.CC4.6-8(A) Students understand systems may interact with other systems: they may have sub-systems and be a part of larger complex systems. They use models to represent systems and their interactions—such as inputs, processes, and outputs—and energy, matter, and information flows within systems. They also learn that models are limited in that they only represent certain aspects of the system under study. SCI.SEP6.A.6-8(A) Students construct explanations supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. This includes the following: •Construct an explanation that includes qualitative or quantitative relationships between variables that predict and describe phenomena. •Construct an explanation using models or representations. •Construct a scientific explanation based on valid and reliable evidence obtained from sources, including the students' own experiments. Solutions should build on the following assumption: theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. •Apply scientific ideas, principles, and evidence to construct, revise, or use an explanation for real world phenomena, examples, or events. •Apply scientific reasoning to show why the data or evidence is adequate for the explanation. SCI.SEP7.A.6-8(A) Students construct a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. This includes the following. •Compare and critique two arguments on the same topic. Analyze whether they emphasize similar or different evidence and interpretations of facts. •Respectfully provide and receive critiques about one's explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail. •Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. •Make an oral or written argument that supports or refutes the advertised performance of a device, process, or system. Based the argument on empirical evidence concerning whether or not the technology meets relevant criteria and constraints. •Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.		How can we describe Earth's features? What happens when Earth's plates move ? How does plate movement shape the land? How do weathering and erosion change Earth's surface? How do scientists study Earth's history?	Knowledge: Describe the layers that make up Earth Explain how to use latitude and longitude Discuss evidence for continental drift and plate tectonics Explain sea floor spreading Identify types of landforms and the processes that form them Describe what happens when an earthquake occurs Describe the two main types of weathering Summarize how soil is formed and its importance Distinguish between relative and absolute age Discuss the future of Earth's life and geologic structures SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations How can you make a model of Earth's interior Lab Are the continents moving Lab How do mountains form Lab Earthquake news report Which rock layer is oldest Lab	Discuss the reasons that Pangaea could be true even with a young earth. Look at the flood and the amount of force that all of that water would have pressed against the land. Discuss the firmament and why there is an increase in cancer.

	SCI.ESS.C.8(A) Rock strata and the fossil record can be used as evidence to organize the relative occurrence of major historical events in Earth's history. SCI.ESS3.C.8(A) Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth. SCI.ESS3.D.8(A) Evidence suggests human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.					
Conserving Our Resources *(updated 7/14/20)*	SCI.CC5.6-8(A) Students understand matter is conserved because atoms are conserved in physical and chemical processes. They also understand that within a natural or designed system the transfer of energy drives the motion and cycling of matter. Energy may take different forms (e.g. energy in fields, thermal energy, and energy of motion). The transfer of energy can be tracked as energy flows through a designed or natural system. SCI.SEP8.A.6-8(A) Students evaluate the merit and validity of ideas and methods. This includes the following: •Critically read scientific texts adapted for classroom use to determine the central ideas, to obtain scientific and technical information, and to describe patterns in and evidence about the natural and designed world(s). •Clarify claims and findings by integrating text-based qualitative and quantitative scientific information with information contained in media and visual displays. •Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication. Describe how they are supported or not supported by evidence and evaluate methods used. •Evaluate data, hypotheses, and conclusions in scientific and technical texts in light of competing information or accounts. •Communicate scientific and technical information (e.g. about a proposed object, tool, process, or system) in writing and through oral presentations. SCI.ESS2.A.8(A) Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes. SCIE.ESS2.C.8(A) Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features. SCI.ESS3.A.8(A) Humans depend on Earth's land, oceans, fresh water, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes.		What makes up Earth's crust? How are clean air and water important to living organisms? How does using natural resources affect the environment? How does conservation preserve resources and the environment?	Knowledge: Identify minerals by their properties Discuss the formation of igneous, sedimentary, and metamorphic rock Summarize the importance of air Describe the water cycle Compare renewable and nonrenewable resources Describe how human activities affect the environment Describe practices used to conserve Earth's land, water, and air Discuss alternative energy sources SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations What is granite made of Lab What are objects made from Lab	Compare and contrast the reasons for pollution in Biblical verses current times.

	SCI.ESS3.B.8(A) Patterns can be seen through mapping the history of natural hazards in a region and understanding related geological forces. SCI.ESS3.C.8(A) Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth.					
Unit	**State Standards**	**Outcomes**	**Essential Questions**	**Essential Skills**	**Assessments**	**Faith Integration**
4th Quarter						
Weather and Climate *(updated 7/14/20)*	SCI.CC4.6-8(A) Students understand systems may interact with other systems: they may have sub-systems and be a part of larger complex systems. They use models to represent systems and their interactions—such as inputs, processes, and outputs—and energy, matter, and information flows within systems. They also learn that models are limited in that they only represent certain aspects of the system under study. SCI.SEP5.A.6-8(A) Students identify patterns in large data sets and use mathematical concepts to support explanations and arguments. This includes the following: •Decide when to use qualitative vs. quantitative data. •Use digital tools (e.g., computers) to analyze very large data sets for patterns and trends. •Use mathematical representations to describe and support scientific conclusions and design solutions. •Create algorithms (a series of ordered steps) to solve a problem. •Apply mathematical concepts and processes (such as ratio, rate, percent, basic operations, and simple algebra) to scientific and engineering questions and problems. •Use digital tools and mathematical concepts and arguments to test and compare proposed solutions to an engineering design problem. SCI.SEP7.A.6-8(A) Students construct a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. This includes the following. •Compare and critique two arguments on the same topic. Analyze whether they emphasize similar or different evidence and interpretations of facts. •Respectfully provide and receive critiques about one's explanations, procedures, models, and questions by citing relevant evidence and posing and responding to questions that elicit pertinent elaboration and detail. •Construct, use, and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. •Make an oral or written argument that supports or refutes the advertised performance of a device, process, or system. Based the argument on empirical evidence concerning whether or not the		What makes up weather? What factors affect the different types of weather? How do scientists predict and study weather? What factors determine an area's climate?	Knowledge: Describe what weather is, what affects it, and where it occurs Explain the connection between air pressure and wind Explore how the water cycle drives weather Discuss the conditions that favor thunderstorms and tornadoes Describe high and low pressure systems Explain how technology is used to study weather Define climate in terms of temperature and precipitation Describe the factors that affect climate SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets Chapter Exams Tri-weekly Homework Assignments Explorations Two weather reports How do you observe air pressure Lab Interpret Data Lab What can weather patterns tell us Lab	Why was there no snow in the Bible? Could a hurricane or thunderstorm produce the type of waters needed for a global flood? Did you know you could be drinking the same water that Jesus was baptized in?

	technology meets relevant criteria and constraints. •Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. SCI.SEP8.A.6-8(A) Students evaluate the merit and validity of ideas and methods. This includes the following: •Critically read scientific texts adapted for classroom use to determine the central ideas, to obtain scientific and technical information, and to describe patterns in and evidence about the natural and designed world(s). •Clarify claims and findings by integrating text-based qualitative and quantitative scientific information with information contained in media and visual displays. •Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication. Describe how they are supported or not supported by evidence and evaluate methods used. •Evaluate data, hypotheses, and conclusions in scientific and technical texts in light of competing information or accounts. •Communicate scientific and technical information (e.g. about a proposed object, tool, process, or system) in writing and through oral presentations. SCIE.ESS2.C.8(A) Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features. SCI.ESS2.D.8(A) Complex interactions determine local weather patterns and influence climate, including the role of the ocean. SCI.ESS3.A.8(A) Humans depend on Earth's land, oceans, fresh water, atmosphere, and biosphere for different resources, many of which are limited or not renewable. Resources are distributed unevenly around the planet as a result of past geologic processes. SCI.ESS3.B.8(A) Patterns can be seen through mapping the history of natural hazards in a region and understanding related geological forces. SCI.ESS3.C.8(A) Human activities have altered the hydrosphere, atmosphere, and lithosphere which in turn has altered the biosphere. Changes to the biosphere can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impacts on Earth. SCI.ESS3.D.8(A) Evidence suggests human activities affect global warming. Decisions to reduce the impact of global warming depend on understanding climate science, engineering capabilities, and social dynamics.					
Astronomy *(updated 7/14/20)*	SCI.PS4.C.4(A) Waves can be used to transmit digital information. Digitized information is comprised of a pattern of 1s and 0s. SCI.ESS.A.8(A) The solar system is part of the Milky Way, which is one of many billions of galaxies. SCI.ESS.B.8(A)		What happens as Earth moves around the Sun? What happens as the Moon moves around Earth? What are the	Knowledge: Model some of the ways in which scientists observe the planets Relate evidence that Earth rotates and define revolution Investigate how the interaction of Earth, the Moon, and the Sun	Big 40+2 Vocabulary Quizzes Listing the Steps of the Scientific Method Exit Tickets	Discuss the star that the wisemen followed. Look at the other celestial bodies mentioned in the Bible.

	The solar system contains many varied objects held together by gravity. Solar system models explain and predict eclipses, lunar phases, and seasons. SCI.ESS.C.8(A) Rock strata and the fossil record can be used as evidence to organize the relative occurrence of major historical events in Earth's history. SCI.ESS2.A.8(A) Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of these processes. SCI.ESS2.B.8(A) Plate tectonics is the unifying theory that explains movements of rocks at Earth's surface and geological history. Maps are used to display evidence of plate movement.		components of our solar system? What are the characteristics of stars? What do we know about our expanding universe?	cause lunar phases Describe conditions that produce lunar and solar eclipses Identify planets by observing their movement against background stars Explain the solar system consists of many bodies held together by gravity Define some of the properties of stars Compare the evolutionary paths of star types Classify gallaxies according to their properties Explain the big bang and the way in which Earth and its atmosphere were formed in comparison to Creation SKILLS: -posing questions, forming operational definitions, communication, drawing conclusions, applying concepts, developing hypotheses, interpreting data, predicting, interpreting data, inferring, graphing,	Chapter Exams Tri-weekly Homework Assignments Explorations How can you model the solar system Lab How are galaxies classified Lab	