Course Resources:

Science Outcomes.docx

Unit	State Standards	Outcomes	Essential Questions	Essential Skills	Assessments	Faith Integration
Entire Year of 3rd Grade						
Unit A: Living Things *(updated 6/3/20)*	SCI.ESS3.A.1(I) Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do. SCI.CC1.3-5(I) Students identify similarities and differences in order to sort and classify natural objects and designed products. They identify patterns related to time, including simple rates of change and cycles, and use these patterns to make predictions. SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes, recognizing the total mass of substances does not change. SCI.CC6.3-5(I) Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions. SCI.CC7.3-5(I) Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change. SCI.SEP1.A.3-5(I) Students ask questions that specify qualitative relationships. This includes the following: •Ask questions about what would happen if a variable is changed. •Identify scientific (testable) and non-scientific (non-testable) questions. •Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. SCI.SEP1.B.3-5(I) Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost. SCI.SEP2.A.3-5(I) Students build and revise simple models and use models to represent events and design solutions. This includes the following:		<u>Chapter 1:</u> • How are all living things alike? • How do plant structures compare? • What helps animals survive in their environments? • Which features can we use to classify animals? <u>Chapter 2:</u> • How do plants grow and reproduce? • How do animals grow and reproduce? • How do organisms get their features?	<u>Chapter 1:</u> • Compare and contrast living and nonliving things. • Describe and locate plant structures. • Describe the needs of animals and how they find these needs. • Identify two major groups of animals and classify animals into these groups <u>Chapter 2:</u> • Recognize the lifecycle of plants • Identify and compare the life cycles of different animals • Explore and Distinguish inherited and learned traits	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Explore the 7 days of creation.

•Identify limitations of models.
•Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.
•Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.
•Develop and/or use models to describe or predict phenomena.
•Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.
•Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system

SCI.SEP3.A.3-5(I)

Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
•Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
•Evaluate appropriate methods and tools for collecting data.
•Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
•Make predictions about what would happen if a variable changes.
•Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)

Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)

Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)

Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).

•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP6.B.3-5(I)
Students use evidence to create multiple solutions to design problems. This includes the following:
•Apply scientific ideas to solve design problems.
•Generate multiple solutions to a problem and compare how well they meet the criteria and constraints.

SCI.SEP7.A.3-5(I)
Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)
Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
•Compare and/or combine information across complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.LS1.A.4(I)
Plants and animals have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.

SCI.LS1.B.3(I)
Reproduction is essential to every kind of organism. Organisms have unique and diverse life cycles.

SCI.LS1.C.5(I)
Food provides animals with the materials and energy they need for body repair, growth, warmth, and motion. Plants acquire material for growth chiefly from air, water, and process matter, and obtain energy from sunlight, which is used to maintain conditions necessary for survival.

SCI.LS1.D.4(I)
Different sense receptors are specialized for particular kinds of information; animals use their perceptions and memories to guide their actions.

SCI.LS2.A.5(I)

The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.

SCI.LS2.B.5(I)
Matter cycles between the air and soil and among organisms as they live and die.

SCI.LS2.C.3(I)
When the environment changes, some organisms survive and reproduce, some move to new locations, some move into

SCI.LS2.D.3(I)
Being part of a group helps animals obtain food, defend themselves, and cope with changes.

SCI.LS3.A.3(I)
Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment. Many characteristics involve both inheritance and environment.

SCI.LS3.B.3(I)
Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops.

SCI.LS4.A.3(I)
Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms and environments that existed long ago.

SCI.LS4.C.3(I)
Particular organisms can only survive in particular environments.

SCI.LS4.D.2(I)
Biodiversity and Humans

SCI.ETS1.A.3(I)
Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

SCI.ETS1.B.3(I)
Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.

SCI.ETS1.B.4(I)
At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

SCI.ETS1.B.5(I)
Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.

SCI.ETS1.C.5(I)
Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

SCI.ETS2.A.5(I)
Science and technology support each other.

SCI.ETS2.A.6(I)
Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies.

SCI.ETS3.A.5(I)

	Science and engineering affect everyday life. SCI.ETS3.B.3(I) Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. SCI.ETS3.B.4(I) Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					
Unit B: Ecosystems *(updated 6/3/20)*	SCI.ESS3.B.1(I) In a region, some kinds of severe weather are more likely than others. Forecasts allow communities to prepare for severe weather. SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes, recognizing the total mass of substances does not change. SCI.CC6.3-5(I) Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions. SCI.CC7.3-5(I) Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change. SCI.SEP1.A.3-5(I) Students ask questions that specify qualitative relationships. This includes the following: •Ask questions about what would happen if a variable is changed. •Identify scientific (testable) and non-scientific (non-testable) questions. •Ask questions that can be investigated and predict		<u>Chapter 3:</u> • How do living things interact? • How do ecosystems compare? • How does an organism's traits help it survive? <u>Chapter 4:</u> • How can people and other living things change their environment? • How can changes in an environment affect living things? • What can we learn about living things of the past?	<u>Chapter 3:</u> • Explore ecosystems and the roles of different organisms in a food web/food chain • Describe characteristics of different ecosystems • Recognize adaptations that help an organism to survive <u>Chapter 4:</u> • Identify ways living things change their environment and compete for food, water, and shelter • Explore how environmental changes affect living things and how animals can become endangered • Explore how scientists learn about ancient plants and animals by studying fossils	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Explore God's creation and the 7 days of creation.

reasonable outcomes based on patterns such as cause and effect relationships.

SCI.SEP1.B.3-5(I)
Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost.

SCI.SEP2.A.3-5(I)
Students build and revise simple models and use models to represent events and design solutions. This includes the following:
•Identify limitations of models.
•Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.
•Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.
•Develop and/or use models to describe or predict phenomena.
•Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.
•Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system

SCI.SEP3.A.3-5(I)
Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
•Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
•Evaluate appropriate methods and tools for collecting data.
•Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
•Make predictions about what would happen if a variable changes.
•Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)
Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)
Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph

quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)
Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP6.B.3-5(I)
Students use evidence to create multiple solutions to design problems. This includes the following:
•Apply scientific ideas to solve design problems.
•Generate multiple solutions to a problem and compare how well they meet the criteria and constraints.

SCI.SEP7.A.3-5(I)
Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)
Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
•Compare and/or combine information across complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.LS1.A.4(I)
Plants and animals have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.

SCI.LS1.B.3(I)
Reproduction is essential to every kind of organism. Organisms have unique and diverse life cycles.

SCI.LS1.C.5(I)
Food provides animals with the materials and energy they need for body repair, growth, warmth, and motion. Plants acquire material for growth chiefly from air, water, and process matter, and obtain energy from sunlight, which is used to maintain conditions necessary for survival.

SCI.LS1.D.4(I)
Different sense receptors are specialized for particular kinds of information; animals use their perceptions and memories to guide their actions.

SCI.LS2.A.5(I)
The food of almost any animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants, while decomposers restore some materials back to the soil.

SCI.LS2.B.5(I)
Matter cycles between the air and soil and among organisms as they live and die.

SCI.LS2.C.3(I)
When the environment changes, some organisms survive and reproduce, some move to new locations, some move into

SCI.LS2.D.3(I)
Being part of a group helps animals obtain food, defend themselves, and cope with changes.

SCI.LS3.A.3(I)
Many characteristics of organisms are inherited from their parents. Other characteristics result from individuals' interactions with the environment. Many characteristics involve both inheritance and environment.

SCI.LS3.B.3(I)
Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops.

SCI.LS4.A.3(I)
Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms and environments that existed long ago.

SCI.LS4.B.3(I)
Differences in characteristics between individuals of the same species provide advantages in surviving and reproducing.

SCI.LS4.C.3(I)
Particular organisms can only survive in particular environments.

SCI.LS4.D.2(I)
Biodiversity and Humans

SCI.ETS1.B.3(I)
Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.

SCI.ETS1.B.4(I)
At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

SCI.ETS1.B.5(I)
Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.

SCI.ETS1.C.5(I)
Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

	SCI.ETS2.A.5(I) Science and technology support each other. SCI.ETS2.A.6(I) Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies. SCI.ETS2.B.1(I) People's needs and wants change over time, as do their demands for new and improved technologies. SCI.ETS2.B.2(I) Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. SCI.ETS2.B.3(I) When new technologies become available, they can bring about changes in the way people live and interact with one another. SCI.ETS3.A.3(I) Science and engineering knowledge have been created by many cultures. SCI.ETS3.A.4(I) People use the tools and practices of science and engineering in many different situations (e.g. land managers, technicians, nurses and welders). SCI.ETS3.A.5(I) Science and engineering affect everyday life. SCI.ETS3.B.3(I) Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. SCI.ETS3.B.4(I) Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set "scientific method" or "engineering design process." Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					
Unit C: Earth & Its Resources *(updated 6/3/20)*	SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before		<u>Chapter 5:</u> • What shapes can the land take? • How can Earth's surface change quickly? • How can Earh's surface change slowly? <u>Chapter 6:</u> • What makes rocks different from one another? • How does soil affect living things?	<u>Chapter 5:</u> • Identify Earth's landforms and features of the ocean floor. • Describe the layers of the Earth. • Explore the effects of earthquakes, volcanoes, landslides, and floods. • Describe and identify the forces that cause weathering and erosion. • Explore how people change the land. <u>Chapter 6:</u>	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Explore why God gave us rocks and soil and the importance of these resources to us.

and after processes, recognizing the total mass of substances does not change.

SCI.CC6.3-5(I)
Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions.

SCI.CC7.3-5(I)
Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change.

SCI.SEP1.A.3-5(I)
Students ask questions that specify qualitative relationships. This includes the following:
•Ask questions about what would happen if a variable is changed.
•Identify scientific (testable) and non-scientific (non-testable) questions.
•Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.

SCI.SEP1.B.3-5(I)
Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost.

SCI.SEP2.A.3-5(I)
Students build and revise simple models and use models to represent events and design solutions. This includes the following:
•Identify limitations of models.
•Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.
•Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.
•Develop and/or use models to describe or predict phenomena.
•Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.
•Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system

SCI.SEP3.A.3-5(I)
Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
•Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
•Evaluate appropriate methods and tools for collecting data.
•Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
•Make predictions about what would happen if a variable changes.
•Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)
Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be

- How are fossils and energy related?
- How do we use air and water?

- Compare and contrast properties of minerals.
- Describe how three main kinds of rock form.
- Explore soil and identify its components.
- Compare and contrast different kinds of soil.
- Model and describe how fossils form.
- List examples of fossil fuels and other sources of energy.
- Describe how air and water are used as resources, and how we can conserve these resources.

used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)
Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)
Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP6.B.3-5(I)
Students use evidence to create multiple solutions to design problems. This includes the following:
•Apply scientific ideas to solve design problems.
•Generate multiple solutions to a problem and compare how well they meet the criteria and constraints.

SCI.SEP7.A.3-5(I)
Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)
Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.

•Compare and/or combine information across complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.ESS.A.5(I)
Stars range greatly in size and distance from Earth, and this can explain their relative brightness

SCI.ESS.B.5(I)
The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns.

SCI.ESS.C.4(I)
Certain features on Earth can be used to order events that have occurred in a landscape.

SCI.ESS2.A.4(I)
Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.

SCI.ESS2.B.4(I)
Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events.

SCIE.ESS2.C.5(I)
Most of Earth's water is in the ocean, and much of the Earth's freshwater is in glaciers or underground.

SCI.ESS2.E.4(I)
Living things can affect the physical characteristics of their environment.

SCI.ESS3.A.4(I)
Energy and fuels humans use are derived from natural sources, and their use affects the environment. Some resources are renewable over time, others are not.

SCI.ESS3.B.4(I)
A variety of hazards result from natural processes; humans cannot eliminate hazards but can reduce their impacts.

SCI.ESS3.C.5(I)
Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

SCI.ETS1.A.3(I)
Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

SCI.ETS1.B.3(I)
Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.

SCI.ETS1.B.4(I)
At whatever stage, communicating with peers about

	proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. SCI.ETS1.B.5(I) Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. SCI.ETS1.C.5(I) Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. SCI.ETS2.A.5(I) Science and technology support each other. SCI.ETS2.A.6(I) Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies. SCI.ETS3.A.5(I) Science and engineering affect everyday life. SCI.ETS3.B.3(I) Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. SCI.ETS3.B.4(I) Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					
Unit D: Weather & Space *(updated 6/3/20)*	SCI.ESS3.B.1(I) In a region, some kinds of severe weather are more likely than others. Forecasts allow communities to prepare for severe weather. SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC3.3-5(I) Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as mass, time, temperature, and volume. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and		Chapter 7: • What information is used to predict the weather? • Where does water go? • How do weather patterns change? Chapter 8: • How do the Sun and Earth interact? • What can we learn about the Moon? • How can Earth be compared to the other objects in the solar system? • What can we see in the night sky?	Chapter 7: • Identify the meaning of weather and list four characteristics of weather. • Infer how condensation occurs and rain forms in the atmosphere. • Describe the water cycle and relate it to weather. • Explore climates in various places. • Summarize how seasons differ from place to place. Chapter 8: • Explore what causes day and night and the seasons. • Describe the importance of the sun. • Identify the phases of the moon and explore why the moon seems to change shape. • Identify features of the moon.	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Explore Noah's flood and why God caused that flooding and other natural disasters today.

energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes, recognizing the total mass of substances does not change.

SCI.CC6.3-5(I)
Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions.

SCI.CC7.3-5(I)
Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change.

SCI.SEP1.A.3-5(I)
Students ask questions that specify qualitative relationships. This includes the following:
•Ask questions about what would happen if a variable is changed.
•Identify scientific (testable) and non-scientific (non-testable) questions.
•Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.

SCI.SEP1.B.3-5(I)
Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost.

SCI.SEP2.A.3-5(I)
Students build and revise simple models and use models to represent events and design solutions. This includes the following:
•Identify limitations of models.
•Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events.
•Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.
•Develop and/or use models to describe or predict phenomena.
•Develop a diagram or simple physical prototype to convey a proposed object, tool, or process.
•Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system

SCI.SEP3.A.3-5(I)
Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
•Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
•Evaluate appropriate methods and tools for collecting data.
•Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
•Make predictions about what would happen if a variable changes.
•Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)

- Identify our solar system and inner/outter planets.
- Identify stars and constellations and explore why different constellations can be seen during different seasons.

Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)

Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)

Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP6.B.3-5(I)

Students use evidence to create multiple solutions to design problems. This includes the following:
•Apply scientific ideas to solve design problems.
•Generate multiple solutions to a problem and compare how well they meet the criteria and constraints.

SCI.SEP7.A.3-5(I)

Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)

Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex

texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
•Compare and/or combine information across complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.ESS.A.5(I)
Stars range greatly in size and distance from Earth, and this can explain their relative brightness

SCI.ESS.B.5(I)
The Earth's orbit and rotation, and the orbit of the moon around the Earth cause observable patterns.

SCI.ESS.C.4(I)
Certain features on Earth can be used to order events that have occurred in a landscape.

SCI.ESS2.A.4(I)
Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around.

SCI.ESS2.B.4(I)
Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events.

SCIE.ESS2.C.5(I)
Most of Earth's water is in the ocean, and much of the Earth's freshwater is in glaciers or underground.

SCI.ESS2.D.3(I)
Climate describes patterns of typical weather conditions over different scales and variations. Historical weather patterns can be analyzed.

SCI.ESS2.E.4(I)
Living things can affect the physical characteristics of their environment.

SCI.ESS3.A.4(I)
Energy and fuels humans use are derived from natural sources, and their use affects the environment. Some resources are renewable over time, others are not.

SCI.ESS3.B.4(I)
A variety of hazards result from natural processes; humans cannot eliminate hazards but can reduce their impacts.

SCI.ESS3.C.5(I)
Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments.

SCI.ETS1.A.3(I)
Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

	SCI.ETS1.B.3(I) Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. SCI.ETS1.B.4(I) At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. SCI.ETS1.B.5(I) Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. SCI.ETS1.C.5(I) Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. SCI.ETS2.A.5(I) Science and technology support each other. SCI.ETS2.A.6(I) Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies. SCI.ETS3.A.5(I) Science and engineering affect everyday life. SCI.ETS3.B.3(I) Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. SCI.ETS3.B.4(I) Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					
Unit E: Matter *(updated 6/3/20)*	SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC3.3-5(I) Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as mass, time, temperature, and volume. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and		<u>Chapter 9:</u> • What are all objects made of? • How can you compare different kinds of matter? • What are the states of matter? <u>Chapter 10:</u> • How can matter change states? • What happens when matter goes through a physical change? • What happens when matter goes through	<u>Chapter 9:</u> • Identify that matter is anything that has mass and takes up space. • Describe properties of matter. • Measure matter using tools that record standard units. • Compare and contrast weight and mass. • Define and explore the three common states of matter: solid, liquid, and gas. • Identify the properties of solids, liquids, and gases. <u>Chapter 10:</u> • Measure & Record the	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Explore the amazing creations God has given us and how it helps us with day to day life.

	their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes, recognizing the total mass of substances does not change. SCI.CC6.3-5(I) Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions. SCI.CC7.3-5(I) Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change. SCI.SEP1.A.3-5(I) Students ask questions that specify qualitative relationships. This includes the following: •Ask questions about what would happen if a variable is changed. •Identify scientific (testable) and non-scientific (non-testable) questions. •Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. SCI.SEP1.B.3-5(I) Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost. SCI.SEP2.A.3-5(I) Students build and revise simple models and use models to represent events and design solutions. This includes the following: •Identify limitations of models. •Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events. •Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. •Develop and/or use models to describe or predict phenomena. •Develop a diagram or simple physical prototype to convey a proposed object, tool, or process. •Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system SCI.SEP3.A.3-5(I) Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following: •Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. •Evaluate appropriate methods and tools for collecting data. •Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. •Make predictions about what would happen if a variable changes. •Test two different models of the same proposed	matter goes through a chemical change?	• Measure & Record the temperature of water in different states. • Identify the effects of heating and cooling matter. • Define physical changes as those that do not change the identify of a material. • Explore how to make and separate mixtures. • Describe chemical changes and explore how they are apart of our everyday life.		

object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)

Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)

Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)

Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP7.A.3-5(I)

Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)

Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
•Compare and/or combine information across

complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.PS1.A.5(I)
Matter exists as particles that are too small to see. Matter is always conserved even if it seems to disappear. Measurements of a variety of observable properties can be used to identify particular materials.

SCI.PS1.B.5(I)
Chemical reactions that occur when substances are mixed can be identified by the emergence of substances with different properties.

SCI.PS1.B.6(I)
In chemical reactions the total mass remains the same.

SCI.PS2.A.3(I)
Qualities of motion and changes in motion require description of both size and direction.

SCI.PS2.A.4(I)
The effect of unbalanced forces on an object results in a change of motion.

SCI.PS2.A.5(I)
Patterns of motion can be used to predict future motion.

SCI.PS2.B.3(I)
Some forces act through contact, some forces (e.g. magnetic, electrostatic) act even when the objects are not in contact.

SCI.PS2.B.5(I)
The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.

SCI.PS3.A.4(I)
Moving objects contain energy. The faster the object moves, the more energy it has.

SCI.PS3.B.4(I)
Energy can be moved from place to place by moving objects, or through sound, light, or electrical currents. Energy can be converted from one form to another form.

SCI.PS3.C.4(I)
When objects collide, contact forces transfer energy so as to change objects' motions.

SCI.PS3.D.4(I)
Plants capture energy from sunlight which can be used as fuel or food.

SCI.PS3.D.5(I)
Stored energy in food or fuel can be converted to useable energy.

SCI.PS4.A.4(I)
Waves are regular patterns of motion, which can be made in water by disturbing the surface. Waves of the same type can differ in amplitude and wavelength. Waves can make objects move.

SCI.PS4.B.4(I)
Objects can be seen when light reflected from their surface enters our eyes.

SCI.PS4.C.4(I)
Patterns can encode, send, receive, and decode information.

	SCI.ETS1.A.3(I) Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. SCI.ETS1.B.3(I) Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. SCI.ETS1.B.4(I) At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. SCI.ETS1.B.5(I) Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. SCI.ETS1.C.5(I) Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. SCI.ETS2.A.5(I) Science and technology support each other. SCI.ETS2.A.6(I) Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies. SCI.ETS3.A.5(I) Science and engineering affect everyday life. SCI.ETS3.B.3(I) Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding. SCI.ETS3.B.4(I) Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.5(I) Basic laws of nature are the same everywhere in the universe (e.g. gravity, conservation of matter, energy transfer, etc.). SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					

Unit F: Forces & Energy *(updated 6/3/20)*	SCI.ESS3.B.1(I) In a region, some kinds of severe weather are more likely than others. Forecasts allow communities to prepare for severe weather. SCI.CC2.3-5(I) Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. SCI.CC3.3-5(I) Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as mass, time, temperature, and volume. SCI.CC4.3-5(I) Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions. SCI.CC5.3-5(I) Students understand matter is made of particles and energy can be transferred in various ways and between objects. Students observe the conservation of matter by tracking matter flows and cycles before and after processes, recognizing the total mass of substances does not change. SCI.CC6.3-5(I) Students understand different materials have different substructures, which can sometimes be observed; and substructures have shapes and parts that serve functions. SCI.CC7.3-5(I) Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change. SCI.SEP1.A.3-5(I) Students ask questions that specify qualitative relationships. This includes the following: •Ask questions about what would happen if a variable is changed. •Identify scientific (testable) and non-scientific (non-testable) questions. •Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. SCI.SEP1.B.3-5(I) Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost. SCI.SEP2.A.3-5(I) Students build and revise simple models and use models to represent events and design solutions. This includes the following: •Identify limitations of models. •Collaboratively develop and/or revise a model based on evidence that shows the relationships among variables for frequent and regular occurring events. •Develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. •Develop and/or use models to describe or predict phenomena. •Develop a diagram or simple physical prototype to		<u>Chapter 11:</u> • How can you tell if something is moving? • How do forces change motion? • How do we work? • How can a simple machine reduce force? <u>Chapter 12:</u> • How can you describe heat? • What is a sound? • How does light allow you to see objects? • How do you use electricity?	<u>Chapter 11:</u> • Describe and relate position and motion. • Define speed using distance and time. • Identify a force as a push or a pull, and relate force to motion. • Define common forces, such as friction, gravity, and magnetism. • Define energy and work. • Discuss the forms of energy and how energy changes from one form to another. • Identify and describe simple machines, and apply their use to real-world tasks. • Define what a compound machine is and give examples. <u>Chapter 12:</u> • Describe how heat moves. • Compare insulators and conductors. • Describe how vibrations produce sounds. • Compare the pitch and volume of a sound. • Explore how light travels. • Describe how colors are seen. • Describe electrical charge. • Identify the parts of a circut.	Lab Activities Chapter Tests Chapter Quizzes Projects Unit Tests	Discuss God's creation of heat, sound, light, and electricity and explore how God's gifts help us everyday.

convey a proposed object, tool, or process.
•Use a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed system

SCI.SEP3.A.3-5(I)
Students plan and carry out investigations that control variables and provide evidence to support explanations or design solutions. This includes the following:
•Collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
•Evaluate appropriate methods and tools for collecting data.
•Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
•Make predictions about what would happen if a variable changes.
•Test two different models of the same proposed object, tool, or process to determine which better meets criteria for success.

SCI.SEP4.A.3-5(I)
Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following:
•Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships.
•Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation.
•Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
•Analyze data to refine a problem statement or the design of a proposed object, tool, or process.
•Use data to evaluate and refine design solutions.

SCI.SEP5.A.3-5(I)
Students extend quantitative measurements to a variety of physical properties, using computation and mathematics to analyze data and compare alternative design solutions. This includes the following:
•Organize simple data sets to reveal patterns that suggest relationships.
•Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and time to address scientific and engineering questions and problems.
•Create and use graphs or charts generated from simple algorithms to compare alternative solutions to an engineering problem.

SCI.SEP6.A.3-5(I)
Students use evidence to construct explanations that specify variables which describe and predict phenomena. This includes the following:
•Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).
•Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation.
•Identify the evidence that supports particular points in an explanation.

SCI.SEP6.B.3-5(I)
Students use evidence to create multiple solutions to design problems. This includes the following:
•Apply scientific ideas to solve design problems.
•Generate multiple solutions to a problem and compare how well they meet the criteria and

constraints.

SCI.SEP7.A.3-5(I)

Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world. This includes the following:
•Compare and refine arguments based on an evaluation of the evidence presented.
•Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.
•Respectfully provide and receive critiques from peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.
•Construct and/or support an argument with evidence, data, or a model.
•Use data to evaluate claims about cause and effect.
•Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

SCI.SEP8.A.3-5(I)

Students evaluate the merit and accuracy of ideas and methods. This includes the following:
•Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence.
•Compare and/or combine information across complex texts and other reliable media to support the engagement in scientific and engineering practices.
•Combine information in written text with that contained in corresponding tables, diagrams, or charts to support the engagement in other scientific and engineering practices.
•Obtain and combine information from books or other reliable media to explain phenomena or solutions to a design problem.
•Communicate scientific and technical information orally or in written formats, including various forms of media, which may include tables, diagrams, and charts.

SCI.PS1.A.5(I)

Matter exists as particles that are too small to see. Matter is always conserved even if it seems to disappear. Measurements of a variety of observable properties can be used to identify particular materials.

SCI.PS1.B.5(I)

Chemical reactions that occur when substances are mixed can be identified by the emergence of substances with different properties.

SCI.PS1.B.6(I)

In chemical reactions the total mass remains the same.

SCI.PS2.A.3(I)

Qualities of motion and changes in motion require description of both size and direction.

SCI.PS2.A.4(I)

The effect of unbalanced forces on an object results in a change of motion.

SCI.PS2.A.5(I)

Patterns of motion can be used to predict future motion.

SCI.PS2.B.3(I)

Some forces act through contact, some forces (e.g. magnetic, electrostatic) act even when the objects are not in contact.

SCI.PS2.B.5(I)

The gravitational force of Earth acting on an object near Earth’s surface pulls that object toward the

planet's center.

SCI.PS3.A.4(I)
Moving objects contain energy. The faster the object moves, the more energy it has.

SCI.PS3.B.4(I)
Energy can be moved from place to place by moving objects, or through sound, light, or electrical currents. Energy can be converted from one form to another form.

SCI.PS3.C.4(I)
When objects collide, contact forces transfer energy so as to change objects' motions.

SCI.PS3.D.4(I)
Plants capture energy from sunlight which can be used as fuel or food.

SCI.PS3.D.5(I)
Stored energy in food or fuel can be converted to useable energy.

SCI.PS4.A.4(I)
Waves are regular patterns of motion, which can be made in water by disturbing the surface. Waves of the same type can differ in amplitude and wavelength. Waves can make objects move.

SCI.PS4.B.4(I)
Objects can be seen when light reflected from their surface enters our eyes.

SCI.PS4.C.4(I)
Patterns can encode, send, receive, and decode information.

SCI.ETS1.A.3(I)
Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.

SCI.ETS1.B.3(I)
Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions.

SCI.ETS1.B.4(I)
At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

SCI.ETS1.B.5(I)
Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved.

SCI.ETS1.C.5(I)
Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.

SCI.ETS2.A.5(I)
Science and technology support each other.

SCI.ETS2.A.6(I)
Tools and instruments are used to answer scientific questions, while scientific discoveries lead to the development of new technologies.

SCI.ETS3.A.5(I)
Science and engineering affect everyday life.

SCI.ETS3.B.3(I)
Science and engineering are both bodies of knowledge and processes that add new knowledge to our understanding.

SCI.ETS3.B.4(I)

	Scientific findings are limited to what can be supported with evidence from the natural world. SCI.ETS3.B.5(I) Basic laws of nature are the same everywhere in the universe (e.g. gravity, conservation of matter, energy transfer, etc.). SCI.ETS3.B.6(I) Engineering solutions often have drawbacks as well as benefits. SCI.ETS3.C.3(I) The products of science and engineering are not developed through one set “scientific method” or “engineering design process.” Instead, they use a variety of approaches described in the Science and Engineering Practices. SCI.ETS3.C.4(I) Science explanations are based on a body of evidence and multiple tests, and describe the mechanisms for natural events. Science explanations can change based on new evidence. SCI.ETS3.C.5(I) There is no perfect design in engineering. Designs that are best in some ways (e.g. safety or ease of use) may be inferior in other ways (e.g. cost or aesthetics).					