



Course Description
5th Grade Science
SSA Review



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Big Ideas 1 and 2: Nature of Science

Topic 1: Safety and Scientific Processes

Description: [SC.5.N.1.1; SC.5.N.1.2; SC.5.N.2.1; SC.5.N.2.2] In this topic students will learn about the steps of carrying out scientific investigations. They learn to identify variables, collect and organize data, interpret data in charts, tables, and graphs, analyze information, make predictions, and arrive at conclusions. They learn about safe practices and the use of safety equipment while conducting scientific investigations.

Instruction Module
Safety and Scientific Processes: In this Instruction Module, students learn about the steps of conducting scientific investigations including asking well-defined questions, developing testable hypotheses, planning investigations, and using appropriate equipment. They learn how to collect information by observing, measuring, and organizing data in charts, tables, and graphs. They learn to analyze the data and arrive at conclusions. They recognize the importance of safe practices and the use of safety equipment while conducting scientific investigations

Glossary
Safety and Scientific Processes
The interactive multimedia glossary provides both linguistic and non-linguistic representations of key terms related to science concepts presented in the Instruction Modules, Interactivities, and Simulations.

Interactivity
Tess Pulley Experiment: In this interactivity, students choose the materials and equipment to "carry out" an experimental investigation. They observe and "measure" the force required to lift different amounts of sand, with and without a pulley system. They record their observations and compare data. Based on data collected, they reach a conclusion.

Simulations
Thermal Energy - Conductor Or Insulator?: In this simulation students will classify materials as thermal insulators or thermal conductors by conducting a simple investigation.
Testing The Effects Of Force – Friction: In this simulation students will design an experiment and investigate the effect of friction on the speed of a car rolling down a ramp.

Journals
Journal 1 - Safety and Scientific Processes
Journal 2 - Steps in an Experiment

Activities
Collecting, Recording, and Analyzing Information Using Tools
Evaluating Claims for Products and Services



Quiz [SC.5.N.1.1, 2, 4; SC.4.N.1.1,6; SC.3.N.1.1] The Practice of Science
 [SC.5.N.2.1; SC.5.N.1.5, 6; SC.4.N.1.3, 7; SC.3.N.1.7] The Characteristics of Scientific Knowledge
 [SC.5.N.2.2; SC.5.N.1.3; SC.4.N.1.2, 5; SC.3.N.1.2, 5] The Characteristics of Scientific Knowledge

Readers Variables
 Variables in Experiments and Investigations
 Repeatable and Replicable
 Creativity and Tentativeness
 Hypothesis Testing

Big Idea 5: Earth in Space and Time

Topic 1: Types of Galaxies

Description: [SC.5.E.5.1] In this topic students will learn that galaxies consist of gas, dust, and many stars, and recognize that they are classified based on their shape.

Instruction Module **Galaxies:** In this Instruction Module, students learn that galaxies are made of gas, dust, and stars. They learn about the characteristics of spiral, elliptical, and irregular galaxies and understand that galaxies are constantly changing or evolving. They recognize that our solar system is part of the Milky Way galaxy.

Student Review **Galaxies:** Students assess and review their understanding of the composition, shapes, and changing nature of galaxies.

Quiz [SC.5.E.5.1] The Milky Way and other Galaxies

Glossary Types of Galaxies

Reader Our Galaxy



Topic 2: Our Solar System

Description: [SC.5.E.5.2; SC.5.E.5.3] In this topic students will learn about the various objects in our solar system including the inner and outer planets, their moons, asteroids, and comets.

Instruction Module **Inner Planets:** In this Instruction Module, students are presented with the descriptions of each of the inner planets (Mercury, Venus, Earth, and Mars) and their distinctive features, such as nature of surface, atmosphere, comparative sizes, and position in relation to the Sun. Students observe, compare and contrast the inner planets.

Instruction Module **Outer Planets:** In this Instruction Module, students are presented with the descriptions of each of the outer planets (Jupiter, Saturn, Uranus, and Neptune) and their distinctive features, such as, comparative sizes, atmosphere, rings, and position in relation to the Sun. Students observe, compare and contrasts the outer planets. They learn that the asteroid belt separates the inner planets from the outer planets and understand why Pluto is no longer considered a planet.

Instruction Module **Solar System:** In this Instruction Module, students learn about the location, the movements, and some of the physical properties of the objects in our solar system such as the planets, the Galilean moons, the asteroid belt, meteors, and comets.

Instruction Module **Characteristics of Earth:** In this Instruction Module, students are introduced to the characteristics of Earth such as its core, its crust, and the gases in its atmosphere, its gravitational pull, and the existence of water in all three states. Students recognize the various characteristics that make life of Earth possible.

Instruction Module **Comparing the Moon to Earth:** In this Instruction Module, students compare the size, mass, gravitational pull, and atmosphere of the Earth and the Moon. They compare and contrast the lunar surface to Earth's surface and understand that the forces that cause weathering and erosion on Earth do not exist on the Moon.

Instruction Module **Characteristics of the Sun:** In this Instruction Module, students are introduced to the characteristics of the Sun such as its temperature and composition. Students observe and compare the Sun's mass and size with that of Earth. They learn about sunspots, solar winds, and solar flares.

Student Review
Planets in Our Solar System
The Solar System
Asteroids, Meteors, and Comets
Comparing the Moon to Earth



Quiz	[SC.5.E.5.2] Inner and Outer Planet [SC.5.E.5.3] Objects of the Solar System
Interactivities	The Solar System: In this interactivity, students identify and match the names of the planets in our solar system to their positions in relation to the Sun. The Spotlight: In this interactivity, students identify the planets with the help of some clues and determine their correct location in the solar system.
Activities	Describing Celestial Bodies Characteristics of the Sun, Moon, and Earth
Glossaries	Our Solar System Characteristics of the Sun, Moon, and Earth
Journals	Journal 1- The Solar System Journal 2- The Solar System Journal 1 - Characteristics of the Sun, Moon, and Earth
Readers	How Did Our Solar System Form? Inner Planets

Topic 3: Earth Cycles

Description: [SC.4.E.5.1, SC.4.E.5.2; SC.4.E.5.3; SC.4.E.5.4] In this topic students will learn to describe the changes in the observable shape of the Moon; they will learn that Earth's rotation on its axis and its revolution around the Sun cause the day and night cycle and the seasons respectively.

Instruction Module
Phases of the Moon: In this Instruction Module, students learn that as the Moon revolves around Earth, only parts of its lit up surface are visible from Earth resulting in the different phases of the Moon. They also learn that waxing and waning are terms used to describe the apparent growing and shrinking of the Moon.



Instruction Module	The Day and Night Cycle: In this Instruction Module, students learn that changes that repeat and form a pattern are called cycles. They understand that the day-and-night cycle is caused by the rotation of Earth on its axis.
Instruction Module	Cycle of the Seasons: In this Instruction Module, students learn that the cycle of seasons is a result of Earth revolving around the Sun on its tilted axis. They observe and understand that when the Northern hemisphere is tilted toward the Sun, it experiences summer and when it is tilted away from the Sun, it experiences winter
Student Review	The Day and Night Cycle
Student Review	Cycle of the Seasons
Quiz	[SC.4.E.5.3] Earth's Rotation and Revolution [SC.4.E.5.4] Rotation of Earth [SC.4.E.5.2] Phases of the Moon [SC.4.E.5.1] Star Patterns
Activity	Day and Night and the Movement of the Sun
Glossary	Earth Cycles



Journals

Journal 1 - Earth Cycles
 Journal 2 - Earth Cycles
 Journal 3 - Earth Cycle

Reader	Phases of The Moon
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Topic 4: Our Sun

Description: [SC.3.E.5.1; SC.3.E.5.2; SC.3.E.5.3] In this topic, students will identify the Sun is a star, and learn to describe its composition and the process by which it emits energy.

Instruction Module

The Sun—Our Star: In this Instruction Module, students are introduced to the Sun as the largest object in our solar system. Students learn that the Sun is a star and is made of up mostly of hydrogen and helium. They compare the relative sizes of the Sun, Earth, and the Moon and understand that the Sun appears to be the same size as the Moon because it is much farther away from Earth than the Moon.

Instruction Module

The Physical Sun: In this Instruction Module, students are introduced to some of the regions of the Sun such as the Sun’s corona, the photosphere, and sunspots. Students understand that the Sun is the main source of energy on Earth, providing energy for photosynthesis and driving the water cycle.

Instruction Module

The Sun: In this Instruction Module, students are introduced to the Sun as the object in the center of our solar system. Students learn about the composition of the Sun, its different layers, and the process of fusion that makes the Sun the main source of energy on Earth. Students are also introduced to Sunspots.

Student Review

The Sun—Our Star

Quiz

[SC.3.E.5.2] Energy from the
 [SC.3.E.5.1] Stars Sun
 [SC.3.E.5.3] Our Sun



Interactivity	Orbiting Spheres: In this Interactivity, students “place” the Sun, the Moon, and Earth in their correct orbital positions in the solar system. Then, they identify the correct object based on the characteristics of the Sun, the Moon, and Earth.
Activity	The Sun, Earth, and Moon As a System
Glossary	Our Sun
Journal	Journal - The Physical Sun
Readers	Our Shining Star Constellation

Big Idea 6: Earth Structures

Topic 1: Types of Rocks

Description: [SC.4.E.6.1] In this topic, students will learn to identify the three categories of rock including igneous, sedimentary, and metamorphic, and describe the processes by which they are formed.

Instruction Module **Rocks:** In this Instruction Module, students learn that rocks are of three basic types, namely igneous, sedimentary, and metamorphic. They learn about the processes involved in the formation of these rocks. They also understand the rock cycle in which rocks can be converted from one form to another.

Student Review Igneous and Metamorphic Rocks
Sedimentary Rocks

Quiz [SC.4.E.6.1] Types of Rocks

Interactivity **Rock Transformer:** In this interactivity, students identify the process that formed a given rock sample and then “transform” it into another rock type by choosing the right process.



Activity	Modeling the Rock Cycle
Glossary	Types of Rocks
Journal	Journal – Rock Cycle
Reader	Rocks
Topic 2: Properties of Minerals	
Description: [SC.4.E.6.2] In this topic, students will learn to identify the properties of some common minerals, including hardness, color, luster, cleavage, streak, and understand how some minerals are formed.	
Instruction Module	Mineral Basics: In this Instruction Modules, students learn to define a mineral. They understand how some minerals such as diamonds and salt are formed. They also learn how minerals are used in our daily lives for various purposes.
Instruction Module	Identifying Minerals: In this Instruction Module, students learn that minerals are inorganic, solid substances found in nature and that all rocks are made of minerals. They understand that different minerals are formed in different ways in different regions of Earth. They also learn to identify minerals based on their physical properties such as color and streak, luster, hardness and cleavage.
Student Review	Identifying Minerals
Quiz	[SC.4.E.6.2] Properties of Minerals
Simulation	Mystery Minerals: In this simulation, students identify minerals by observing their physical properties such as color, streak, luster, hardness, and cleavage and comparing the results with a mineral identification chart.
Activity	Testing for Physical Properties to Identify Minerals



Glossary Properties of Minerals

Journal Journal - Classifying Minerals

Reader Identifying Minerals

Topic 3: Renewable and Nonrenewable Resources

Description: [SC.4.E.6.3] In this topic students learn to identify renewable and nonrenewable resources, and recognize the importance of conserving our resources.

Instruction Module

Renewable Resources: In this Instruction Module, students learn that renewable resources are natural resources that are plentiful in nature. They also learn to identify and give examples of renewable resources.

Instruction Module

Nonrenewable Resources: In this Instruction Module, students learn that nonrenewable resources are natural resources that exist in limited quantities in nature. They also learn to identify and give examples of nonrenewable resources.

Instruction Module

Conservation of Natural Resources: In this Instruction Module, students learn about the consequences of depletion of natural resources and recognize the importance of conservation of resources. They also learn about different ways to conserve these resources.

Student Review

Renewable Resources
Nonrenewable Resources
Conservation of Natural Resources

Quiz

[SC.4.E.6.3] Renewable and Nonrenewable Resources
[SC.4.E.6.6] Florida Resources

Interactivity

Conserving Resources: In this Interactivity, students classify and group resources as renewable and nonrenewable resources. Then, they identify which nonrenewable resource is used the most for a certain purpose that is mentioned.

Activity

Alternative Energy Resource



Glossary	Renewable and Nonrenewable Resources
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Journal	Journal - Conserving Resources Journal 1 - Energy Resources Journal 2 - Energy Resources
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Reader	Florida Resources
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Topic 4: Weathering and Erosion

Description: [SC.4.E.6.4] In this topic students will learn to recognize how processes such as weathering, erosion, deposition, and dissolution constantly change Earth's surface, and identify the agents that cause these changes.

Instruction Module	Changes on Earth's Surface: In this Instruction Module, students learn that Earth's surface is constantly being changed by natural forces such as wind, water, and glaciers. They understand how these forces cause weathering, erosion, deposition, and dissolving which change landforms and create new landforms.
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Instruction Module	Erosion by Water: In this Instruction Module, students will learn about water erosion and the landforms created by such erosion. They will also understand how erosion by water can be measured quantitatively in the laboratory.
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Instruction Module	Water as a Force: In this Instruction Module, students learn how water can change Earth's surface. They learn that water is a destructive force when it causes weathering and erosion and that it is a constructive force when it causes deposition.
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Student Review	Changes on the Earth's Surface Water as a Force
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Quiz	[SC.4.E.6.4] Weathering and Erosion
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Activity	Changes on the Earth's Surface A Changing Earth Modeling Erosion and Deposition
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Glossary	Weathering and Erosion
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Journal	Journal - Observing Change Journal - Changes on the Earth's Surface
Reader	Florida's Sinkholes The Dust Bowl Erosion—Soil on the Move Types of Weathering

Big Idea 7: Earth Systems and Patterns

Topic 1: The Water Cycle

Description: [SC.5.E.7.1; SC.5.E.7.2] In this topic students will learn about the importance of the water cycle and describe the processes involved in it including evaporation, condensation, and precipitation.

Instruction Module **The Water Cycle:** In this Instruction Module, students are introduced to the water cycle. Students learn to identify and describe the different processes that are part of the water cycle such as evaporation, condensation, precipitation, infiltration, and transpiration.

Student Review Water Cycle

Quiz [SC.5.E.7.2] Water Cycle and the Oceans
[SC.5.E.7.1] The Water Cycle Model

Activity **The Water Cycle - Descriptive Investigation:** Students work with a lab partner to design a test that allows them to create a model of the water cycle and observe the different steps in the water cycle.

Expository - The Water Cycle: This expository reading passage focuses on how energy from the Sun and the oceans interact with topographical features to influence weather conditions in the natural world. It introduces students to Mount Wai'ale'ale in Hawaii, the location in the United States that receives the most rainfall per year, and highlights how processes in the water cycle influence this phenomenon.

Glossary The Water Cycle



Journal	Journal - The Water Cycle
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Reader	The Water Cycle
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Topic 2: Weather or Climate?

Description: [SC.5.E.7.3] In this topic students will recognize how air temperature, humidity, and air pressure determine the weather and climate.

Instruction Module	The Sun and Weather: In this Instruction Module, students learn how uneven heating of the Earth’s surface results in variation of temperatures in the different parts of Earth. They learn that the Earth's tilted axis is the cause of the uneven heating.
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Instruction Module	Humidity: In this Instruction Module, students are introduced to humidity. They learn that humidity refers to the amount of water vapor in the air. They understand that humidity depends on the climate of a place and on temperature.
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Instruction Module	Pressure and Weather: In this Instruction Module, students are introduced to air pressure. Students learn about the effects of temperature on air pressure and learn to identify regions of high and low pressures on a weather map. They understand that air moves from a region of high pressure to a region of low pressure and recognize the effects of air pressure on weather.
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Instruction Module	Climate: In this Instruction Module, students learn the difference between climate and weather. They learn how meteorologists collect weather data over several years to determine the climate of a place. They also learn about global warming and some of the possible consequences.
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Student Review	The Sun and Weather Weather and the Climate
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Quiz	[SC.5.E.7.3] Factors Affecting Weather
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Interactivity	Weather vs Climate
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Activity	Determining Wind Direction: Students work in cooperative groups to build a simple nephscope to determine wind direction and use the nephscope to record wind direction for at least 10 days. From
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their observations students will analyze data and infer how wind direction helps in predicting the weather.

Weather or Climate?: Students will be observing, collecting, and graphing weather data for their area over the period of a month and answering questions about weather and climate.

Benjamin Franklin: Meteorologist: In this student research project, students will research one of the weather related discoveries made by Benjamin Franklin that impacted our knowledge of weather and weather forecasting. They will prepare a presentation to present their findings to the class and explain how this has impacted our knowledge of weather.

Glossary

Weather or Climate?

Journal

Journal 1 - Weather or Climate?

Reader

Weather

Topic 3: Precipitation and Weather Patterns

Description: [SC.5.E.7.4; SC.5.E.7.5] In this topic students will learn to distinguish among the various forms of precipitation; they understand how scientists collect weather data and identify patterns that determine the climate of different environments.

Instruction Module

Precipitation: In this Instruction Module, students learn about the different forms of precipitation such as rain, sleet, and snow. They learn that tools such as the rain gauge and the snow gauge help to measure the amount of precipitation in an area. They recognize the effects of an excess or of a shortage of precipitation.

Instruction Module

Patterns in Weather: In this Instruction Module, students learn that meteorologists use information from satellite maps to study weather patterns and predict weather conditions. They also learn how data collected and represented in charts and tables help to identify weather patterns.

Instruction Module

Climate: In this Instruction Module, students learn the difference between climate and weather. They learn how meteorologists collect weather data over several years to determine the climate of a place. They also learn about global warming and some of the possible consequences.



Student Review	What is Weather? Air Temperature Wind
Quiz	[SC.5.E.7.4] Precipitation and Weather [SC.5.E.7.5] Weather Patterns and Environment [SC.5.E.7.6] Climate Zones
Interactivity	Weather vs Climate Watch Out for the Weather!
Activity	<p>Recording the Weather: Students will work in a small group to construct a simple wind vane. They will use this tool, along with a rain gauge to observe and record the weather over a period of time. Students will recognize that measuring and recording wind speed can be useful to predict what the weather will be like.</p> <p>Expository - Weather: Measuring the Wind: This expository reading passage focuses on how scientists use tools to investigate the natural world. It introduces students the tools meteorologists use to measure the speed and direction of wind in order to monitor daily weather conditions and make predictions about future weather conditions. It is important that scientists document their findings, recording their observations, so they can study the data to identify patterns used to make predictions.</p>
Glossary	Precipitation and Weather Patterns
Journal	Journal - Weather
Reader	Weather Climate Tidal Waves Climate Zone



Big Idea 8: Properties of Matter

Topic 1: Solids, Liquids, and Gases

Description: [SC.5.P.8.1] In this topic students will recognize the properties of solids, liquids, and gases, and learn that these properties can be used to classify matter. They learn how adding or removing heat to matter affects its state.

Instruction Module **Classification of Matter:** In this Instruction Module, students observe and learn that matter has physical properties that can help to classify matter. They learn that matter can be classified based on its physical state and recognize the properties of solids, liquids, and gases.

Instruction Module **Melting, Freezing, and Boiling Points:** In this Instruction Module, students observe and learn that adding or removing heat results in an increase or decrease in temperature. They learn that water changes state from solid to liquid at 0 °C (melting point) and from liquid to gas at 100 °C (boiling point). They also learn that the freezing point of water is the same as its melting point.

Student Review Mass
Melting, Freezing, and Boiling Points

Quiz [SC.5.P.8.1] Solids, Liquids, Gases

Interactivity Hot or Not?

Glossary Solids, Liquids, and Gases

Journal Journal 1 - Physical Properties of Matter
Journal 2 - Physical Properties of Matte

Reader Atoms, Elements, Compound and Mixtures
All That Glitters

Topic 2: Mixtures and Solutions

Description: [SC.5.P.8.2; SC.5.P.8.3] In this topic students will learn about mixtures and solutions, identify materials that dissolve in water, and understand that mixtures can be separated based on the physical properties of their parts.



Instruction Module	The Mixed and the Pure: In this Instruction Module, students observe various examples of mixtures and identify the substances that make up each mixture. They understand the difference between mixtures and pure substances. They recognize that mixture can be physical combinations of solids, liquids, and gases.
Instruction Module	Heterogeneous and Homogeneous Mixtures: In this Instruction Module, students observe examples of heterogeneous and homogeneous mixtures and understand the difference. They learn that solutions are homogeneous mixtures.
Instruction Module	Solutions: In this Instruction Module, students learn that solutions are homogeneous mixtures. They observe examples of solutions and understand that the size of the ingredients, a physical property, changes. They learn that alloys are solutions of two or more metals.
Instruction Module	Using Properties to Separate Mixtures: In this Instruction Module, students observe examples of mixtures and understand that the components retain most of their physical properties. They learn that mixtures can be separated using tools based on the physical properties of the components.
Student Review	Separate the Mixtures Identifying Solutions Solution Heterogeneous Mixtures
Quiz	[SC.5.P.8.2] The Dissolving Process [SC.5.P.8.3] Separating Mixtures
Interactivity	Mix Your Cake and Eat It Too: In this interactivity, students observe how different ingredients are mixed together to make the batter for a cake, and identify whether the mixture is heterogeneous or homogeneous at each stage during the process.
Simulation	Properties Of Mixtures: In this Simulation, students conduct an experimental investigation to determine if different materials, when mixed with water, will maintain their size (which is a physical property) or dissolve.
Activity	Comparing Mixtures and Solutions: This review activity provides an opportunity for students to define a mixture and solution and then compare/sort different examples into the appropriate column(s). Identifying Mixtures and Solutions: Students observe the physical properties of sand, salt, and sugar in this investigation. Students



observe what happens when these solid substances are mixed with water and determine if a solution is formed.

The Ingredients of Solutions: After viewing the instruction module Mixtures and Solutions, students will work in small groups to conduct an investigation to identify and describe the changes that occur to the physical properties of the ingredients of a solution when it forms.

Glossary	Mixtures and Solutions
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Journal	Journal 1 - Mixtures and Solution
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Reader	Danger in the Grain Elevator Recycling: A Process of Sorting
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Topic 3: Elements and Compounds

Description: [SC.5.P.8.4] In this topic students will learn that elements are the simplest form of matter; each element is composed of parts too small to be seen, called atoms; two or more elements combine to form a compound.

Instruction Module	What are Elements? : In this Instruction Module, students learn that elements are the simplest form of matter and that about 117 elements have been discovered so far. They learn the names of some elements such as oxygen, hydrogen, nitrogen, and, carbon that make up the solid part of Earth, the ocean, the atmosphere, and living matter.
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Instruction Module	Identifying Elements: In this Instruction Module, students learn that an element can be identified by its properties. They learn that the atoms of each element have a unique structure that determines its properties. They also learn that each element is represented by a chemical symbol.
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Instruction Module	What are Compounds? : In this Instruction Module, students learn that two or more elements combine to form a compound and that the smallest unit of a compound is a molecule. They learn that compounds are represented by chemical formulas and can only be separated by chemical process such as electrolysis.
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Student Review	Introducing Elements Common Elements on Earth What are Compounds?
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Quiz [SC.5.P.8.4] Elements and Atoms

Interactivity	The Substance Detector: In this interactivity, students classify a given substance as an element or a compound based on its symbol/chemical formula. They observe the substance undergoing a change and recognize it as a physical or a chemical change.
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Glossary Elements And Compounds

Reader	Atoms, Elements, Compound and Mixtures All That Glitters
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Topic 4: Measuring Physical Properties

Description: [SC.4.P.8.1] In this topic students learn that matter has properties such as temperature, mass, volume, density, attraction to magnets, and hardness, that can be measured and compared.

Instruction Module	What is Matter?: In this Instruction Module, students are introduced to the term “Matter”. Students learn that matter can be classified into solids, liquids, and gases. They observe and compare the physical properties of the three states of water. They observe the example of water and recognize that matter can change from one state to another.
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Instruction Module	Adding and Removing Heat: In this Instruction Module, students are introduced to the processes that lead to changes in the state of matter. Students learn that adding or removing heat from matter causes the molecules in matter to gain or lose energy. They learn that temperature is a measure of how fast the molecules in matter are moving and is measured with a thermometer.
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Instruction Module	Measuring Mass: In this Instruction Module, students learn that mass refers to the amount of matter in an object and can be measured with a triple beam balance.
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Instruction Module	Volume: In this Instruction Module, students learn that the volume of an object is the amount of space occupied by it. They observe and infer that two objects cannot occupy the same space at the same time and learn how this property is used to measure the volume of irregular solids using a graduated cylinder. They also learn to use formulas to find the volume of a rectangular prism.
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Instruction Module	Magnetic Properties: In this Instruction Module, students are introduced to the magnetic properties of matter. They learn that magnets attract objects made of certain metals like iron. They observe and understand that like poles of magnets repel while unlike poles attract each other.
Student Review	States of Matter Measuring Mass Magnetic Properties
Quiz	[SC.4.P.8.1] Measuring Physical Properties
Interactivity	Float or Sink: In this Interactivity, students “drop” various objects in water and observe them as they float or sink. Based on their observations, they decide whether or not the object is denser than water.
Simulation	Temperatures Effect On Magnetic Force: In this simulation students will determine how temperature affects the force of a magnet by setting up a simple investigation.
Activity	Measuring the Temperature of Pure Water and Salt Water: Students will work with a partner to conduct an investigation to determine if salt water or pure water will reach a boiling point in a shorter time. Expository - Measuring, Comparing, and Contrasting Sizes: This expository introduces students to standard and non-standard units of measure, gives examples of how the human anatomy has been used to measure, and explains why a consistent measuring tool is important, particularly in science.
Glossary	Measuring Physical Properties
Journal	Journal - Measuring Physical Properties
Reader	The Blackbird



Topic 5: Physical Properties of Matter

Description: [SC.3.P.8.1; SC.3.P.8.2; SC.3.P.8.3] In this topic, students will learn that matter has observable properties such as temperature, mass, volume, density, and hardness.

Instruction Module **Identifying Matter:** In this Instruction Module students understand that matter is anything that has mass and occupies space. They recognize that the characteristics or properties of matter can be used to identify matter.

Instruction Module **Matter - Measuring Mass and Volume:** In this Instruction Module, students learn that matter is anything that has mass and occupies space. They learn how a pan balance can be used to compare and measure mass. They also learn how to use graduated cylinder to find the volume of an irregular shaped object.

Instruction Module **Understanding Mass:** In this Instruction Module students are introduced to the concept of mass; they recognize that objects that are of different sizes may have the same mass. Students understand that mass can be compared and measured using a pan balance or a triple beam balance.

Instruction Module **Float or Sink – Density:** In this Instruction Module, students are introduced to the concepts of density. Students learn to explain why an object floats or sinks in water, using the concept of density.

Instruction Module **Hardness of Matter:** In this Instruction Module, students are introduced to the term “hardness”. Students learn how to use the scratch test to test and compare hardness of objects made of different kinds of matter.

Instruction Module **Hot or Cold:** In this Instruction Module, students are introduced to the concept of temperature. Students learn how a thermometer is used to measure and compare temperatures.

Student Review Understanding Mass
Float or Sink
Temperature



Quiz	[SC.3.P.8.2] Mass and Volume of Solids and Liquids [SC.3.P.8.1] Measuring Temperature [SC.3.P.8.3] Materials and their Properties
Interactivity	Physical Properties: In this interactivity, students first identify the tools or measuring devices used to measure temperature and mass. Then, they read the temperature or compare masses.
Simulation	Matter and Mass: In this simulated lab experience, students will predict and measure the mass of objects that have the same volume but are made out of different materials.
Activity	Sink or Float: Students will work with a partner activity, you will work with a partner to predict and test various objects to determine if they are less dense than water (will float) or more dense than water (will sink). They will record their predictions and results of the investigation. Measuring Water Temperature: Students will work with a partner and apply their knowledge of measuring temperature to measure and compare the temperatures of water in three different beakers, using a Celsius thermometer.
Glossary	Physical Properties of Matter
Journal	Journal - Observing Physical Properties
Reader	How My Parents Torture Me at Meals

Big Idea 9: Changes in Matter

Topic 1: Physical and Chemical Changes

Description: [SC.5.P.9.1] In this topic students will learn to identify and describe physical and chemical changes.



Instruction Module **Physical and Chemical Changes:** In this Instruction Module, students will observe and recognize the difference between a physical change and a chemical change.

Quiz [SC.5.P.9.1] Effect of Temperature on Changes

Interactivity **The Change Detector:** In this interactivity, students observe various changes and identify each as a physical change or a chemical change, based on whether or not a new substance is formed.

Glossary Physical and Chemical Changes

Journal 1 Journal 1 - Physical and Chemical Changes

Reader New Foam Pushes Up Concrete
Physical and Chemical Change

Topic 2: Chemical Changes

Description: [SC.4.P.9.1] In this topic students will learn to recognize changes that result in materials with different characteristics and identify evidence of chemical changes.

Instruction Module **Evidence of Chemical Changes:** In this Instruction Module, students understand that a chemical change results in the formation of new substances. They learn that a change in color, a change in temperature, the release of a gas, the formation of a precipitate, and a change in color are evidence of chemical changes.

Student Review Evidence of Chemical Changes
Chemical Reactions and Equations

Quiz [SC.4.P.9.1] Changes in Material

Glossary Chemical Change



Journal Journal 1 - Elements and Compounds

Reader New Foam Pushes Up Concrete

Topic 3: States of Matter

Description: [SC.3.P.9.1] In this topic, students will learn that matter can exist as solids, liquids, or gases, and describe the changes water undergoes when it changes state through heating and cooling.

Instruction Module

Solids, Liquids, and Gases: In this Instruction Module, students are presented with examples of solids, liquids, and gases. Students observe and compare their physical properties including shape and volume, and arrive at a generalization of their physical properties. They also learn that the differences in state are a result of the differences in the arrangement of particles of matter in them.

Instruction Module

Changing States of Water: In this Instruction Module, students observe the changes in states of water when heat is added to it or removed from it. They learn how adding or removing heat affects the particles of matter in water, and results in change of state.

Student Review

Solids, Liquids, and Gases
Changing States of Water

Quiz

[SC.3.P.9.1] Changing States of Water

Interactivity

Matter Sorter: In this Interactivity, students identify and classify given materials as solids, liquids, or gases, based on their physical properties.

Activity

States of Matter Chart and Venn Diagram: While viewing the instruction module, States of Matter, students will use the information presented and a chart to record and compare the physical properties of solids, liquids and gases. After color-coding similarities and differences in their properties, the information will be used to complete a Venn Diagram.

Glossary

States of Matter



Journal

Journal - States of Matter

Reader

Foggy Day

Big Idea 10: Forms of Energy

Topic 1: Energy Forms and Transformations

Description: [SC.5.P.10.1; SC.5.P.10.2] In this topic students will learn to describe some basic forms of energy and recognize that energy can be changed from one form to another.

Instruction Module

Heat and Light Energy: In this Instruction Module, students observe and recognize that the Sun provides us with heat and light energy. They identify other sources of light energy and heat energy. They learn that light energy helps us to see, and heat energy helps us to cook food and keep ourselves warm.

Instruction Module

Mechanical Energy and Sound: In this Instruction Module, students observe examples and recognize that objects have energy due to their motion or their position. They learn that this energy is called mechanical energy. They also learn that sound is a form of mechanical energy and is produced by vibrations of matter and travels through particles of matter.

Instruction Module

Energy Transformations: In this Instruction Module, students observe various examples of energy transformations and learn that energy is neither created nor destroyed but can change from one form to another.

Instruction Module

Sound Energy: In this Instruction Module, students observe and infer that sound is produced by mechanical vibrations and travels as sound waves. They learn that sound needs matter to travel through and travels fastest through solids. They also learn that echoes are a result of the bouncing of sound waves.

Instruction Module

Thermal Energy: In this Instruction Module, students learn that that the energy of the moving particles of matter is called thermal energy, and that temperature is a measure of how fast the particles of matter are moving. They learn about the process of heat transfer including conduction, convection, and radiation. They also learn that heat conductors are materials that allow heat to pass through them while heat insulators are materials that do not allow heat to pass through them easily.



Student review	Heat, Light, and Electrical Energy Mechanical Energy and Sound Sound Energy Thermal Energy
Quiz	[SC.5.P.10.1] Forms of Energy [SC.5.P.10.2] Energy Causes Change
Simulation	Exploring The Uses Of Mechanical Energy: In this Simulation, students conduct an experimental investigation to explore how the energy in a twisted rubber band used in a spool racer is transformed into mechanical energy.
Activity	Exploring Uses of Energy: Printable activities include “hands on” lab investigations, project-based and STEM activities, as well as traditional paper and pencil type activities. They can be printed and assigned to small groups of students for collaborative group learning or assigned to individual student. The activities are designed to promote inquiry, to reinforce learning, to extend learning and to assess learning. Converting Thermal Energy to Motion: Students will work with a lab partner during this investigation. They will observe how energy can be converted from one form to another. Students will determine how converting energy allows energy to be used to do different types of work.
Glossary	Energy Forms and Transformations
Journal	Journal 1 - Energy Conversions
Readers	Refraction at Water's Edge Refraction of Light



Topic 2: Electricity

Description: [SC.5.P.10.3; SC.5.P.10.4] In this topic students will learn about the forces between electrically charged objects and recognize that electrical energy can be transformed into heat, light, sound, and energy of motion.

Instruction Module **Electricity:** In this Instruction Module, students are introduced to static electricity. Students learn that charges are of two type - positive and negative; like charges repel each other while unlike charges attract each other. They also learn that almost all electrical appliances use current electricity, which is charges in motion.

Instruction Module **What is Electricity? :** In this Instruction Module, students learn that electrical devices work on electric current, which is a flow of electric charges. They understand that the flow of electric current requires a source of energy and a closed continuous path called an electric circuit. They recognize instances where electrical energy is converted to other useful forms of energy such as light, heat, and sound.

Instruction Module **Electromagnets:** In this Instruction Module, students learn that electro magnets are temporary magnets. They observe and learn to make an electromagnet. They recognize the use of an electromagnet in a junkyard crane.

Student Review What is Electricity?
Electromagnets

Quiz [SC.5.P.10.4] Electrical to Other Forms of Energy
[SC.5.P.10.3] Forces between Charged Object

Interactivity **Circuit Fixer:** In this interactivity, students identify missing circuit components required to complete the given open circuits.

Simulation **Investigating Circuits:** In this Simulation, students conduct an experimental investigation to compare how electric current flows through a series and parallel circuit.



Activity	<p>Electrical Circuits – Electromagnet: Students will work with a partner to construct a simple electromagnet, observing how many of the same objects the electromagnet is able to lift. After testing the strength of the electromagnet, the students will redesign the electromagnet to increase its strength.</p> <p>Design a Switch for an Electric Circuit: After viewing the instruction module, Electricity, student will work in small groups to construct a simple circuit, and design a switch that can be used to open and close the circuit at will.</p> <p>Using an Electrical Circuit to Pop a Balloon: In this Activity, students demonstrate that the flow of electricity in circuits requires a complete path through which an electric current can produce enough heat to pop a balloon.</p>
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Glossary	Electricity
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Journal	Journal 1 – Electricity Journal 2 - Electricity
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Reader	Static Electricity on a Grand Scale
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Topic 3: Transfer of Heat

Description: [SC.4.P.11.1; SC.4.P.11.2] In this topic students will learn that heat is transferred from a hot object to a cold object, and identify conductors and insulators of heat.

Instruction Module	<p>Heat Conductors and Insulators: In this Instruction Module, students learn about conductors and insulators of heat. They observe various examples of conductors and insulators of heat, and recognize their uses.</p>
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Instruction Module	<p>Heat Transfer by Conduction: In this Instruction Module, students learn that heat is transferred from an object at a higher temperature to an object at a lower temperature until both objects are at the same temperature. They also learn that conduction is the process in which heat is transferred through a substance from one particle to another and mostly occurs in solids.</p>
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Student Review	Heat Conductors and Insulator Heat Transfer by Conduction
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Quiz	[SC.4.P.11.1] Heat Flow [SC.4.P.11.2] Materials that Conduct Heat
Simulation	Heat and Heat Transfer: In this simulation, students set the temperatures of two materials whose containers are in contact with each other, observe the changes in temperature of both after an interval of time, and arrive at a conclusion about the direction in which thermal energy moves.
Activity	Conductors and Insulator: Students will work with a partner to investigate why some materials are good conductors of heat energy, while others are good insulators. Students will determine what evidence showed that heat energy was conducted from one material to another.
Glossary	Transfer of Heat
Journal	Journal 1 - Heat Transfer
Reader	Air is to Insulator

Topic 4: Energy

Description: [SC.3.P.10.1; SC.3.P.10.2] In this topic, students will learn to identify some basic forms of energy such as light, heat, mechanical, sound, and electrical.

Instruction Module **What is Energy?** : In this Instruction Module, students observe examples of situations where energy is used and understand the meaning of energy. They learn that energy exists in different forms.

Instruction Module **Energy Forms – Light and Heat:** In this Instruction Module, students are introduced to heat and light as forms of energy. They learn that light energy helps us to see and plants use light energy during photosynthesis. They understand that light bends as it passes through transparent objects and is blocked by opaque objects. They also learn that heat or thermal energy is the energy of the moving particles of matter.

Instruction Module **Energy of Moving Objects:** In this Instruction Module, students are introduced to examples of mechanical energy. Students observe various examples and infer that moving objects have mechanical energy. They also recognize that objects can have stored mechanical energy because of their position.



Instruction Module	<p>What is Sound? : In this Instruction Module, students are introduced to sound. Students learn how sound is produced, how it travels, and how our ear helps us to hear sound. They also learn that sound can travel through solids, liquids, and gases but cannot travel in space.</p>
Instruction Module	<p>What is Electricity? : In this Instruction Module, students learn that electrical devices work on electric current, which is a flow of electric charges. They understand that the flow of electric current requires a source of energy and a closed continuous path called an electric circuit. They recognize instances where electrical energy is converted to other useful forms of energy such as light, heat, and sound.</p>
Student Review	<p>What is Electricity? Energy Forms – Light and Heat Energy of Moving Objects What is Sound?</p>
Quiz	[SC.3.P.10.1] Basic Forms of Energy
Interactivity	<p>Jamie In The Maze: In this interactivity, students identify the correct form of energy that they need to use to perform a task, as they move through a maze.</p>
Activity	<p>Energy: Observing Sound: Students will work with a partner to investigate if it is possible to see sound. The students will use materials to test if they can observe sound waves and if the vibration causes pieces of sugar/sand to move.</p> <p>Sound Energy: Make a Speaker: Students will work in a small group to build a speaker using an electromagnet and a plastic container. Students will test the speaker and determine if adding an additional magnet increases the volume of the speaker.</p>
Glossary	Energy
Journal	Journal - Energy Journal - Electricity
Reader	Wind farms



Topic 5: Light

Description: [SC.3.P.11.2] In this topic, students will learn to observe examples of energy transformations and explain them.

Instruction Module **Light and Matter:** In this Instruction Module students learn about light as a form of energy, its sources, and how it travels. They observe various examples and identify transparent, translucent, and opaque materials.

Instruction Module **Reflection and Refraction of Light:** In this Instruction Module, students learn that light rays reflect off surfaces. They learn the difference between regular reflection and diffuse reflection. They also understand that light rays refract when they travel from one medium into another, and recognize instances of refraction.

Instruction Module **Lenses and Their Uses:** In this Instruction Modules, students learn how light rays refract when they travel through concave and convex lenses. They understand how telescopes make distant objects appear closer by using a combination of lenses to magnify the image. They also understand the role of the lens in the human eye and a camera.

Student Review Light and Matter
Reflection and Refraction of Light

Quiz [SC.3.P.10.4] Reflection, Refraction, Absorption
[SC.3.P.10.3] Light

Activity **The Properties of Light:** Students will work with their lab partner to investigate some of the properties of light. They will explore and record what light looks like as it travels through the spaces between the teeth of a comb, as well as what happens when light reflects off a mirror.

Light Reflection and Different Surfaces: Students will work with their lab partner to investigate the property of light that allows it to be reflected when it interacts with certain types of matter. They will observe how light interacts with different surfaces, including both the shape and texture of the surface.

Why Rainbows Form: Students will investigate Sir Isaac Newton's study on white light. Using a computer to research prisms, white light, rainbows, and how Newton experimented with these materials, students will then investigate and explain why rainbows form.



Exploring the Properties of Light: In this activity, student rotate through a series of centers and collect information about light energy including: refraction, magnification, and prisms.

Glossary

Light

Journal

Journal 1 – Light
Journal 2 - Light

Reader

Refraction at Water's Edge
How Light Affects Sight
Strike, or Do I Mean Reflection?

Topic 6: Energy Transformations

Description: [SC.3.P.11.2] In this topic, students will learn to observe examples of energy transformations and explain them.

Instruction Module

Energy Transformations: In this Instruction Module, students observe and recognize examples of energy transformations such as chemical energy in a flashlight battery changing to electrical energy and then to light energy, and kinetic energy changing to thermal energy. They learn about the Law of Conservation of Energy.

Student Review

Energy Transformation

Quiz

[SC.3.P.11.2] Heat Produced by Rubbing

Glossary

Energy Transformations

Journal

Journal - Energy Transformations

Reader

One Old Lightbulb



Topic 7: Weather - The Role of the Sun

Description: [SC.3.E.6.1] In this topic students will learn that the energy from the Sun warms the surface of Earth and the air above it, causing weather changes, and understand that variations in temperatures across Earth are the result of the uneven heating.

Instruction Module **What is Weather?:** In this Instruction Module, students are introduced to the concept of weather. Students learn that the Sun warms the surface of Earth and the air above it, causing the weather changes on Earth. They recognize how weather affects our daily activities.

Instruction Module **Air Temperature:** In this Instruction Module, students are introduced to air temperature. Students learn how a thermometer is used to measure air temperature. They recognize that the Sun does not heat Earth's surface evenly, resulting in variations in temperatures across Earth.

Student Review Air Temperature

Quiz [SC.3.E.6.1] Radiant Energy from the Sun

Glossary Weather - The Role of the Sun

Reader Earth's Energy Budget

Big Idea 11: Energy Transfer and Transformations

Topic 1: Electrical Circuits

Description: [SC.5.P.11.1; SC.5.P.11.2] In this topic students will learn that the flow of electricity requires a closed circuit and identify materials that conduct electricity and those that do not. They are introduced to magnetic fields, electrical fields, and electromagnetic fields.



Instruction Module	Electrical Circuits: In this Instruction Module, students are introduced to electrical circuits. Students learn that the flow of electricity requires a closed path and a source of energy such as a battery. They understand how a switch helps to make or break a circuit and learn the difference between conductors and insulators of electricity.
Instruction Module	Electricity and Magnetism: In this Instruction Module, students are introduced to magnetic fields, electrical fields, and electromagnetic fields. Students learn how to create an electromagnet and understand how electromagnets differ from permanent magnets. Students also learn how magnets are used to produce electricity.
Student Review	Electrical Circuits Electromagnetism
Quiz	[SC.5.P.11.1] Electrical Circuits [SC.5.P.11.2] Materials that Conduct Electricit
Simulation	Conductor or Insulator: In this simulation students will test different materials to find out whether they are electrical conductors or insulators.
Activity	Electrical Circuits – Electromagnets: Students will work with a partner to construct a simple electromagnet, observing how many of the same objects the electromagnet is able to lift. After testing the strength of the electromagnet, the students will redesign the electromagnet to increase its strength. Design a Switch for an Electric Circuit: After viewing the instruction module, Electricity, student will work in small groups to construct a simple circuit, and design a switch that can be used to open and close the circuit at will.
Glossary	Electrical Circuits
Journal	Journal - Electrical Circuits
Reader	Electric Lighting: History and Function



Big Idea 13: Forces and Changes in Motion

Topic 1: Effects of Force

Description: [SC.5.P.13.1; SC.5.P.13.2; SC.5.P.13.3; SC.5.P.13.4] In this topic students identify forces such as pushes and pulls, gravity, and friction; they learn about balanced and unbalanced forces and recognize their effects on an object.

Instruction Module **Force and Motion:** In this Instruction Module, students observe and identify the various forces that can act on a ball during a baseball game. They recognize the effects of these forces.

Instruction Module **Speed and Acceleration:** In this Instruction Module, students are introduced to speed and acceleration. Students learn that speed is the distance travelled by an object in a unit of time. They understand that acceleration refers to a change in speed and/or direction of motion and is caused by a force acting on the object.

Instruction Module **Effects of Force and Mass on Motion:** In this Instruction Module, students observe examples and understand that an object at rest travels a greater distance when a greater force is used to move it. They also learn that an object of greater mass requires a greater force to move it through a certain distance as compared to an object that has less mass.

Instruction Module **Gravity and Weight:** In this Instruction Module, students learn that the gravitational force between two objects depends on the mass of the objects. They compare the weights of an object on Earth, on the Moon, and on Jupiter, and infer that weight depends on the gravitational force experienced by it.

Instruction Module **Friction – An Opposing Force:** In this Instruction Module, students learn that friction is a force that opposes the motion of an object. They observe an experiment and understand that friction depends on the nature of surfaces in contact.

Instruction Module **Balanced and Unbalanced Force:** In this Instruction Module, students learn that forces have a magnitude and direction. They observe examples of balanced and unbalanced forces and infer about their effects on an object. They learn that an object at rest will move only when the forces acting on it are not balanced.

Student Review Force and Motion
Speed and Acceleration
Effects of Force and Mass on Motion
Gravity and Weight
Friction – An Opposing Force



Quiz	[SC.5.P.13.1] Effects of Force [SC.5.P.13.2] Force Changes Motion [SC.5.P.13.3] Mass and the Effect of Force [SC.5.P.13.4] Balanced Forces
Interactivity	Types of Forces: In this Interactivity, students observe the movement of an object and identify the force that causes the changes in motion.
Simulation	Testing The Effects Of Force – Friction: In this Simulation, students conduct an experiment that investigates the effect of friction on the speed of a car rolling down a ramp. The Effect of Force on an Object: Students will design an experiment to test the effects of force on an object. They will determine how different amounts of force affect the motion of an object.
Activity	How the Direction of the Force Affects the Motion of an Object: After viewing the instruction module, Effects of Force, students will design their own experiment that investigates how the direction of the force affects the motion of an object. The Effect of Mass on the Motion of an Object: After viewing the instruction module, Effects of Force, students will design their own experiment that investigates how changing the mass of an object affects its motion when acted on by the same amount of force.
Glossary	Effects of Force
Journal	Journal 1 - Effects of Force
Reader	Eddie the Eagle: A Battle with Forces

Topic 2: A Magnet's Force

Description: [SC.4.P.8.4] In this topic students will observe and describe that magnets can attract magnetic materials, and that unlike poles of a magnet attract each other while like poles repel.

Instruction Module **Magnetic Properties:** In this Instruction Module, students are introduced to the magnetic properties of matter. They learn that magnets attract objects made of certain metals like iron. They observe and understand that like poles of magnets repel while



unlike poles attract each other.

Instruction Module	A Magnet's Force: In this Instruction Module, students observe examples and understand that magnets exert a force of attraction on certain materials such as iron. They also learn that like of poles of two magnets repel each other while unlike poles attract each other.
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Student Review Magnetic Properties

Quiz	[SC.4.P.8.4] A Magnet's Force
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Glossary A Magnet's Force

Reader	Magnets and Wind in a Perfect World
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Topic 3: Gravity and the Solar System

Description: [SC.3.E.5.4] In this topic, students will understand that the Sun's gravitational pull holds Earth and the other planets in their orbits around the Sun, and describe, compare, and contrast gravity and magnetic force.

Instruction Module **Orbits and Rotation:** In this Instruction Module, students learn that Earth rotates on its axis, causing the day and night cycle. They also understand that the Sun's gravitational pull holds Earth and the other planets in their orbits around the Sun.

Instruction Module	Gravity and Magnetic Force: In this Instruction Module, student learn that both gravity and magnetic forces are similar because they are invisible forces that can pull objects. They also learn the differences between the two forces. They understand that while gravity pulls all objects, magnetic forces pull magnetic materials, and that magnets can also push other magnets depending on the direction in which they point.
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Student Review Orbits and Rotation
Gravity and Magnetic Force



Quiz	[SC.3.E.5.4] Gravity
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Glossary Gravity and the Solar System

Reader	Gravity on the Road
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Topic 4: Force and Motion

Description: [SC.4.P.12.1; SC.4.P.12.2] In this topic students will learn about the effect of force on the motion of an object, and describe and compare speeds of objects.

Instruction Module **Speed and Acceleration:** In this Instruction Module, students are introduced to the concepts of speed and acceleration. Students learn that speed is the distance travelled by an object in a unit of time. They understand that acceleration refers to a change in speed and/or direction of motion and is caused by a force acting on the object.

Instruction Module **Force and Motion:** In this Instruction Module, students observe and identify the various forces that can act on a ball during a baseball game. They recognize the effects of these forces.

Student Review Force and Motion
Speed and Acceleration

Quiz	[SC.4.P.12.2]Speed, Distance, and Time [SC.4.P.12.1] Objects in Motion
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Glossary Force and Motion



Reader	Speed and Direction Need for Speed Speed and Motion Describing Motion
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Big Idea 14: Organization and Development of Living Organisms

Topic 1: The Human Body System

Description: [SC.5.L.14.1; SC.5.L.14.2] In this topic students will learn to describe the various organs and organ systems in the human body.

Instruction Module **Respiratory and Circulatory Systems:** In this Instruction Module, students learn about the structural components of the respiratory and the circulatory systems. They understand that these systems are interconnected for the transport of gases in the human body. They understand how the respiratory system helps in the exchange of gases and the circulatory system helps in the transport of gases within the body.

Instruction Module **Skeletal and Muscular Systems:** In this Instruction Module, students learn how bones and muscles work together to facilitate movement. They learn that muscles are of two main types, namely voluntary and involuntary muscles. They learn that the region where two or more bones meet is called a joint and learn about the different types of joints in the human body.

Instruction Module **Digestive and Excretory Systems:** In this Instruction Module, students learn about the different components of the digestive system and how they aid in digestion. They also learn about the kidneys in the excretory system and how they work to eliminate wastes in the bloodstream.

Instruction Module **Integumentary System:** In this Instruction Module, students learn that the integumentary system is made of the skin, hair and nails. They learn about the different structural components of the skin and the functions of these components.

Instruction Module **Nervous System:** In this Instruction Module, students Learn about the components of the nervous system and their functions. They also understand how nerves carry electrical messages or impulses to and from the brain.

Instruction Module **Endocrine and Reproductive Systems:** In this Instruction Module, students learn that the endocrine system is made of structures called glands that release hormones to regulate some important functions in the body. They learn about the functions of some



	important endocrine glands. They also learn about the structural components of the male and female reproductive systems and their functions.
Student Review	Respiratory System Circulatory System Skeletal and Muscular Systems Digestive and Excretory Systems Integumentary System Nervous System Endocrine and Reproductive Systems
Quiz	[SC.5.L.14.1] Organs in the Human Body [SC.5.L.14.2] Comparing Organs and Structures
Interactivity	Dr. Fix it: In this interactivity, students identify organs that are missing from an organ system and drag and drop the right organ to its right location in the organ system.
Activity	Human Body Systems: After viewing the instruction module, Human Body Systems, students will use a diagram of the human body to identify systems and their functions.
Glossary	The Human Body Systems
Journal	Journal - Human Body System

Topic 2: Parts of a Plant

Description: [SC.3.L.14.1] In this topic, students will learn to identify and describe the structures in plants such as root, stem, leaves, and flowers, and explain their functions.

Instruction Module	Parts of a Plant: In this Instruction Module, students learn to identify the various parts of a plant, including the root, stem, leaf, flower, fruit, and seed. Students also learn how each plant part helps the plant by performing individual functions.
Quiz	[SC.3.L.14.1] Plant Structures



Interactivity **Backyard Bugs:** In the interactivity, students learn the positions of the various plant parts by placing backyard bugs on the different parts of plants. Students also learn how each plant part helps the bugs in different ways, be it providing them with shelter or food.

Glossary Parts of a Plant

Reader Plants Get Hungry, Too!

Topic 3: Plants - Response to Stimuli

Description: [SC.3.L.14.2] In this topic, students will learn to recognize and describe how plants response to stimuli.

Instruction Module **Forces Affect Plant Growth:** n this Instruction Module, students learn that certain forces acting on plants affect their growth. They understand how plants respond to stimuli such as gravity and light.

Student Review Forces Affect Plant Growth

Quiz [SC.3.L.14.2] Plants - Response to Stimuli

Interactivity **Gravity and Plants:** In this interactivity, students observe the direction of growth of roots and stems of plants and decide the direction of the force of gravity. They identify the parts of the plant that exhibit positive geotropism or negative geotropism.

Activity **Expository - Structure and Function:** This expository reading passage provides information on the basic parts of plants and their functions. Students use the information to identify basic parts of collected plants and to recognize their functions.

Glossary Plants - Response to Stimuli

Readers Plants Get Hungry, Too!
Plants in Space



Topic 4: Classifying Plants and Animals

Description: [SC.3.L.15.1; SC.3.L.15.2] In this topic, students will learn to classify plants and animals into major groups.

Instruction Module **Classifying Animals:** In this Instruction Module, students learn that an animal can either be a vertebrate or an invertebrate based on the presence of a backbone. They learn that vertebrates can further be classified into five major groups namely fish, amphibians, reptiles, birds, and mammals. They learn about the important characteristics of each of these groups and also learn to compare animals in these five groups

Instruction Module **Classifying Plants:** In this Instructional Module, students learn how plants are classified based on their physical characteristics into different groups. They learn that all plants can be classified as vascular and non-vascular plants. They learn that vascular plants can further be divided into the seedless and seed producing plants. They recognize that seed producing plants are classified into gymnosperms and angiosperms and that angiosperms are further divided into monocots and dicots. Students learn to compare plants from different group based on their external characteristics and also learn to distinguish between monocots and dicots based on some salient external characteristics.

Quiz [SC.3.L.15.1] Classifying Animals
[SC.4.L.16.1] Reproduction in Flowering Plant
[SC.3.L.15.2] Classifying Plants

Interactivity **Find n Fit:** In this interactivity students use descriptions of animals to sort them into invertebrate and vertebrate groups. They further classify the vertebrates into the five vertebrate groups based on their descriptions and external characteristics.
Plant in Place: In this interactivity, students use a graphical organizer to sort five different types of plants into separate categories based on their external characteristics

Glossary Classifying Plants and Animals

Journals Journal - Classifying Animals
Journal - Classifying Plants



Reader

Ancient Plants

Big Idea 15: Diversity and Evolution of Living Organisms

Topic 1: Changes in Ecosystems

Description: [SC.5.L.15.1] In this topic students will learn how environments can change, and recognize the effects of these changes on the ecosystem.

Instruction Module	How Organisms Change Their Ecosystems: In this Instruction Module, students learn how an organism can make important changes to its ecosystem using the example of the prairie dog in the Backland Prairie Ecosystem. They also understand how these changes benefit other organisms in the same ecosystem.
Instruction Module	Human Impacts on Ecosystems: In this Instruction Module, students understand how humans have drastically altered ecosystems by activities such as hunting, agriculture, and the construction of roadways, using the example of a Backland Prairie ecosystem. They also learn about the different steps that humans can take to minimize damage to an ecosystem and to restore an ecosystem.
Student Review	How Organisms Change Their Ecosystems Human Impacts on Ecosystems
Quiz	[SC.5.L.15.1] Environmental Changes
Interactivity	Ecosystem Harmony: In this interactivity, students apply their understanding of factors affecting ecosystem stability to predict the impacts of different changes on an estuary ecosystem.
Activity	Predicting Effects of Changes to an Ant Farm Ecosystem: After viewing the module Changes in Ecosystems students will make predictions and observations about the effects of changes caused by ants over time to an artificial ant farm ecosystem.
Glossary	Changes in Ecosystems



Journal	Journal 1 Changes in Ecosystems Journal 2 Changes in Ecosystems
Reader	Coral Reefs and Ocean Diversity

Big Idea 16: Heredity and Reproduction

Topic 1: Life Cycles of Plants and Animals

Description: [SC.4.L.16.4] In this topic students will learn to compare and contrast the major stages in the life cycles of animals.

Instruction Module **What are Life Cycles?** : In this Instruction Module, students understand that a life cycle has no beginning or an end and that it is continuous. They also learn to explain the important events that are part of every life cycle such as birth, growth, and reproduction.

Instruction Module **Life Cycles of Animals:** In this Instruction Module, students observe examples of organisms that have simple life cycles and complex life cycles. They learn which types of organisms have simple life cycles and which ones have complex life cycles.

Instruction Module **Life Cycle of a Butterfly:** In this Instruction Module, students observe and understand that a butterfly undergoes a complete change in form or complete metamorphosis during its life. Students will be able to identify and describe the main features of the four stages in a butterfly life cycle.

Instruction Module **The Life Cycle of Mammals:** In this Instruction Module, students learn that all mammals have a simple life cycle, with the young closely resembling the adults. They also identify the different stages in the life cycle of humans and outline important changes that occur in each of these stages.



Instruction Module	<p>Life Cycle of a Frog: In this Instruction Module, students learn that metamorphosis is a complete change in form that some animals such as frogs undergo during their lives. They learn to describe the different stages in the life cycle of a frog and identify the important changes that take place as a tadpole metamorphoses into an adult frog. They also learn to identify structural differences between a tadpole and an adult frog.</p>
Instruction Module	<p>Incomplete Metamorphosis: In this Instruction Module, students learn that some insects such as grasshoppers go through incomplete metamorphosis, where the larval stage resembles the adult. They learn to identify and describes the various stages in the incomplete metamorphosis of a grasshopper. They will also learn to compare incomplete metamorphosis with complete metamorphosis.</p>
Instruction Module	<p>Complete Metamorphosis: In this Instruction Module, students learn that some insects such as butterflies go through complete metamorphosis, where the larval stage looks completely different from the adult. They learn to identify and describes the various stages in the complete metamorphosis of a butterfly.</p>
Instruction Module	<p>Plant Life Cycles: In this Instruction Module students observe example of plant life cycles and recognize that plants have a complex life cycle. They learn about the different stages in the life cycle of a bean plant and an oak tree.</p>
Instruction Module	<p>Life Cycle of a Bean Plant: In this Instruction Module, students learn to identify and describe the different stages of plant growth, using the example of a bean plant.</p>
Instruction Module	<p>Life Cycle of an Apple Tree: In this Instruction Module, students learn to identify and describe the different stages in the life cycle of an apple tree and identify the correct sequence in which these events occur.</p>
Student Review	Complete and Incomplete Metamorphosis Plant Life Cycles
Quiz	[SC.4.L.16.4] Life Cycles of Plants and Animals



Interactivity	The Circle of Life Life Cycle
Activity	Insect Life Cycles: Comparing Complete and Incomplete Metamorphosis Life Cycle of a Dandelion Expository - Lifecycles: Fireflies
Glossary	Life Cycles of Plants and Animals
Journal	Journal - Comparing Life Cycles Journal 1 - Life Cycles Journal 2 - Life Cycles
Reader	Life Cycle of Plants and Animals

Big Idea 17: Interdependence

Topic 1: Adaptations and Survival

Description: [SC.5.L.17.1] In this topic students will learn to observe, identify, compare, and contrast adaptations that enable organisms to survive in different environments.

Instruction Module **Comparing Adaptations of Similar Organisms:** In this Instruction Module, students observe and compare the structural adaptations of similar organisms that inhabit different environments. They learn how adaptations help an organism survive in its natural environment.



Instruction Module	Behavioral Adaptations: In this Instruction Module, students observe and identify examples of instinctive and learned behavioral adaptations. They learn how behavioral adaptations help organisms survive in their environment.
Student Review	Comparing Adaptations of Similar Organisms
Quiz	[SC.5.L.17.1] Adaptations and Survival
Interactivity	True or False?
Activity	Adaptations Expository - Insect Adaptation
Glossary	Adaptations and Survival
Reader	Natural Selection

Topic 2: Adaptations to Changing Seasons

Description: [SC.3.L.17.1] In this topic, students will learn to recognize and describe how animals and plants respond to changing seasons, and identify the behavioral adaptations.

Instruction Module	What is an Adaptation? : In this Instruction Module, students observe a variety of examples of adaptations. They identify the adaptations and differentiate between structural and behavioral adaptations..
Student Review	What is an Adaptation?
Quiz	[SC.3.L.17.1] Response to Changing Season
Interactivity	Sonoran Desert Organisms



Glossary

Adaptations to Changing Season

Journal

Journal - Adaptations

Reader

The Long Journey of the Monarch

Topic 3: Traits and Characteristics

Description: [SC.4.L.16.2; SC.4.L.16.3] In this topic students will learn to differentiate between inherited traits and learned characteristics in plants and animals.

Instruction Module

Inherited Traits and Survival: In this Instruction Module, students learn that inherited traits are characteristics that are passed on from parents to offspring and recognize different examples of inherited traits. They also understand how the inherited traits of some organisms help them adapt to their environment.

Instruction Module

What is Learned Behavior? : n this Instruction Module, students will understand what learned behavior is and explain how learned behavior is different from inherited traits. They will also understand how some types of learned behavior helps some organisms survive in their environment.

Instruction Module

Inherited Traits: In this Instruction Module, students learn to define inherited traits and give examples of inherited traits in plants and animals. They also understand how some inherited traits are adaptations in organisms that help them survive in their environment.

Instruction Module

Learned Characteristics: In this Instruction Module, students understand what learned characteristics are. They learn to distinguish between learned characteristics and inherited traits. They observe and identify examples of learned characteristics in animals and humans.

Instruction Module

Inherited Traits of Animals and Plants: In this Instruction Module, students learn that offspring resemble their parents because of inherited traits that are passed on from parents to their offspring. They observe and recognize examples of inherited traits in animals, plants, and humans.



Student Review	Inherited Traits and Learned Behavior Inherited Traits Learned Characteristics Traits And Behavior
Quiz	[SC.4.L.16.2] Characteristics Affected by Environment [SC.4.L.16.3] Inherited and Learned Behaviour
Interactivity	<p>Sort the Pictures: In this interactivity, students learn to distinguish between inherited traits and learned characteristics by identifying whether different pictures show inherited traits or learned characteristics of organisms.</p> <p>Inherited or Learned? : In this interactivity, students identify whether the different pictures that are presented show an inherited trait or a learned characteristic.</p> <p>Test Your Pair-enting Skills: In this interactivity, students apply their knowledge of inherited traits of animals and plants to correctly identify the parent of given offspring based on inherited traits.</p>
Activity	<p>Inherited vs Acquired Trait: After viewing the instruction module, Inherited Traits vs. Learned Characteristics, the students will differentiate between inherited traits of plants and animals and learned or acquired traits and behaviors.</p>
Glossary	Traits and Characteristics
Journal	Journal - Traits and Characteristics Journal - Inherited Traits Journal 1 - Inherited Traits vs Learned Characteristics Journal 2 - Inherited Traits vs Learned Characteristics



Reader	Instincts and Learned Behaviors A Horse of Course
Topic 4: Changes in Ecosystems	
Description: [SC.4.L.17.4] [SC.5.L.15.1] In this topic students will learn how organisms, including humans, can impact the environment and cause changes in the ecosystems	
Instruction Module	Organisms Changing their Environment: In this Instruction Module, students observe and understand how organisms like beavers change their environment, and how these changes affects other organisms living in the same environment.
Instruction Module	How Organisms Change Their Ecosystems: In this Instruction Module, students learn how an organism can make changes to its ecosystem using the example of the prairie dog in the Backland Prairie Ecosystem. They also understand how these changes affect other organisms in the same ecosystem.
Instruction Module	Human Impacts on Ecosystems: In this Instruction Module, students understand how humans have drastically altered ecosystems by activities such as hunting, agriculture, and the construction of roadways, using the example of a Backland Prairie ecosystem. They also learn about the different steps that humans can take to minimize damage to an ecosystem and to restore an ecosystem.
Student Review	How Organisms Change Their Ecosystems Human Impacts on Ecosystem Organisms Changing their Environment
Quiz	[SC.4.L.17.4] Organisms Impact the Environment
Glossary	Changes in Ecosystems
Journal	Journal - Environmental Changes Journal 1 - Changes in Ecosystem Journal 2 - Changes in Ecosystem
Reader	Put it Out or let it burn? The Dust Bowl A Restoration Story



Topic 5: Photosynthesis

Description: [SC.3.L.17.2] In this topic, students will learn to recognize and describe how plants make their own food using energy from the Sun, air, and water.

Instruction Module **Photosynthesis:** In this Instruction Module, students learn that plants use carbon dioxide and water along with energy from sunlight to make their own food. They also understand that oxygen is released as a by-product of photosynthesis. They evaluate the significance of photosynthesis in sustaining life on Earth.

Quiz [SC.3.L.17.2] Plants Make Their Food

Glossary Photosynthesis

Topic 6: Producers, Consumers, and Decomposers

Description: [SC.4.L.17.2; SC.4.L.17.3] In this topic students will learn to identify the producers, consumers and the decomposers in an ecosystem.

Instruction Module **Ecosystems:** In this Instruction Module, students learn to describe ecosystems and explain why they are important. They also use examples to identify suitable ecosystems for different animals.

Instruction Module **Role of Producers:** In this Instruction Module, students understand that plants are called producers because they can directly convert sunlight to chemical energy through photosynthesis. They also learn how plants make the Sun's energy available to all other organisms in an ecosystem.

Instruction Module **Consumers:** In this Instruction Module, students will learn that all animals are consumers because they depend on other organisms for their energy. They learn to identify, describe, and give examples of the different types of consumers such as herbivores, carnivore, omnivores, predators, prey, and scavengers

Instruction Module **Decomposers:** In this Instruction Module, students learn to explain the role of decomposers in an ecosystem and give examples of some common decomposers. They also learn to evaluate the significance of decomposers in the recycling of nutrients in an ecosystem.



Student Review Producers, Consumers, and Decomposer

Quiz [SC.4.L.17.2] Energy from Food

Interactivity **Got the Munchies!** In this interactivity, students apply their understanding of consumers, and decomposers and sort organisms as herbivores, carnivores, omnivores, or decomposers, based on their food preferences.

Glossary Producers, Consumers, and Decomposers

Journal Journal: Producers and Consumer

Readers Aquatic Food Webs
Energy flow in the environment

Topic 7: Energy Flow through Food Webs

Description: [SC.4.L.17.3] In this topic, students learn to trace the flow of energy from the Sun as it is transferred along food chains and food webs.

Instruction Module **Food Chains:** In this Instruction Module, students understand how energy from the Sun is converted to chemical energy by the producers. They learn how this chemical energy is passed on from the producers to the consumers, and understand that this flow of energy can be represented using a food chain.

Instruction Module **Food Webs:** In this Instruction Module, students understand how food chains can be interconnected to form food webs. They learn how to use a food web to recognize the relationship between different organisms in an ecosystem.

Instruction Module **Factors Affecting Populations:** In this Instruction Module, students learn to describe the effects of a forest fire on the different populations of organisms living in it. They also learn to explain how a change in the number of producers or consumers can affect the entire food web.

Instruction Module **Energy from the Sun:** In this Instruction Module, students learn that energy from the Sun powers the water cycle. They also understand that plants convert sunlight to chemical energy during photosynthesis and animals depend on plants directly or indirectly for this chemical energy.



Instruction Module

Energy Flow in an Ecosystem: In this Instruction Module, students learn that the flow of energy from one organism to another in an ecosystem can be represented diagrammatically using a food chain. They understand that food chains in an ecosystem interlink to form food webs. They also learn that more energy is available to the producers than to the consumers and that this decrease in energy can be represented using an energy pyramid.

Student Review

Food Chains
Food Webs
Factors Affecting Populations
Energy Flow in an Ecosystem

Quiz

[SC.4.L.17.3] Energy Flow through Food Chain

Interactivity

Go with the Energy Flow: In this interactivity, students apply their understanding of food chains to identify the roles of organisms in a food chain and the correct order of energy flow.

Food Web Flow!: In this interactivity, students arrange organisms of different food chains in the correct order of energy flow and form food webs by identifying the correct links between food chains.

Ecosystem Harmony: In this interactivity, students apply their understanding to predict the impacts of different changes on an estuary ecosystem.

Energy Flow through Food Webs: Students will apply what they learned from viewing the instruction module, Energy Flow through Food Webs, and completing the note-taking guide to trace the flow of energy through food chains in three different ecosystems.

Activity

A Meadow Food Web: Students work in cooperative groups to find each food chain in a meadow food web, following the flow of energy from the producers to the top consumers, ending with the decomposers.

Predicting Effects of Changes to an Ant Farm Ecosystem: After viewing the module Changes in Ecosystems students will make predictions and observations about the effects of changes caused by ants over time to an artificial ant farm ecosystem.

Expository - Food Web: This expository reading passage focuses on how organisms interact with their environment. It introduces



students to the Brown Tree Snake and highlights how its arrival on the island of Guam changed the ecosystem by significantly affecting the flow of energy through food chains and food webs.

Glossary	Energy Flow through Food Webs
Journal	Journal - Food Webs Journal 1 - Energy Flow through Food Web Journal 2 - Energy Flow through Food Web
Reader	Aquatic Food Web Energy flow in the environment