

Activate Learning PRIME Alignment to 2015 Alabama Course of Study Grades K-5

The page numbers listed represent each section in which students are being prepared to meet the 2015 Alabama Course of Study *Science*.



Grade Level	Performance Expectation	Activate Learning Prime
Kindergarten	<p>Motion and Stability: Forces and Interactions 1. Investigate the resulting motion of objects when forces of different strengths and directions act upon them (e.g., object being pushed, object being pulled, two objects colliding).</p>	<p>Unit: Pushes and Pulls Cluster: Pushes and Pulls Everywhere Lesson: Motion Walk Lesson: Drawing Objects in Motion Lesson: Starting Things Moving Lesson: Turns, Curves, and Zigzags Lesson: Big and Small Pushes and Pulls</p> <p>Cluster: Using Pushes and Pulls Lessons Lesson: Playing with Collisions Lesson: Playground Motion</p>
	<p>Motion and Stability: Forces and Interactions 2. Use observations and data from investigations to determine if a design solution (e.g., designing a ramp to increase the speed of an object in order to move a stationary object) solves the problem of using force to change the speed or direction of an object.*</p>	<p>Unit: Pushes and Pulls Cluster: Using Pushes and Pulls Lessons Lesson: Solving Motion Challenges</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics 3. Distinguish between living and nonliving things and verify what living things need to survive (e.g., animals needing food, water, and air; plants needing nutrients, water, sunlight, and air).</p>	<p>Unit: Plants and Animals Cluster: Animals and Where They Live Lesson: What Is an Animal? Lesson: Our Animal Library Lesson: What Do Animals Need? Lesson: What Does My Animal Eat?</p> <p>Cluster: Plants Around Us Lessons Lesson: Meet Our Class Plant Lesson: What Do Plants Need? Lesson: Plants in Our World</p> <p>Cluster: People and Their Needs Lesson: What People Need</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics 4. Gather evidence to support how plants and animals provide for their needs by altering their environment (e.g., tree roots breaking a sidewalk to provide space, red fox burrowing to create a den to raise young, humans growing gardens for food and building roads for transportation).</p>	<p>Unit: Plants and Animals Cluster: Animals and Where They Live Lesson: Animals in the Wild</p> <p>Cluster: People and Their Needs Lesson: Neighborhood Walk</p>

		<p>Lesson: Making Our Surroundings Better</p> <p>Unit: Animal Homes Design Project Lessons Cluster: Animal Homes Design Project Lesson: Looking at Animal Homes Lesson: Researching Animal Homes Lesson: Making Animal Homes Lesson: Presenting Animal Homes</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics 5. Construct a model of a natural habitat (e.g., terrarium, ant farm, diorama) conducive to meeting the needs of plants and animals native to Alabama.</p>	<p>Unit: Plants and Animals Cluster: Animals and Where They Live Lesson: Where Does My Animal Live? Lesson: Where My Animals Gets Air and Water Lesson: What Does My Animal Eat? Lesson: Animals in the Wild</p> <p>Unit: Plants and Animals Cluster: Animal Homes Design Project Lesson: Looking at Animal Homes Lesson: Researching Animal Homes Lesson: Making Animal Homes Lesson: Presenting Animal Homes</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics 6. Identify and plan possible solutions (e.g., reducing, reusing, recycling) to lessen the human impact on the local environment.*</p>	<p>Unit: Plants and Animals Cluster: People and Their Needs Lesson: People Use Resources Lesson: Making Choices Lesson: Making Our Surroundings Better</p>
	<p>Earth's Systems 7. Observe and describe the effects of sunlight on Earth's surface (e.g., heat from the sun causing evaporation of water or increased temperature of soil, rocks, sand, and water).</p>	<p>Unit: Tracking the Weather Cluster: Observing the Weather Lesson: Sun's Light, Sun's Heat</p>
	<p>Earth's Systems 8. Design and construct a device (e.g., hat, canopy, umbrella, tent) to reduce the effects of sunlight.*</p>	<p>Unit: Tracking the Weather Cluster: Observing the Weather Lesson: Making a Sun Shield</p>
	<p>Earth's Systems 9. Observe, record, and share findings of local weather patterns over a period of time (e.g., increase in daily temperature from morning to afternoon, typical rain and storm patterns from season to season).</p>	<p>Unit: Tracking the Weather Cluster: Observing the Weather Lesson: What Is Weather? Lesson: What Am I Wearing? Lesson: Weather Calendar Lesson: Cloud and Precipitation Observations</p>

		<p>Lesson: Observing Evidence of Wind</p> <p>Cluster: Weather Over a Year</p> <p>Lesson: Weather Data for a Month</p> <p>Lesson: Fall Weather Data</p> <p>Lesson: Seasonal Weather Books</p> <p>Lesson: Winter Weather Data</p> <p>Lesson: Spring Weather Data</p>
	<p>Earth and Human Activity</p> <p>10. Ask questions to obtain information about the purpose of weather forecasts in planning for, preparing for, and responding to severe weather.*</p>	<p>Unit: Tracking the Weather</p> <p>Cluster: Weather Over a Year</p> <p>Lesson: Severe Weather</p>
1 st Grade	<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>1. Conduct experiments to provide evidence that vibrations of matter can create sound (e.g., striking a tuning fork, plucking a guitar string) and sound can make matter vibrate (e.g., holding a piece of paper near a sound system speaker, touching your throat while speaking).</p>	<p>Unit: Light and Sound</p> <p>Cluster: What Is Sound? Lessons</p> <p>Lesson: Sound Detectives</p> <p>Lesson: Sound Vibrations</p> <p>Cluster: How Sound Travels Lessons</p> <p>Lesson: Sound Travels Through Materials</p> <p>Lesson: Sound Travels Through Air</p> <p>Lesson: Cup and String Telephones</p> <p>Lesson: Sound and Hearing</p>
	<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>2. Construct explanations from observations that objects can be seen only when light is available to illuminate them (e.g., moon being illuminated by the sun, colors and patterns in a kaleidoscope being illuminated when held toward a light).</p>	<p>Unit: Light and Sound</p> <p>Cluster: Light All Around Us Lessons</p> <p>Lesson: Light Around Us</p> <p>Lesson: Dark and Light</p> <p>Lesson: Light Travels</p>
	<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>3. Investigate materials to determine which types allow light to pass through (e.g., transparent materials such as clear plastic wrap), allow only partial light to pass through (e.g., translucent materials such as wax paper), block light (e.g., opaque materials such as construction paper), or reflect light (e.g., shiny materials such as aluminum foil).</p>	<p>Unit: Light and Sound</p> <p>Cluster: Light Meeting Materials Lessons</p> <p>Lesson: Light Investigations</p> <p>Lesson: Blocking and Reflecting Light</p> <p>Lesson: Light and Shadow</p> <p>Lesson: Prisms and Rainbows</p>
	<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>4. Design and construct a device that uses light or sound to send a communication signal over a distance (e.g., using a flashlight and a piece of cardboard to simulate a signal lamp for sending a coded message to a classmate, using a paper cup and string to simulate a telephone for talking to a classmate).*</p>	<p>Unit: Light and Sound</p> <p>Cluster: Communications Project for Lower Elementary Lessons</p> <p>Lesson: Exploring Communication Devices</p> <p>Lesson: Making a Simple Communication Device</p> <p>Lesson: Building a New Communication Device</p> <p>Lesson: Testing and Demonstrating Devices</p>

	<p>From Molecules to Organisms: Structures and Processes</p> <p>5. Design a solution to a human problem by using materials to imitate how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., outerwear imitating animal furs for insulation, gear mimicking tree bark or shells for protection).*</p>	<p>Unit: Examining Living Things Cluster: Living Things Lessons Lesson: What Is a Biologist? Lesson: Fall Wild Walk</p> <p>Cluster: Plant Parts Lessons Lesson: Exploring Plant Parts Lesson: Examining Roots Lesson: Experimenting with Stems Lesson: Studying Leaves Lesson: Inspecting Flowers Lesson: Finding Seeds in Fruit Lesson: Sprouting New Plants</p> <p>Cluster: Animal Parts Lessons Lesson: Animal Body Parts Lesson: Snails: Parts and Functions Lesson: Crickets: Parts and Functions Lesson: Fish: Parts and Functions Lesson: Invent an Animal</p> <p>Cluster: Nature-Inspired Inventions Lesson: Exploring Nature-Inspired Inventions Lesson: Testing a Nature-Inspired Invention Lesson: Building the Tallest Tower</p>
	<p>From Molecules to Organisms: Structures and Processes</p> <p>6. Obtain information to provide evidence that parents and their offspring engage in patterns of behavior that help the offspring survive (e.g., crying of offspring indicating need for feeding, quacking or barking by parents indicating protection of young).</p>	<p>Unit: Examining Living Things Cluster: Animal Family Lessons Lesson: Animal Family Research Lesson: Animal Family Books</p>
	<p>Heredity: Inheritance and Variation of Traits</p> <p>7. Make observations to identify the similarities and differences of offspring to their parents and to other members of the same species (e.g., flowers from the same kind of plant being the same shape, but differing in size; dog being same breed as parent, but differing in fur color or pattern).</p>	<p>Unit: Examining Living Things Cluster: Animal Family Lessons Lesson: Comparing Animal Parents and Offspring</p>
	<p>Earth's Place in the Universe</p> <p>8. Observe, describe, and predict patterns of the sun, moon, and stars as they appear in the sky (e.g., sun and moon appearing to rise in one part of the sky, move across the sky, and set; stars other than our sun being visible at night, but not during the day).</p>	<p>Unit: Watching the Sky Cluster: Sky Objects Lessons Lesson: Objects in the Sky Lesson: Day and Night Sky Lesson: Watching the Sun During a Day</p>

		Lesson: Moon Detectives Lesson: Star Detectives
	<p>Earth's Place in the Universe</p> <p>9. Observe seasonal patterns of sunrise and sunset to describe the relationship between the number of hours of daylight and the time of year (e.g., more hours of daylight during summer as compared to winter).</p>	<p>Unit: Watching the Sky</p> <p>Cluster: Length of Day Lessons</p> <p>Lesson: What Are Sunrise and Sunset?</p> <p>Lesson: Fall Sunrise and Sunset Patterns</p> <p>Lesson: Winter Sunrise and Sunset Patterns</p> <p>Lesson: Spring Sunrise and Sunset Patterns</p> <p>Lesson: Planning an Event</p>
2 nd Grade	<p>Matter and Its Interactions</p> <p>1. Conduct an investigation to describe and classify various substances according to physical properties (e.g., milk being a liquid, not clear in color, assuming shape of its container, mixing with water; mineral oil being a liquid, clear in color, taking shape of its container, floating in water; a brick being a solid, not clear in color, rough in texture, not taking the shape of its container, sinking in water).</p>	<p>Unit: Solids, Liquids, and Gases</p> <p>Cluster: Objects and Materials Lessons</p> <p>Lesson: Properties of Objects</p> <p>Cluster: Properties of Solids and Liquids Lessons</p> <p>Lesson: A Walk Outside</p> <p>Lesson: Comparing Liquids</p>
	<p>Matter and Its Interactions</p> <p>2. Collect and evaluate data to determine appropriate uses of materials based on their properties (e.g., strength, flexibility, hardness, texture, absorbency).*</p>	<p>Unit: Solids, Liquids, and Gases</p> <p>Cluster: Objects and Materials Lessons</p> <p>Lesson: What Are Things Made Of?</p> <p>Cluster: Properties of Solids and Liquids Lessons</p> <p>Lesson: Comparing Liquids</p> <p>Lesson: Changing Solids</p>
	<p>Matter and Its Interactions</p> <p>3. Demonstrate and explain how structures made from small pieces (e.g., linking cubes, blocks, building bricks, creative construction toys) can be disassembled and then rearranged to make new and different structures.</p>	<p>Unit: Solids, Liquids, and Gases</p> <p>Cluster: Objects and Materials Lessons</p> <p>Lesson: Building a New Object</p>
	<p>Matter and Its Interactions</p> <p>4. Provide evidence that some changes in matter caused by heating or cooling can be reversed (e.g., heating or freezing of water) and some changes are irreversible (e.g., baking a cake, boiling an egg).</p>	<p>Unit: Solids, Liquids, and Gases</p> <p>Cluster: Heating and Cooling Lessons</p> <p>Lesson: Water Changes</p> <p>Lesson: Reversible and Irreversible Changes</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics</p> <p>5. Plan and carry out an investigation, using one variable at a time (e.g., water, light, soil, air), to determine the growth needs of plants.</p>	<p>Unit: Diversity in Habitats</p> <p>Cluster: Plants Relationships Lessons</p> <p>Lesson: Plant Needs Investigation</p>
	<p>Ecosystems: Interactions, Energy, and Dynamics</p> <p>6. Design and construct models to simulate how animals disperse seeds or pollinate plants (e.g., animals brushing fur against seed pods and seeds falling</p>	<p>Unit: Diversity in Habitats</p> <p>Cluster: Plants Relationships Lessons</p> <p>Lesson: Pollination Partnerships</p> <p>Lesson: Seed Dispersal</p>

	<p>off in other areas, birds and bees extracting nectar from flowers and transferring pollen from one plant to another).*</p>	
	<p>Ecosystems: Interactions, Energy, and Dynamics 7. Obtain information from literature and other media to illustrate that there are many different kinds of living things and that they exist in different places on land and in water (e.g., woodland, tundra, desert, rainforest, ocean, river).</p>	<p>Unit: Diversity in Habitats Cluster: Sharing Habitats Lesson: Living in My Habitat Lesson: Sharing an Oak Tree Habitat Lesson: Diversity in Owl Food Lesson: Sharing a Saguaro Habitat Lesson: Sharing a Kelp Forest Habitat Lesson: Diversity Walk</p>
	<p>Earth's Systems 8. Make observations from media to obtain information about Earth's events that happen over a short period of time (e.g., tornados, volcanic explosions, earthquakes) or over a time period longer than one can observe (e.g., erosion of rocks, melting of glaciers).</p>	<p>Unit: Land, Water, and Wind Cluster: Changes to the Shape of the Land Lessons Lesson: Water Can Change the Land Lesson: Wind Can Change the Land Lesson: Rapid Changes to the Land</p>
	<p>Earth's Systems 9. Create models to identify physical features of Earth (e.g., mountains, valleys, plains, deserts, lakes, rivers, oceans).</p>	<p>Unit: Land, Water, and Wind Cluster: Landforms and Bodies of Water Lessons Lesson: Looking at Earth's Surface: Landforms Lesson: Looking at Earth's Surface: Bodies of Water Lesson: Modeling Landforms and Bodies of Water Lesson: Mapping Landforms and Bodies of Water</p>
	<p>Earth's Systems 10. Collect and evaluate data to identify water found on Earth and determine whether it is a solid or a liquid (e.g., glaciers as solid forms of water; oceans, lakes, rivers, streams as liquid forms of water).</p>	<p>Unit: Land, Water, and Wind Cluster: Landforms and Bodies of Water Lessons Lesson: Looking at Earth's Surface: Bodies of Water Lesson: Mapping Landforms and Bodies of Water</p>
	<p>Earth and Human Activity 11. Examine and test solutions that address changes caused by Earth's events (e.g., dams for minimizing flooding, plants for controlling erosion).*</p>	<p>Unit: Land, Water, and Wind Cluster: Changes to the Shape of the Land Lessons Lesson: Solutions to Water Erosion Lesson: Wind Can Change the Land</p>
	<p>Motion and Stability: Forces and Interactions 1. Plan and carry out an experiment to determine the effects of balanced and unbalanced forces on the motion of an object using one variable at a time, including number, size, direction, speed, position, friction, or air resistance (e.g., balanced forces pushing from both sides on an object, such as a box, producing no motion; unbalanced force on one side of an object, such as a ball, producing motion), and communicate these findings graphically.</p>	<p>Unit: Forces in Action Cluster: Force and Motion Lessons Lesson: Forces: Starting Things Moving Lesson: Forces have Strength and Direction Lesson: Examining Forces Lesson: Gravity Is a Force Lesson: Balanced and Unbalanced Forces</p>
	<p>Motion and Stability: Forces and Interactions 2. Investigate, measure, and communicate in a graphical format how an observed pattern of motion (e.g., a child swinging in a swing, a ball rolling</p>	<p>Unit: Forces in Action Cluster: Force and Motion Lessons Lesson: Predicting Motion</p>

	<p>back and forth in a bowl, two children teetering on a see-saw, a model vehicle rolling down a ramp of varying heights, a pendulum swinging) can be used to predict the future motion of an object.</p>	
3 rd grade	<p>Motion and Stability: Forces and Interactions 3. Explore objects that can be manipulated in order to determine cause-and-effect relationships (e.g., distance between objects affecting strength of a force, orientation of magnets affecting direction of a magnetic force) of electric interactions between two objects not in contact with one another (e.g., force on hair from an electrically charged balloon, electrical forces between a charged rod and pieces of paper) or magnetic interactions between two objects not in contact with one another (e.g., force between two permanent magnets or between an electromagnet and steel paperclips, force exerted by one magnet versus the force exerted by two magnets).</p>	<p>Unit: Forces in Action Cluster: Magnetic Forces Lessons Lesson: Magnets Interacting with Materials Lesson: Forces of Magnets Through Materials Lesson: Magnets on Magnets</p> <p>Cluster: Static Electricity Lessons Lesson: Discovering Static Electricity Lesson: Static Electricity Tests</p>
	<p>Motion and Stability: Forces and Interactions 4. Apply scientific ideas about magnets to solve a problem through an engineering design project (e.g., constructing a latch to keep a door shut, creating a device to keep two moving objects from touching each other such as a maglev system).*</p>	<p>Unit: Forces in Action Cluster: Magnetic Forces Lessons Lesson: Designing Magnetic Devices Lesson: Building Magnetic Devices Lesson: Sharing Magnetic Devices</p>
	<p>From Molecules to Organisms: Structures and Processes 5. Obtain and combine information to describe that organisms are classified as living things, rather than nonliving things, based on their ability to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.</p>	<p>Unit: Changing Environments Cluster: Survival in Different Environments Lesson: Environmental Matchup Lesson: Exploring Behaviors Lesson: How a Bird Feeds Lesson: How a Cactus Survives</p> <p>Cluster: Solutions to Change Lesson: Effects of Environmental Change</p>
	<p>From Molecules to Organisms: Structures and Processes 6. Create representations to explain the unique and diverse life cycles of organisms other than humans (e.g., flowering plants, frogs, butterflies), including commonalities such as birth, growth, reproduction, and death.</p>	<p>Unit: Patterns in Life Cycles Cluster: Life Cycles Introduction Lesson: Introduction to Life Cycles Lesson: Comparing Life Cycles</p> <p>Cluster: Seed to Seed Study Lesson: Planting Seeds Lesson: Transplanting Sprouts Lesson: Looking at Flowers Lesson: Observing Fruit and Seeds</p> <p>Cluster: Butterflies Study</p>

		<p>Lesson: Baby Caterpillars</p> <p>Lesson: Larger Caterpillars</p> <p>Lesson: Chrysalises</p> <p>Lesson: Adult Butterflies</p> <p>Lesson: Generations</p>
	<p>Heredity: Inheritance and Variation of Traits</p> <p>7. Examine data to provide evidence that plants and animals, excluding humans, have traits inherited from parents and that variations of these traits exist in groups of similar organisms (e.g., flower colors in pea plants, fur color and pattern in animal offspring).</p>	<p>Unit: Inheritance and Variation</p> <p>Cluster: Inheriting Traits Lessons</p> <p>Lesson: Are All Dogs Alike?</p> <p>Lesson: Where Do Traits Come From?</p> <p>Lesson: Variation from Parents</p> <p>Cluster: Consequences of Variation</p> <p>Lesson: Does Variation in Color Matter?</p>
	<p>Heredity: Inheritance and Variation of Traits</p> <p>8. Engage in argument from evidence to justify that traits can be influenced by the environment (e.g., stunted growth in normally tall plants due to insufficient water, change in an arctic fox’s fur color due to light and/or temperature, stunted growth of a normally large animal due to malnourishment).</p>	<p>Unit: Inheritance and Variation</p> <p>Cluster: Environment and Variation Lessons</p> <p>Lesson: Variation in Plants</p> <p>Lesson: Variation in Animals</p> <p>Cluster: Consequences of Variation</p> <p>Lesson: Variation and Survival</p>
	<p>Unity and Diversity</p> <p>9. Analyze and interpret data from fossils (e.g., type, size, distribution) to provide evidence of organisms and the environments in which they lived long ago (e.g., marine fossils on dry land, tropical plant fossils in arctic areas, fossils of extinct organisms in any environment).</p>	<p>Unit: Changing Environments</p> <p>Cluster: Learning from Fossils</p> <p>Lesson: Backyard Discovery</p> <p>Lesson: What Can Fossils Tell Us?</p> <p>Lesson: Fossils Tell of Changes</p>
	<p>Unity and Diversity</p> <p>10. Investigate how variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants having larger thorns being less likely to be eaten by predators, animals having better camouflage coloration being more likely to survive and bear offspring).</p>	<p>Unit: Inheritance and Variation</p> <p>Cluster: Consequences of Variation</p> <p>Lesson: Variation and Survival</p>
	<p>Unity and Diversity</p> <p>11. Construct an argument from evidence to explain the likelihood of an organism’s ability to survive when compared to the resources in a certain habitat (e.g., freshwater organisms survive well, less well, or not at all in saltwater; desert organisms survive well, less well, or not at all in woodlands).</p> <p>a. Construct explanations that forming groups helps some organisms survive.</p>	<p>Unit: Changing Environments</p> <p>Cluster: Survival in Different Environments</p> <p>Lesson: Environmental Matchup</p> <p>Lesson: Exploring Behaviors</p> <p>Lesson: How a Bird Feeds</p> <p>Lesson: How a Cactus Survives</p> <p>Unit: Inheritance and Variation</p>

	<p>b. Create models that illustrate how organisms and their habitats make up a system in which the parts depend on each other.</p> <p>c. Categorize resources in various habitats as basic materials (e.g., sunlight, air, freshwater, soil), produced materials (e.g., food, fuel, shelter), or as nonmaterial (e.g., safety, instinct, nature-learned behaviors).</p>	<p>Cluster: <i>Consequences of Variation</i> Lesson: Does Variation in Color Matter</p>
	<p>Unity and Diversity 12. Evaluate engineered solutions to a problem created by environmental changes and any resulting impacts on the types and density of plant and animal populations living in the environment (e.g., replanting of sea oats in coastal areas due to destruction by hurricanes, creating property development restrictions in vacation areas to reduce displacement and loss of native animal populations).*</p>	<p>Unit: <i>Changing Environments</i> Cluster: <i>Solutions to Change</i> Lesson: Effects of Environmental Change Lesson: Evaluating Solutions to Environmental Change</p>
	<p>Earth's Systems 13. Display data graphically and in tables to describe typical weather conditions expected during a particular season (e.g., average temperature, precipitation, wind direction).</p>	<p>Unit: <i>Weather and Climate</i> Cluster: <i>What Is Weather? Lessons</i> Lesson: Describing Weather Lesson: Where Does Weather Happen? Lesson: Weather in Different Places?</p> <p>Cluster: <i>Weather Data Lessons</i> Lesson: Making Weather Tools Lesson: Observing and Measuring Weather Lesson: Analyzing Weather Data Lesson: Making Weather Maps</p>
	<p>Earth's Systems 14. Collect information from a variety of sources to describe climates in different regions of the world.</p>	<p>Unit: <i>Weather and Climate</i> Cluster: <i>Climate Lessons</i> Lesson: What Is a Climate Zone? Lesson: Identifying Mystery Climates Lesson: Discovering Climate Patterns</p>
	<p>Earth and Human Activity 15. Evaluate a design solution (e.g., flood barriers, wind resistant roofs, lightning rods) that reduces the impact of a weather-related hazard.*</p>	<p>Unit: <i>Weather and Climate</i> Cluster: <i>Severe Weather Lessons</i> Lesson: What Is Severe Weather? Lesson: Predicting Severe Weather Lesson: Reducing Severe Weather Effects</p>
	<p>Energy 1. Use evidence to explain the relationship of the speed of an object to the energy of that object.</p>	<p>Unit: <i>Energy Transfers</i> Cluster: <i>Motion Energy Transfers Lessons</i> Lesson: Energy of Moving Objects Lesson: Colliding Marbles</p>
	<p>Energy</p>	<p>Unit: <i>Energy Transfers</i></p>

4 th Grade	<p>2. Plan and carry out investigations that explain transference of energy from place to place by sound, light, heat, and electric currents.</p> <p>a. Provide evidence that heat can be produced in many ways (e.g., rubbing hands together, burning leaves) and can move from one object to another by conduction.</p> <p>b. Demonstrate that different objects can absorb, reflect, and/or conduct energy.</p> <p>c. Demonstrate that electric circuits require a complete loop through which an electric current can pass.</p>	<p>Cluster: <i>Changing Energy Lessons</i> Lesson: Energy Is All Around Us Lesson: Forms of Energy Lesson: Energy Transfer in Toys</p> <p>Cluster: <i>Light Energy Lessons</i> Lesson: Light Is Energy Lesson: Modeling Traveling Light</p> <p>Cluster: <i>Putting Energy to Work Lessons</i> Lesson: Inventions with Energy</p> <p>Unit: <i>Technology and Energy</i> Cluster: <i>Using Electric Current</i> Lesson: Light a Bulb Lesson: More Light Connections Lesson: Circuits for Other Effects Lesson: Conductors and Insulators Lesson: Recognizing Electrical Hazards</p> <p>Cluster: <i>Electrical Circuits Design Project</i> Lesson: Creating a Bulb Holder Lesson: Circuits and Schematics Lesson: Designing Circuits Lesson: Building and Refining Circuits Lesson: Demonstrating Circuits</p> <p>Unit: <i>Waves</i> Cluster: <i>Different Kinds of Waves Lessons</i> Lesson: Sound Travels in Waves</p>
	<p>Energy</p> <p>3. Investigate to determine changes in energy resulting from increases or decreases in speed that occur when objects collide.</p>	<p>Unit: <i>Energy Transfers</i> Cluster: <i>Motion Energy Transfers Lessons</i> Lesson: Energy of Moving Objects Lesson: Colliding Marbles</p>
	<p>Energy</p> <p>4. Design, construct, and test a device that changes energy from one form to another (e.g., electric circuits converting electrical energy into motion, light, or sound energy; a passive solar heater converting light energy into heat energy).*</p>	<p>Unit: <i>Technology and Energy</i> Cluster: <i>Electrical Circuits Design Project</i> Lesson: Building Parallel Circuits Lesson: Designing Circuits Lesson: Building and Refining Circuits Lesson: Demonstrating Circuits</p>

<p>Energy</p> <p>5. Compile information to describe how the use of energy derived from natural renewable and nonrenewable resources affects the environment (e.g., constructing dams to harness energy from water, a renewable resource, while causing a loss of animal habitats; burning of fossil fuels, a nonrenewable resource, while causing an increase in air pollution; installing solar panels to harness energy from the sun, a renewable resource, while requiring specialized materials that necessitate mining).</p>	<p>Unit: Technology and Energy Cluster: Energy for Human Technologies Lesson: Stored Energy and Fuels Lesson: Effects on Our Planet</p>
<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>6. Develop a model of waves to describe patterns in terms of amplitude and wavelength, and including that waves can cause objects to move.</p>	<p>Unit: Waves Cluster: What Is a Wave? Lessons Lesson: What Are Waves? Lesson: Wave Behavior Lesson: Wave Shape Lesson: Wave Motion and Energy</p> <p>Cluster: Different Kinds of Waves Lessons Lesson: Deep and Shallow Water Waves Lesson: Sound Travels in Waves</p>
<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>7. Develop and use models to show multiple solutions in which patterns are used to transfer information (e.g., using a grid of 1s and 0s representing black and white to send information about a picture, using drums to send coded information through sound waves, using Morse code to send a message).*</p>	<p>Unit: Waves Cluster: Communications Project for Upper Elementary Lessons Lesson: Exploring a Communication Solution Lesson: Using Codes to Communicate Lesson: Developing a Communication Solution Lesson: Refining a Communication Solution Lesson: Demonstrating a Communication Solution Lesson: History of Communication Technology</p>
<p>Waves and Their Applications in Technologies for Information Transfer</p> <p>8. Construct a model to explain that an object can be seen when light reflected from its surface enters the eyes.</p>	<p>Unit: Energy Transfers Cluster: Light Energy Lessons Lesson: Reflecting Light Lesson: The Eye and Light Lesson: Modeling Traveling Light</p>
<p>From Molecules to Organisms: Structures and Processes</p> <p>9. Examine evidence to support an argument that the internal and external structures of plants (e.g., thorns, leaves, stems, roots, colored petals, xylem, phloem) and animals (e.g., heart, stomach, lung, brain, skin) function to support survival, growth, behavior, and reproduction.</p>	<p>Unit: Structures in Living Things Cluster: Animals – Structure, Function, and Information Processing Lesson: Animal Structures Lesson: Human Body Structures and Functions Lesson: Observing Earthworms</p>

		<p>Cluster: Plants – Structure and Function Lesson: Plants Structures and Systems Lesson: Observing Plant Structures</p>
<p>From Molecules to Organisms: Structures and Processes 10. Obtain and communicate information explaining that humans have systems that interact with one another for digestion, respiration, circulation, excretion, movement, control, coordination, and protection from disease.</p>		<p>Cluster: Animals – Structure, Function, and Information Processing Lesson: Animal Structures Lesson: Human Body Structures and Functions</p>
<p>From Molecules to Organisms: Structures and Processes 11. Investigate different ways animals receive information through the senses, process that information, and respond to it in different ways (e.g., skunks lifting tails and spraying an odor when threatened, dogs moving ears when reacting to sound, snakes coiling or striking when sensing vibrations).</p>		<p>Unit: Structures in Living Things Cluster: Animals – Structure, Function, and Information Processing Lesson: Investigating Earthworm Senses</p>
<p>Earth’s Systems 12. Construct explanations by citing evidence found in patterns of rock formations and fossils in rock layers that Earth changes over time through both slow and rapid processes (e.g., rock layers containing shell fossils appearing above rock layers containing plant fossils and no shells indicating a change from land to water over time, a canyon with different rock layers in the walls and a river in the bottom indicating that over time a river cut through the rock).</p>		<p>Unit: Our Geosphere Cluster: Explaining Earth’s Changes Lessons Lesson: Shaping the Earth Lesson: Fossils in Rock Layers</p>
<p>Earth’s Systems 13. Plan and carry out investigations to examine properties of soils and soil types (e.g., color, texture, capacity to retain water, ability to support growth of plants).</p>		
<p>Earth’s Systems 14. Explore information to support the claim that landforms are the result of a combination of constructive forces, including crustal deformation, volcanic eruptions, and sediment deposition as well as a result of destructive forces, including erosion and weathering.</p>		<p>Unit: Our Geosphere Cluster: Effects of Weathering and Erosion Lessons Lesson: Landscapes Change Lesson: Abrasion Weathers Rock Lesson: Glaciers Change Landscapes Lesson: Investigating Erosion and Deposition</p> <p>Unit: Our Geosphere Cluster: A Moving Earth Lessons Lesson: Moving Plates Create Landscapes Lesson: Mapping Earthquakes</p>
<p>Earth’s Systems 15. Analyze and interpret data (e.g., angle of slope in downhill movement of water, volume of water flow, cycles of freezing and thawing of water, cycles</p>		<p>Unit: Our Geosphere Cluster: Effects of Weathering and Erosion Lessons Lesson: Landscapes Change</p>

	of heating and cooling of water, speed of wind, relative rate of soil deposition, amount of vegetation) to determine effects of weathering and rate of erosion by water, ice, wind, and vegetation using one single form of weathering or erosion at a time.	Lesson: Abrasion Weathers Rock Lesson: Glaciers Change Landscapes Lesson: Investigating Erosion and Deposition
	Earth's Systems 16. Describe patterns of Earth's features on land and in the ocean using data from maps (e.g., topographic maps of Earth's land and ocean floor; maps of locations of mountains, continental boundaries, volcanoes, and earthquakes).	Unit: Our Geosphere Cluster: A Moving Earth Lessons Lesson: Moving Plates Create Landscapes Lesson: Mapping Earthquakes
	Earth's Systems 17. Formulate and evaluate solutions to limit the effects of natural Earth processes on humans (e.g., designing earthquake, tornado, or hurricane-resistant buildings; improving monitoring of volcanic activity).*	Investigating Erosion and Deposition? Unit: Technology and Energy Cluster: Energy for Human Technologies Lesson: Energy Conservation
5 th Grade	Matter and Its Interactions 1. Plan and carry out investigations (e.g., adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, evaporating salt water) to provide evidence that matter is made of particles too small to be seen.	Unit: Investigating Matter Cluster: Properties of Matter Lesson: Properties of Gases Cluster: Mixing and Changing Matter Lesson: Modeling Mixtures
	Matter and Its Interactions 2. Investigate matter to provide mathematical evidence, including graphs, to show that regardless of the type of reaction (e.g., new substance forming due to dissolving or mixing) or change (e.g., phase change) that occurs when heating, cooling, or mixing substances, the total weight of the matter is conserved.	Unit: Investigating Matter Cluster: Mixing and Changing Matter Lesson: Heating and Cooling Matter Lesson: Mixtures Lesson: Modeling Mixtures Lesson: Exploring Chemical Reactions
	Matter and Its Interactions 3. Examine matter through observations and measurements to identify materials (e.g., powders, metals, minerals, liquids) based on their properties (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, solubility, density).	Unit: Investigating Matter Cluster: Properties of Matter Lesson: What is Matter? Lesson: Properties of Matter Lesson: Identifying Materials' Properties
	Matter and Its Interactions 4. Investigate whether the mixing of two or more substances results in new substances (e.g., mixing of baking soda and vinegar resulting in the formation of a new substance, gas; mixing of sand and water resulting in no new substance being formed).	Unit: Investigating Matter Cluster: Mixing and Changing Matter Lesson: Modeling Mixtures Lesson: Exploring Chemical Reactions Lesson: Investigating Whatzit?!
	Matter and Its Interactions 5. Construct explanations from observations to determine how the density of an object affects whether the object sinks or floats when placed in a liquid.	Unit: Investigating Matter Cluster: Properties of Matter Lesson: What is Matter? Lesson: Properties of Matter

		Lesson: Identifying Materials' Properties
Motion and Stability: Forces and Interactions 6. Construct an explanation from evidence to illustrate that the gravitational force exerted by Earth on objects is directed downward towards the center of Earth.		Unit: Earth in Space Cluster: Gravity on Earth Lesson: Modeling Earth's Shape Lesson: Earth's Gravitational Force
Motion and Stability: Forces and Interactions 7. Design and conduct a test to modify the speed of a falling object due to gravity (e.g., constructing a parachute to keep an attached object from breaking).*		
Ecosystems: Interactions, Energy, and Dynamics 8. Defend the position that plants obtain materials needed for growth primarily from air and water.		Unit: Ecosystems Cluster: Producers Lesson: Plants as Producers
Ecosystems: Interactions, Energy, and Dynamics 9. Construct an illustration to explain how plants use light energy to convert carbon dioxide and water into a storable fuel, carbohydrates, and a waste product, oxygen, during the process of photosynthesis.		Unit: Ecosystems Cluster: Producers Lesson: Plants as Producers
Ecosystems: Interactions, Energy, and Dynamics 10. Construct and interpret models (e.g., diagrams, flow charts) to explain that energy in animals' food is used for body repair, growth, motion, and maintenance of body warmth and was once energy from the sun.		Unit: Ecosystems Cluster: Matter and Energy in Ecosystems Lesson: Matter and Energy Cluster: Producers Lesson: Sunlight on the Menu
Ecosystems: Interactions, Energy, and Dynamics 11. Create a model to illustrate the transfer of matter among producers; consumers, including scavengers and decomposers; and the environment.		Unit: Ecosystems Cluster: Matter and Energy in Ecosystems Lesson: What Is an Ecosystem? Lesson: Matter and Energy Lesson: Players in an Ecosystem Cluster: Producers Lesson: Testing Plant Growth Cluster: Waste and Decomposers Lesson: Nature's Waste Matter Lesson: Nature Breaks It Down Lesson: Nature Cleans It Up Lesson: Worms: Consumers and Decomposers Cluster: Completing the Cycle Lesson: Nutrients Help Plants

		Lesson: Matter on the Move Lesson: Prairie Ecosystem
Earth's Place in the Universe 12. Defend the claim that one factor determining the apparent brightness of the sun compared to other stars is the relative distance from Earth.		Unit: Earth in Space Cluster: Sun and Other Stars Lesson: Our Sun Is a Star
Earth's Place in the Universe 13. Analyze data and represent with graphs to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky (e.g., shadows and the position and motion of Earth with respect to the sun, visibility of select stars only in particular months).		Unit: Earth in Space Cluster: Daily Pattern of the Sun Lesson: Day and Night Lesson: Observing Shadow Patterns Lesson: Observing the Sun for a Day Lesson: Tracking Shadows During a Day Lesson: Models of the Sun and Shadow Lesson: Models of Daytime and Nighttime Lesson: Modeling Earth's Rotation Unit: Earth in Space Cluster: Sun and Other Stars Lesson: Seeing Stars from Earth Lesson: Earth's Orbit and Stars Lesson: Star Patterns
Earth's Systems 14. Use a model to represent how any two systems, specifically the atmosphere, biosphere, geosphere, and/or hydrosphere, interact and support life (e.g., influence of the ocean on ecosystems, landform shape, and climate; influence of the atmosphere on landforms and ecosystems through weather and climate; influence of mountain ranges on winds and clouds in the atmosphere).		Unit: Earth's Systems Cluster: Discovering Earth's Systems Lessons Lesson: Watching a Drop of Rain Lesson: Earth Walk Part I Lesson: Studying Earth's Systems Lesson: Modeling Earth's Systems Lesson: Earth Walk Part II Cluster: Earth's Water Systems Lessons Lesson: Learning About Surface Water Lesson: Water Beneath Earth's Surface Lesson: Frozen Water on Earth Lesson: Water in the Atmosphere Lesson: Modeling the Hydrosphere
Earth's Systems 15. Identify the distribution of freshwater and salt water on Earth (e.g., oceans, lakes, rivers, glaciers, ground water, polar ice caps) and construct a		Unit: Earth's Systems Cluster: Earth's Water Systems Lessons Lesson: Water Beneath Earth's Surface Lesson: Frozen Water on Earth

	graphical representation depicting the amounts and percentages found in different reservoirs.	Lesson: Water in the Atmosphere Lesson: Modeling the Hydrosphere
	<p>Earth and Human Activity</p> <p>16. Collect and organize scientific ideas that individuals and communities can use to protect Earth’s natural resources and its environment (e.g., terracing land to prevent soil erosion, utilizing no-till farming to improve soil fertility, regulating emissions from factories and automobiles to reduce air pollution, recycling to reduce overuse of landfill areas).</p>	<p>Unit: Earth’s Systems</p> <p>Cluster: <i>Protecting Water Resources</i></p> <p>Lesson: Water Is a Resource Lesson: Human Water Systems Lesson: Conserving Water at Home Lesson: Cleaning Polluted Water</p> <p>Cluster: Human Impacts Project</p> <p>Lesson: Humans Affect the Environment Lesson: Investigating Human Impacts</p>
	<p>Earth and Human Activity</p> <p>17. Design solutions, test, and revise a process for cleaning a polluted environment (e.g., simulating an oil spill in the ocean or a flood in a city and creating a solution for containment and/or cleanup).*</p>	<p>Unit: Earth’s Systems</p> <p>Cluster: <i>Protecting Water Resources</i></p> <p>Lesson: Water Is a Resource Lesson: Human Water Systems Lesson: Conserving Water at Home Lesson: Cleaning Polluted Water</p> <p>Cluster: Human Impacts Project</p> <p>Lesson: Humans Affect the Environment Lesson: Investigating Human Impacts</p>