KINDERGARTEN: Life Science	
L.K.1A.1 With teacher guidance, conduct an investigation of living organisms and nonliving objects in various real-world environments to define characteristics of living organisms that distinguish them from nonliving things (e.g., playground, garden, school grounds).	**PATHWAYS TREES AND WEATHER** Investigation 1 **PATHWAYS ANIMALS TWO BY TWO** Investigation 3
L.K.1A.2 With teacher support, gain an understanding that scientists are humans who use observations to learn about the natural world. Obtain information from informational text or other media about scientists who have made important observations about living things (e.g. Carl Linnaeus, John James Audubon, Jane Goodall).	**PATHWAYS ANIMALS TWO BY TWO** FOSSweb: Careers in Science and Engineering **DELTA EXPLORE** Insects Plants
L.K.1B.1 Develop and use models to exemplify how animals use their body parts to (a) obtain food and other resources, (b) protect themselves, and (c) move from place to place.	**PATHWAYS ANIMALS TWO BY TWO** Investigations 1, 2, and 4
L.K.1B.2 Identify and describe examples of how animals use their sensory body parts (eyes to detect light and movement, ears to detect sound, skin to detect temperature and touch, tongue to taste, and nose to detect smell).	**PATHWAYS ANIMALS TWO BY TWO** Investigations 1-4 **DELTA EXPLORE** My Five Senses
L.K.2.1 Use informational text or other media to make observations about plants as they change during the life cycle (e.g., germination, growth, reproduction, and death) and use models (e.g., drawing, writing, dramatization, or technology) to communicate findings.	**PATHWAYS TREES AND WEATHER** Investigation 3 **DELTA EXPLORE** Plants
L.K.2.2 Construct explanations using observations to describe and model the life cycle (birth, growth, adulthood, death) of a familiar mammal (e.g., dog, squirrel, rabbit, deer)	**DELTA EXPLORE** Insects
L.K.2.3 With teacher guidance, conduct a structured investigation to observe and measure (comparison of lengths) the changes in various individuals of a single plant species from seed germination to adult plant. Record observations using drawing or writing.	**DELTA EXPLORE** Plants
L.K.2.4 Use observations to explain that young plants and animals are like but not exactly like their parents (i.e., puppies look similar, but not exactly like their parents).	**DELTA EXPLORE** Insects
L.K.3A.1 With teacher guidance, conduct a structured investigation to determine what plants need to live and grow (water, light, and a place to grow). Measure growth by directly comparing plants with other objects.	**DELTA EXPLORE** Plants
L.K.3A.2 Construct explanations using observations to describe and report what animals need to live and grow (food, water, shelter, and space).	**PATHWAYS ANIMALS TWO BY TWO** Investigations 1-4

L.K.3B.1 Observe and communicate that animals get food from plants or other animals. Plants make their own food and need light to live and grow.	**PATHWAYS ANIMALS TWO BY TWO** Investigations 1 and 3
L.K.3B.2 Create a model habitat which demonstrates interdependence of plants and animals using an engineering design process to define the problem, design, construct, evaluate, and improve the habitat.*	**PATHWAYS ANIMALS TWO BY TWO** Investigations 1 and 3
L.K.4.1 Obtain information from informational text or other media to document and report examples of different plants or animals that are extinct.	
L.K.4.2 Observe and report how some present-day animals resemble extinct animals (i.e., elephants resemble wooly mammoths).	

KINDERGARTEN: Physical Science	
P.K.5A.1 Generate questions and investigate the differences between liquids and solids and develop awareness that a liquid can become a solid and vice versa.	**PATHWAYS MATERIALS AND FORCES** Investigations 1 and 2 **DELTA EXPLORE** Matter
P.K.5A.2 Describe and compare the properties of different materials (e.g., wood, plastic, metal, cloth, paper) and classify these materials by their observable characteristics (visual, aural, or natural textural) and by their physical properties (weight, volume, solid or liquid, and sink or float).	**PATHWAYS MATERIALS AND FORCES** Investigation 1 Side Trip 2: Testing a Wooden Raft **DELTA EXPLORE** Floating and Sinking
P.K.5B.1 Use basic shapes and spatial reasoning to model large objects in the environment using a set of small objects (e.g., blocks, construction sets).	**PATHWAYS MATERIALS AND FORCES** Investigations 2 and 3
P.K.5B.2 Analyze a large composite structure to describe its smaller components using drawing and writing.	**PATHWAYS MATERIALS AND FORCES** Investigations 2 and 3
P.K.5B.3 Explain why things may not work the same if some of the parts are missing.	**PATHWAYS MATERIALS AND FORCES** Investigations 2 and 3

KINDERGARTEN: Earth and Space Science	
E.K.8A.1 Construct an explanation of the pattern of the Earth's seasonal changes in the environment using evidence from observations.	**PATHWAYS TREES AND WEATHER** Investigation 2 **DELTA EXPLORE** Looking at the Sky

E.K.8B.1 With teacher guidance, generate and answer questions to develop a simple model, which describes observable patterns of sunlight on the Earth's surface (day and night).	**PATHWAYS TREES AND WEATHER** Investigation 2 **DELTA EXPLORE** Looking at the Sky
E.K.8B.2 With teacher guidance, develop questions to conduct a structured investigation to determine how sunlight affects the temperature of the Earth's natural resources (e.g., sand, soil, rocks, and water).	**PATHWAYS MATERIALS AND FORCES** Investigations 1 and 3
E.K.8B.3 Develop a device (i.e., umbrella, shade structure, or hat) which would reduce heat from the sun (temperature) using an engineering design process to define the problem, design, construct, evaluate, and improve the device.*	**PATHWAYS MATERIALS AND FORCES** Investigation 3
E.K.10.1 Participate in a teacher-led activity to gather, organize and record recyclable materials data on a chart or table using technology. Communicate results.	**PATHWAYS MATERIALS AND FORCES** Investigation 2
E.K.10.2 With teacher guidance, develop questions to conduct a structured investigation to determine ways to conserve Earth's resources (i.e., reduce, reuse, and recycle) and communicate results.	**PATHWAYS MATERIALS AND FORCES** Investigation 2
E.K.10.3 Create a product from the reused materials that will meet a human need (e.g., pencil holder, musical instrument, bird feeder). Use an engineering design process to define the problem, design, construct, evaluate, and improve the product.*	**PATHWAYS MATERIALS AND FORCES** Investigation 2

GRADE ONE: Life Science	
L.1.1.1 Construct explanations using first-hand observations or other media to describe the structures of different plants (i.e., root, stem, leaves, flowers, and fruit). Report findings using drawings, writing, or models.	**PATHWAYS INSECTS AND PLANTS** Investigation 2 **DELTA EXPLORE** Plants
L.1.1.2 Obtain information from informational text and other media to describe the function of each plant part (roots absorb water and anchor the plant, leaves make food, the stem transports water and food, petals attract pollinators, flowers produce seeds, and seeds produce new plants).	**DELTA EXPLORE** Plants
L.1.1.3 Design and conduct an experiment that shows the absorption of water and how it is transported through the plant. Report observations using drawings, sketches, or models.	**PATHWAYS INSECTS AND PLANTS** Investigation 2
L.1.1.4 Create a model which explains the function of each plant structure (roots, stem, leaves, petals, flowers, seeds).	**PATHWAYS INSECTS AND PLANTS** Investigation 2
L.1.1.5 With teacher support, gain an understanding that scientists are humans who use observations and experiments to learn about the natural world. Obtain information from informational text or other media about scientists who have made important observations about plants (e.g., Theophrastus, Gregor Mendel, George Washington Carver, Katherine Esau).	**PATHWAYS INSECTS AND PLANTS** FOSSweb: Careers in Science and Engineering **DELTA EXPLORE** Plants
L.1.2.1 Investigate, using observations and measurements (non-standard units), flowering plants (pumpkins, peas, marigolds, or sunflowers) as they change during the life cycle (i.e., germination, growth, reproduction, and seed dispersal). Use drawings, writing, or models to communicate findings.	**PATHWAYS INSECTS AND PLANTS** Investigation 2
L.1.2.2 Obtain, evaluate, and communicate information through labeled drawings, the life cycle (egg, larva, pupa, adult) of pollinating insects (e.g., bees, butterflies).	**PATHWAYS INSECTS AND PLANTS** Investigation 3 **DELTA EXPLORE** Insects
L.1.3A.1 Conduct structured investigations to make and test predictions about what plants need to live, grow, and repair including water, nutrients, sunlight, and space. Develop explanations, compare results, and report findings.	**PATHWAYS INSECTS AND PLANTS** Investigation 2
L.1.3B.1 Identify the body parts of a pollinating insect (e.g., bee, butterfly) and describe how insects use these parts to gather nectar or disburse pollen. Report findings using drawings, writing, or models.	**PATHWAYS INSECTS AND PLANTS** Investigation 3 **DELTA EXPLORE** Insects Plants

L.1.4.1 Explore the cause and effect relationship between plant adaptations and environmental changes (i.e., leaves turning toward the sun, leaves changing color, leaves wilting, or trees shedding leaves).	**NEXT GENERATION WEATHER AND SEASONS** Investigation 3 **DELTA EXPLORE** Weather and Seasons
L.1.4.2 Describe how the different characteristics of plants help them to survive in distinct environments (e.g., rain forest, desert, grasslands, forests).	**PATHWAYS INSECTS AND PLANTS** Investigation 1
L.1.4.3 Create a solution for an agricultural problem (i.e. pollination, seed dispersal, over-crowding). Use an engineering design process to define the problem, design, construct, evaluate, and improve the solution.*	**PATHWAYS INSECTS AND PLANTS** Investigation 3

GRADE ONE: Physical Science	
P.1.6A.1 Construct explanations using first-hand observations or other media to describe how reflected light makes an object visible.	**PATHWAYS SOUND AND LIGHT** Investigation 4
P.1.6A.2 Use evidence from observations to explain how shadows form and change with the position of the light source.	**PATHWAYS SOUND AND LIGHT** Investigation 3
P.1.6B.1 Conduct an investigation to provide evidence that vibrations create sound (e.g., pluck a guitar string) and that sound can create vibrations (e.g., feeling sound through a speaker).	**PATHWAYS SOUND AND LIGHT** Investigations 1 and 2
P.1.6B.2 Create a device that uses light and/or sound to communicate over a distance (e.g.,a signal lamp with a flashlight). Use an engineering design process to define the problem, design, construct, evaluate, and improve the device.*	**PATHWAYS SOUND AND LIGHT** Investigation 2

GRADE ONE: Earth and Space Science	
E.1.9A.1 Analyze and interpret data from observations and measurements to describe local weather conditions (including temperature, wind, and forms of precipitation).	**NEXT GENERATION WEATHER AND SEASONS** Investigation 1
E.1.9A.2 Develop and use models to predict weather conditions associated with seasonal patterns and changes.	**NEXT GENERATION WEATHER AND SEASONS** Investigation 3
E.1.9A.3 Construct an explanation for the general pattern of change in daily temperatures by measuring and calculating the difference between morning and afternoon temperatures.	**NEXT GENERATION WEATHER AND SEASONS** Investigation 1
E.1.9A.4 Obtain and communicate information about severe weather conditions to explain why certain safety precautions are necessary.	**DELTA EXPLORE** Weather and Seasons
E.1.9B.1 Locate, classify, and describe bodies of water (oceans, rivers, lakes, and ponds) on the Earth's surface using maps, globes, or other media.	**NEXT GENERATION WEATHER AND SEASONS** Investigation 1

E.1.9B.2 Generate and answer questions to explain the patterns and location of frozen and liquid bodies of water on earth using maps, globes, or other media.	**NEXT GENERATION WEATHER AND SEASONS** Investigation 1
E.1.9B.3 With teacher guidance, plan and conduct a structured investigation to determine how the movement of water can change the shape of the land on earth.	**NEXT GENERATION WEATHER AND SEASONS** Investigation 2 **DELTA EXPLORE** Soil
E.1.10.1 Obtain and evaluate informational texts and other media to generate and answer questions about water sources and human uses of clean water.	
E.1.10.2 Communicate solutions that will reduce the impact of humans on the use and quality of water in the local environment.	
E.1.10.3 Create a device that will collect free water to meet a human need (e.g., household drinking water, watering plants/animals, cleaning). Use an engineering design process to define the problem, design, construct, evaluate, and improve the device.*	

GRADE TWO: Life Science	
L.2.1.1 Compare and sort groups of animals with backbones (vertebrates) from groups of animals without backbones (invertebrates).	
L.2.1.2 Classify vertebrates (mammals, fish, birds, amphibians, and reptiles) based on their physical characteristics.	
L.2.1.3 Compare and contrast physical characteristics that distinguish classes of vertebrates (i.e., reptiles compared to amphibians).	
L.2.1.4 Construct a scientific argument for classifying vertebrates that have unusual characteristics, such as bats, penguins, snakes, salamanders, dolphins, and duck-billed platypuses (i.e., bats have wings yet they are mammals).	
L.2.2.1 Use observations through informational texts and other media to observe the different stages of the life cycle of trees (i.e., pines, oaks) to construct explanations and compare how trees change and grow over time.	**DELTA EXPLORE** Plants
L.2.2.2 Construct explanations using first-hand observations or other media to describe the life cycle of an amphibian (birth, growth/development, reproduction, and death). Communicate findings.	**DELTA EXPLORE** Insects
L.2.3A.1 Evaluate and communicate findings from informational text or other media to describe how animals change and respond to rapid or slow changes in their environment (fire, pollution, changes in tide, availability of food/water).	
L.2.3A.2 Construct scientific arguments to explain how animals can make major changes (e.g., beaver dams obstruct streams, or large deer populations destroying crops) and minor changes to their environments (e.g., ant hills, crawfish burrows, mole tunnels). Communicate findings.	
L.2.3B.1 Evaluate and communicate findings from informational text or other media to describe and to compare how animals interact with other animals and plants in the environment (i.e., predator- prey relationships, herbivore, carnivore, omnivore).	**PATHWAYS PLANTS AND ANIMALS** Investigation 2
L.2.3B.2 Conduct an investigation to find evidence where plants and animals compete or cooperate with other plants and animals for food or space. Present findings (i.e., using technology or models).	**PATHWAYS PLANTS AND ANIMALS** Investigation 2
L.2.4.1 Evaluate and communicate findings from informational text or other media to describe how plants and animals use adaptations to survive (e.g., ducks use webbed feet to swim in lakes and ponds, cacti have waxy coatings and spines to grow in the desert) in distinct environments (e.g., polar lands, saltwater and freshwater, desert, rainforest, woodlands).	**PATHWAYS PLANTS AND ANIMALS** Investigation 3

L.2.4.2 Create a solution exemplified by animal adaptations to solve a human problem in a specific environment (e.g., snowshoes are like hare's feet or flippers are like duck's feet). Use an engineering design process to define the problem, design, construct, evaluate, and improve the solution.*	**PATHWAYS PLANTS AND ANIMALS** Investigation 3

GRADE TWO: Physical Science	
P.2.5.1 Conduct a structured investigation to collect, represent, and analyze categorical data to classify matter as solid, liquid, or gas. Report findings and describe a variety of materials according to observable physical properties (e.g., size, color, texture, opacity, solubility).	**PATHWAYS SOLIDS AND LIQUIDS** Investigations 1 and 2
P.2.5.2 Compare and measure the length of solid objects using technology and mathematical representations. Analyze and communicate findings.	**PATHWAYS SOLIDS AND LIQUIDS** Investigation 1
P.2.5.3 Compare the weight of solid objects and the volume of liquid objects. Analyze and communicate findings.	**PATHWAYS SOLIDS AND LIQUIDS** Investigations 1 and 2
P.2.5.4 Construct scientific arguments to support claims that some changes to matter caused by heating can be reversed, and some changes cannot be reversed.	**PATHWAYS SOLIDS AND LIQUIDS** Investigation 3
P.2.6.1 Conduct a structured investigation to collect, represent, and analyze data from observations and measurements to demonstrate the effects of pushes and pulls with different strengths and directions. Communicate findings (e.g., models or technology).	**DELTA EXPLORE** Force and Motion
P.2.6.2 Generate and answer questions about the relationship between (1) friction and the motion of objects and (2) friction and the production of heat.	**DELTA EXPLORE** Force and Motion
P.2.6.3 Develop a plan to change the force (push or pull) of friction to solve a human problem (e.g., improve the ride on a playground slide or make a toy car or truck go faster). Use an engineering design process to define the problem, design, construct, evaluate, and improve the plan.*	

GRADE TWO: Earth and Space Science	
E.2.8.1 Recognize that there are many stars that can be observed in the night sky and the Sun is the Earth's closest star.	**PATHWAYS CHANGES IN THE SKY** Investigation 2 **DELTA EXPLORE** Looking at the Sky
E.2.8.2 With teacher guidance, observe, describe, and predict the seasonal patterns of sunrise and sunset. Collect, represent, and interpret data from internet sources to communicate findings.	**PATHWAYS CHANGES IN THE SKY** Investigation 1 **DELTA EXPLORE** Looking at the Sky
E.2.8.3 Observe and compare the details in images of the moon and planets using the perspective of the naked eye, telescopes, and data from space exploration.	**PATHWAYS CHANGES IN THE SKY** Investigation 2 **DELTA EXPLORE** Looking at the Sky
E.2.8.4 With teacher support, gain an understanding that scientists are humans who use observations and experiments to learn about space. Obtain information from informational text or other media about scientists who have made important discoveries about objects in space (e.g., Galileo Galilei, Johannes Kepler, George Ellery Hale, Jill Tarter) or the development of technologies (e.g., various telescopes and detection devices, computer modeling, and space exploration).	**PATHWAYS CHANGES IN THE SKY** FOSSweb: Careers in Science and Engineering
E.2.8.5 Use informational text and other media to observe, describe and predict the visual patterns of motion of the Sun (sunrise, sunset) and Moon (phases).	**PATHWAYS CHANGES IN THE SKY** Investigations 1 and 2
E.2.8.6 Create a model that will demonstrate the observable pattern of motion of the Sun or Moon. Use an engineering design process to define the problem, design, construct, evaluate, and improve the model. *	**PATHWAYS CHANGES IN THE SKY** Investigations 1 and 2
E.2.10.1 Use informational text, other media, and first-hand observations to investigate, analyze and compare the properties of Earth materials (including rocks, soils, sand, and water).	**PATHWAYS WATER AND LANDFORMS** Investigations 1-3
E.2.10.2 Conduct an investigation to identify and classify everyday objects that are resources from the Earth (e.g., drinking water, granite countertops, clay dishes, wood furniture, or gas grill). Classify these objects as renewable and nonrenewable resources.	**PATHWAYS WATER AND LANDFORMS** Investigation 1: Home School Connection Investigation 2: Side Trip Rocks in Use
E.2.10.3 Use informational text and other media to summarize and communicate how Earth materials are used (e.g., soil and water to grow plants; rocks to make roads, walls or building; or sand to make glass).	**PATHWAYS WATER AND LANDFORMS** Investigations 1-2 **DELTA EXPLORE** Soil

E.2.10.4 Use informational text, other media, and first-hand observations to investigate and communicate the process and consequences of soil erosion.	**PATHWAYS WATER AND LANDFORMS** Investigation 3 **DELTA EXPLORE** Soil
E.2.10.5 With teacher guidance, investigate possible solutions to prevent or repair soil erosion.	**PATHWAYS WATER AND LANDFORMS** Investigations 3 and 4 **DELTA EXPLORE** Soil

GRADE THREE: Life Science	
L.3.1.1 Examine evidence to communicate information that the internal and external structures of animals (e.g., heart, stomach, bone, lung, brain, skin, ears, appendages) function to support survival, growth, and behavior.	**PATHWAYS STRUCTURES OF LIFE** Investigation 3 **MISSISSIPPI SCIENCE GRADE 3** Chapter 2: Animal Needs and Life Cycles
L.3.1.2 Examine evidence to communicate information that the internal and external structures of plant (e.g., thorns, leaves, stems, roots, or colored petals) function to support survival, growth, behavior, and reproduction.	**PATHWAYS STRUCTURES OF LIFE** Investigations 1 and 2
L.3.1.3 Obtain and communicate examples of physical features or behaviors of vertebrates and invertebrates and how these characteristics help them survive in particular environments, (e.g., animals hibernate, migrate, or estivate to stay alive when food is scarce or temperatures are not favorable).	**PATHWAYS STRUCTURES OF LIFE** Investigations 3 and 4 **MISSISSIPPI SCIENCE GRADE 3** Chapter 2: Animal Needs and Life Cycles
L.3.2.1 Identify traits and describe how traits are passed from parent organism(s) to offspring in plants and animals.	**PATHWAYS STRUCTURES OF LIFE** Investigations 2 and 4 **MISSISSIPPI SCIENCE GRADE 3** Chapter 3: Heredity
L.3.2.2 Describe and provide examples of plant and animal offspring from a single parent organism (e.g., bamboo, fern, or starfish) as being an exact replica with identical traits as the parent organism.	**MISSISSIPPI SCIENCE GRADE 3** Chapter 2: Animal Needs and Life Cycles Chapter 3: Heredity
L.3.2.3 Describe and provide examples of offspring from two parent organisms as containing a combination of inherited traits from both parent organisms.	**PATHWAYS STRUCTURES OF LIFE** Investigations 3 and 4 **MISSISSIPPI SCIENCE GRADE 3** Chapter 3: Heredity
L.3.2.4 Obtain and communicate data to provide evidence that plants and animals have traits inherited from both parent organisms and that variations of these traits exist in groups of similar organisms (e.g., flower colors in pea plants or fur color and pattern in animal offspring).	**PATHWAYS STRUCTURES OF LIFE** Investigations 2 and 4
L.3.2.5 Research to justify the concept that traits can be influenced by the environment (e.g., stunted growth in normally tall plants due to insufficient water, changes in an arctic fox's fur color due to light and/or temperature, or flamingo plumage).	**PATHWAYS STRUCTURES OF LIFE** Investigation 4
L.3.4.1 Obtain data from informational text to explain how changes in habitats (both those that occur naturally and those caused by organisms) can be beneficial or harmful to the organisms that live there.	**PATHWAYS STRUCTURES OF LIFE** Investigations 3 and 4

L.3.4.2 Ask questions to predict how natural or man-made changes in a habitat cause plants and animals to respond in different ways, including hibernating, migrating, responding to light, death, or extinction (e.g., sea turtles, the dodo bird, or nocturnal species).	**PATHWAYS STRUCTURES OF LIFE** Investigations 3 and 4
L.3.4.3 Analyze and interpret data to explain how variations in characteristics among organisms of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants with larger thorns being less likely to be eaten by predators or animals with better camouflage colorations being more likely to survive and bear offspring).	**PATHWAYS STRUCTURES OF LIFE** Investigations 3 and 4
L.3.4.4 Define and improve a solution to a problem created by environmental changes and any resulting impacts on the types of density and distribution of plant and animal populations living in the environment (e.g., replanting sea oats in coastal areas or developing or preserving wildlife corridors and green belts). Use an engineering design process to define the problem, design, construct, evaluate, and improve the environment. *	**PATHWAYS STRUCTURES OF LIFE** Investigation 4
L.3.4.5 Construct scientific argument using evidence from fossils of plants and animals that lived long ago to infer the characteristics of early environments (e.g., marine fossils on dry land, tropical plant fossils in arctic areas, or fossils of extinct organisms in any environment).	**PATHWAYS STRUCTURES OF LIFE** Investigation 4

GRADE THREE: Physical Science	
P.3.5.1 Plan and conduct scientific investigations to determine how changes in heat (i.e., an increase or decrease) change matter from one state to another (e.g., melting, freezing, condensing, boiling, or evaporating).	**SCIENCE FLEX** Energy and States of Matter Lessons 2, 5-7
P.3.5.2 Develop and use models to communicate the concept that matter is made of particles too small to be seen that move freely around in space (e.g., inflation and shape of a balloon, wind blowing leaves, or dust suspended in the air).	**SCIENCE FLEX** Energy and States of Matter Lessons 1, 4
P.3.5.3 Plan and conduct investigations that particles speed up or slow down with addition or removal of heat.	**SCIENCE FLEX** Energy and States of Matter Lessons 2, 4, 5
P.3.6.1 Compare and contrast the effects of different strengths and directions of forces on the motion of an object (e.g., gravity, polarity, attraction, repulsion, or strength).	**NEXT GENERATION FORCES IN ACTION** Investigations 1 –3
P.3.6.2 Plan an experiment to investigate the relationship between a force applied to an object (e.g., friction, gravity) and resulting motion of the object.	**NEXT GENERATION FORCES IN ACTION** Investigations 1 -3
P.3.6.3 Research and communicate information to explain how magnets are used in everyday life	**NEXT GENERATION FORCES IN ACTION** Investigation 3

P.3.6.4 Define and solve a simple design problem by applying scientific ideas about magnets (e.g., can opener, door latches, paperclip holders, finding studs in walls, magnetized paint). Use an engineering design process to define the problem, design, construct, evaluate, and improve the magnet.*	**NEXT GENERATION FORCES IN ACTION** Investigation 3

GRADE THREE: Earth and Space Science	
E.3.7A.1 Plan and conduct controlled scientific investigations to identify the processes involved in forming the three major types of rock, and investigate common techniques used to identify them.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigations 2 and 4
E.3.7A.2 Develop and use models to demonstrate the processes involved in the development of various rock formations, including superposition, and how those formations can fracture and move over time.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigations 2 and 4
E.3.7A.3 Ask questions to generate testable hypotheses regarding the formation and location of fossil types, including their presence in some sedimentary rock.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 4
E.3.7B.1 Obtain and evaluate scientific information (e.g. using technology) to describe the four major layers of Earth and the varying compositions of each layer.	**MISSISSIPPI SCIENCE GRADE 3** Chapter 1: Inside Earth
E.3.7B.2 Develop and use models to describe the characteristics of Earth's continental landforms and classify landforms as volcanoes, mountains, valleys, canyons, planes, and islands.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 2
E.3.7B.3 Develop and use models of weathering, erosion, and deposition processes which explain the appearance of various Earth features (e.g., the Grand Canyon, Arches National Park in Utah, Plymouth Bluff in Columbus, or Red Bluff in Marion County, Mississippi).	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 2
E.3.7B.4 Compare and contrast constructive (e.g., deposition, volcano) and destructive (e.g., weathering, erosion, earthquake) processes of the Earth.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 3
E.3.9.1 Develop models to communicate the characteristics of the Earth's major systems, including the geosphere, hydrosphere, atmosphere, and biosphere (e.g., digital models, illustrations, flip books, diagrams, charts, tables).	
E.3.9.2 Construct explanations of how different landforms and surface features result from the location and movement of water on Earth's surface (e.g., watersheds, drainage basins, deltas, or rivers).	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 2

E.3.9.3 Use graphical representations to communicate the distribution of freshwater and saltwater on Earth (e.g., oceans, lakes, rivers, glaciers, groundwater, or polar ice caps).	
E.3.10.1 Identify some of Earth's resources that are used in everyday life such as water, wind, soil, forests, oil, natural gas, and minerals and classify as renewable or nonrenewable.	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 1
E.3.10.2 Obtain and communicate information to exemplify how humans attain, use, and protect renewable and nonrenewable Earth resources.	
E.3.10.3 Use maps and historical information to identify natural resources in the state connecting (a) how resources are used for human needs and (b) how the use of those resources impacts the environment.	
E.3.10.4 Design 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). Use an engineering design process to define the problem, design, construct, evaluate, and improve the environment.*	**PATHWAYS SOILS, ROCKS AND LANDFORMS** Investigation 2

GRADE FOUR: Life Science	
L.4.1.1 Use technology or other resources to research and discover general system function (e.g., machines, water cycle) as they relate to human organ systems and identify organs that work together to create organ systems.	**PATHWAYS SENSES AND SURVIVAL** Investigations 1-3
L 4.1.2 Obtain and communicate data to describe patterns that indicate the nature of relationships between human organ systems, which interact with one another to control digestion, respiration, circulation, excretion, movement, coordination, and protection from infection	**PATHWAYS SENSES AND SURVIVAL** Investigations 1-3
L.4.1.3 Construct models of organ systems (e.g. circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate both the unique function of the system and how multiple organs and organ systems work together to accomplish more complex functions.	**PATHWAYS SENSES AND SURVIVAL** Investigations 1-3
L.4.2.2 Research and communicate how noninfectious diseases (e.g. diabetes, heart disease) and infectious diseases (e.g. cold, flu) serve to disrupt the function of the body system.	**PATHWAYS SENSES AND SURVIVAL** FOSSweb: Careers in Science and Engineering
L.4.1.5 Using informational text, investigate how scientific fields, medical specialties, and research methods help us find new ways to maintain a healthy body and lifestyle (e.g. diet, exercise, vaccines, and mental health).	**PATHWAYS SENSES AND SURVIVAL** FOSSweb: Careers in Science and Engineering
L.4.2.1 Compare and contrast life cycles of familiar plants and animals.	**MISSISSIPPI SCIENCE GRADE 4** Chapter 4: Animal Needs and Life Cycles Chapter 5: Plant Life Cycles
L.4.2.2 Develop and use models to explain the unique and diverse life cycles of organisms other than humans (e.g., flowering plants, frogs, or butterflies) including commonalities (e.g., birth, growth, reproduction, or death).	**MISSISSIPPI SCIENCE GRADE 4** Chapter 4: Animal Needs and Life Cycles Chapter 5: Plant Life Cycles

GRADE FOUR: Physical Science	
P.4.6A.1 Obtain and communicate information to compare how different processes (including burning, friction, and electricity) serve as sources of heat energy.	**PATHWAYS ENERGY** Investigation 1
P.4.6A.2 Plan and conduct scientific investigations to classify different materials as either an insulator or conductor of electricity.	**PATHWAYS ENERGY** Investigation 1
P.4.6A.3 Develop models demonstrating how heat and electrical energy can be transformed into other forms of energy (e.g., motion, sound, heat, or light).	**PATHWAYS ENERGY** Investigations 1 and 2

P.4.6A.4 Develop models that demonstrate the path of an electric current in a complete, simple circuit (e.g., lighting a light bulb or making a sound).	**PATHWAYS ENERGY** Investigation 1
P.4.6A.5 Use informational text and technology resources to communicate technological breakthroughs made by historical figures in electricity (e.g. Alessandro Volta, Michael Faraday, Nicola Tesla, Thomas Edison, incandescent light bulbs, batteries, Light Emitting Diodes).	**PATHWAYS ENERGY** Investigation 1
P.4.6A.6 Design a device that converts any form of energy from one form to another form (e.g., construct a musical instrument that will convert vibrations to sound by controlling varying pitches, a solar oven that will convert energy from the sun to heat energy, or a simple circuit that can be used to complete a task). Use an engineering design process to define the problem, design, construct, evaluate, and improve the device.*	**PATHWAYS ENERGY** Investigation 2
P.4.6B.1 Construct scientific evidence to support the claim that white light is made up of different colors. Include the work of Sir Isaac Newton to communicate results.	**MISSISSIPPI SCIENCE GRADE 4** Chapter 3: Energy
P.4.6B.2 Obtain and communicate information to explain how the visibility of an object is related to light.	**PATHWAYS ENERGY** Investigation 4 **MISSISSIPPI SCIENCE GRADE 4** Chapter 3: Energy
P.4.6B.3 Develop and use models to communicate how light travels and behaves when it strikes an object, including reflection, refraction, and absorption.	**PATHWAYS ENERGY** Investigation 4 **MISSISSIPPI SCIENCE GRADE 4** Chapter 3: Energy
P.4.6B.4 Plan and conduct scientific investigations to explain how light behaves when it strikes transparent, translucent, and opaque materials.	**PATHWAYS ENERGY** Investigation 4: Science Extensions **MISSISSIPPI SCIENCE GRADE 4** Chapter 3: Energy
P.4.6C.1 Plan and conduct scientific investigations to test how different variables affect the properties of sound (i.e., pitch and volume).	**NEXT GENERATION SOUND DESIGN** Investigations 1 and 2
P.4.6C.2 In relation to how sound is perceived by humans, analyze and interpret data from observations and measurements to report how changes in vibration affect the pitch and volume of sound.	**NEXT GENERATION SOUND DESIGN** Investigations 1 and 2
P.4.6C.3 Obtain and communicate information about scientists who pioneered in the science of sound, (e.g., Alexander Graham Bell, Robert Boyle, Daniel Bernoulli, and Guglielmo Marconi).	**PATHWAYS ENERGY** FOSSweb: Careers in Science and Engineering

GRADE FOUR: Earth and Space Science	
E.4.9A.1 Develop and use models to explain how the sun's energy drives the water cycle. (e.g., evaporation, condensation, precipitation, transpiration, runoff, and groundwater).	**PATHWAYS WATER AND CLIMATE** Investigation 3
E.4.9B.1 Analyze and interpret data (e.g., temperature, precipitation, wind speed/direction, relative humidity, or cloud types) to predict changes in weather over time.	**PATHWAYS WATER AND CLIMATE** Investigation 2
E.4.9B.2 Construct explanations about regional climate differences using maps and long-term data from various regions.	**PATHWAYS WATER AND CLIMATE** Investigation 4
E.4.9B.3 Design weather instruments utilized to measure weather conditions (e.g., barometer, hygrometer, rain gauge, anemometer, or wind vane). Use an engineering design process to define the problem, design, construct, evaluate, and improve the weather instrument.*	**PATHWAYS WATER AND CLIMATE** Investigation 2 Side Trip – Build a Thermometer **MISSISSIPPI SCIENCE GRADE 4** Chapter 2: Weather and Climate
E.4.9C.1 Analyze and interpret data to describe and predict how natural processes (e.g., weathering, erosion, deposition, earthquakes, tsunamis, hurricanes, or storms) affect Earth's surface.	**PATHWAYS WATER AND CLIMATE** Investigation 3
E.4.9C.2 Develop and use models of natural processes to explain the effect of the movement of water on the ocean shore zone, including beaches, barrier islands, estuaries, and inlets (e.g., marshes, bays, lagoons, fjord, or sound).	**PATHWAYS WATER AND CLIMATE** Investigation 3
E.4.9C.3 Construct scientific arguments from evidence to support claims that human activities, such as conservation efforts or pollution, affect the land, oceans, and atmosphere of Earth.	**PATHWAYS WATER AND CLIMATE** Investigations 3 and 4 **MISSISSIPPI SCIENCE GRADE 4** Chapter 1: Air and Water
E.4.9C.4 Research and explain how systems (i.e., the atmosphere, geosphere, and/or hydrosphere), interact and support life in the biosphere.	
E.4.9C.5 Obtain and communicate information about severe weather phenomena (e.g., thunderstorms, hurricanes, or tornadoes) to explain steps humans can take to reduce the impact of severe weather events.	**PATHWAYS WATER AND CLIMATE** Investigation 3
E.4.10.1 Organize simple data sets to compare energy and pollution output of various traditional, non-renewable resources (e.g. coal, crude oil, wood).	**PATHWAYS WATER AND CLIMATE** Investigation 1 **PATHWAYS ENERGY** Investigation 1
E.4.10.2 Use technology or informational text to investigate, evaluate, and communicate various forms of clean energy generation.	**PATHWAYS WATER AND CLIMATE** Investigation 1 **PATHWAYS ENERGY** Investigation 1

GRADE FIVE: Life Science	
L.5.3A.1 Research and communicate the basic process of photosynthesis that is used by plants to convert light energy into chemical energy that can be stored and released to fuel an organism's activities.	**PATHWAYS LIVING SYSTEMS** Investigations 1 and 2
L.5.3A.2 Analyze environments that do not receive direct sunlight and devise explanations as to how photosynthesis occurs, either naturally or artificially.	**PATHWAYS LIVING SYSTEMS** Investigation 2
L.5.3B.1 Obtain and evaluate scientific information regarding the characteristics of different ecosystems and the organisms they support (e.g., salt and fresh water, deserts, grasslands, forests, rain forests, or polar tundra lands).	**PATHWAYS LIVING SYSTEMS** Investigations 1-3
L.5.3B.2 Develop and use a food chain model to classify organisms as producers, consumers, or decomposers. Trace the energy flow to explain how each group of organisms obtains energy.	**PATHWAYS LIVING SYSTEMS** Investigations 1-3
L.5.3B.3 Design and interpret models of food webs to justify what effects the removal or the addition of a species (i.e., introduced or invasive) would have on a specific population and/or the ecosystem as a whole.	**PATHWAYS LIVING SYSTEMS** Investigations 1-3
L.5.3B.4 Communicate scientific or technical information that explains human positions in food webs and our potential impacts on these systems.	**PATHWAYS LIVING SYSTEMS** Investigations 2 and 3

GRADE FIVE: Physical Science	
P.5.5A.1 Obtain and evaluate scientific information to describe basic physical properties of atoms and molecules.	**MISSISSIPPI SCIENCE GRADE 5** Chapter 3: Properties of Matter
P.5.5A.2 Collect, analyze, and interpret data from measurements of the physical properties of solids, liquids, and gases (e.g., volume, shape, movement, and spacing of particles).	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1-3
P.5.5A.3 Analyze matter through observations and measurements to classify materials (e.g., powders, metals, minerals, or liquids) based on their properties (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, solubility, or density).	**PATHWAYS MIXTURES AND SOLUTIONS** Investigation 3
P.5.5A.4 Make and test predictions about how the density of an object affects whether the object sinks or floats when placed in a liquid.	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1 and 2
P.5.5A.5 Design a vessel that can safely transport a dense substance (e.g., syrup, coins, marbles) through water at various distances and under variable conditions. Use an engineering design process to define the problem, design, construct, evaluate, and improve the vessel.*	

P.5.5B.1 Obtain and evaluate scientific information to describe what happens to the properties of substances in mixtures and solutions.	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1-4
P.5.5B.2 Analyze and interpret data to communicate that the concentration of a solution is determined by the relative amount of solute versus solvent in various mixtures.	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1 and 2
P.5.5B.3 Investigate how different variables (e.g., temperature change, stirring, particle size, or surface area) affect the rate at which a solute will dissolve.	**PATHWAYS MIXTURES AND SOLUTIONS** Investigation 2
P.5.5B.4 Design an effective system (e.g., sifting, filtration, evaporation, magnetic attraction, or floatation) for separating various mixtures. Use an engineering design process to define the problem, design, construct, evaluate, and improve the system.*	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1and 2
P.5.5C.1 Analyze and communicate the results of chemical changes that result in the formation of new materials (e.g., decaying, burning, rusting, or cooking).	**PATHWAYS MIXTURES AND SOLUTIONS** Investigation 4
P.5.5C.2 Analyze and communicate the results of physical changes to a substance that results in a reversible change (e.g., changes in states of matter with the addition or removal of energy, changes in size or shape, or combining/separating mixtures or solutions).	**PATHWAYS MIXTURES AND SOLUTIONS** Investigation 1
P.5.5C.3 Analyze and interpret data to support claims that when two substances are mixed, the total weight of matter is conserved.	**PATHWAYS MIXTURES AND SOLUTIONS** Investigations 1 and 2
P.5.6.1 Obtain and communicate information describing gravity's effect on an object.	**PATHWAYS MOTION** Investigations 1-3
P.5.6.2 Predict the future motion of various objects based on past observation and measurement of position, direction, and speed.	**PATHWAYS MOTION** Investigations 1-3
P.5.6.3 Develop and use models to explain how the amount or type of force, both contact and non- contact, affects the motion of an object.	**PATHWAYS MOTION** Investigation 1
P.5.6.4 Plan and conduct scientific investigations to test the effects of balanced and unbalanced forces on the speed and/or direction of objects in motion.	**PATHWAYS MOTION** Investigations 1 and 3
P.5.6.5 Predict how a change of force, mass, and/or friction affects the motion of an object to convert potential energy into kinetic energy.	
P.5.6.6 Design a system to increase the effects of friction on the motion of an object (e.g., non-slip surfaces or vehicle braking systems or flaps on aircraft wings). Use an engineering design process to define the problem, design, construct, evaluate, and improve the system.*	**PATHWAYS MOTION** Investigations 2 and 3

GRADE FIVE: Earth and Space Science	
E.5.8A.1 Develop and use scaled models of Earth's solar system to demonstrate the size, composition (i.e., rock or gas), location, and order of the planets as they orbit the Sun.	**PATHWAYS EARTH AND SUN** Investigation 4 Side Trip- The Solar System **MISSISSIPPI SCIENCE GRADE 5** Chapter 2: Our Solar System and Beyond
E.5.8A.2 Use evidence to argue why the sun appears brighter than other stars.	**PATHWAYS EARTH AND SUN** Investigation 4
E.5.8A.3 Describe how constellations appear to move from Earth's perspective throughout the seasons (e.g., Ursa Major, Ursa Minor, and Orion).	**PATHWAYS EARTH AND SUN** Investigation 4
E.5.8A.4 Construct scientific arguments to support claims about the importance of astronomy in navigation and exploration, including the use of telescopes, compasses, and star charts.	**PATHWAYS EARTH AND SUN** Investigations 4 FOSSweb: Careers in Science and Engineering
E.5.8B.1 Analyze and interpret data from observations and research (e.g., from NASA, NOAA, or the USGS) to explain patterns in the location, movement, and appearance of the moon throughout a month and over the course of a year.	**PATHWAYS EARTH AND SUN** Investigation 4
E.5.8B.2 Develop and use a model of the Earth-Sun-Moon system to analyze the cyclic patterns of lunar phases, solar and lunar eclipses, and seasons.	**PATHWAYS EARTH AND SUN** Investigation 4 **MISSISSIPPI SCIENCE GRADE 5** Chapter 1: Earth, Moon, and Sun System
E.5.8B.3 Develop and use models to explain the factors (e.g., tilt, revolution, and angle of sunlight) that result in Earth's seasonal changes.	**PATHWAYS EARTH AND SUN** Investigations 3 and 4 **MISSISSIPPI SCIENCE GRADE 5** Chapter 1: Earth, Moon, and Sun System
E.5.8B.4 Obtain information and analyze how our understanding of the solar system has evolved over time (e.g., Earth-centered model of Aristotle and Ptolemy compared to the Sun-centered model of Copernicus and Galileo).	**PATHWAYS EARTH AND SUN** Investigation 4 Side Trip- The Solar System FOSS web: Careers in Science and Engineering **MISSISSIPPI SCIENCE GRADE 5** Chapter 2: Our Solar System and Beyond
E.5.10.1 Collect and organize scientific ideas that individuals and communities can use to conserve Earth's natural resources and systems (e.g., implementing watershed management practices to conserve water resources, utilizing no-till farming to improve soil fertility, reducing emissions to abate air pollution, or recycling to reduce landfill waste).	**PATHWAYS EARTH AND SUN** Investigations 1 and 2 **PATHWAYS LIVING SYSTEMS** Investigations 3 and 4

E.5.10.2 Design a process for better preparing communities to withstand manmade or natural disasters (e.g., removing oil from water or soil, systems that reduce the impact of floods, structures that resist hurricane forces). Use an engineering design process to define the problem, design, construct, evaluate, and improve the disaster plan.*	