

OAKHILL SCIENCE
SCOPE AND SEQUENCE

Strand	K	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
Physical Science	Primary Colors Explore mixing primary colors to create secondary colors. Name primary colors. Name color words.	Solid, Liquid & Gas Understand that all matter is made up of solids, liquids, and/or gases. Sort materials according to their properties. Recognize how two objects can occupy the same space at the same time.	Magnets Understand that the earth has magnetic poles. Demonstrate where a magnet has its strongest pull. Understand that magnets occur in nature. Describe magnetism as a force that can push or pull other objects without touching them.	Sound Explain that sound is a form of energy caused by waves of vibrations that spread from its source. Explain the difference between loudness and pitch. Understand how the ear enables people to hear sounds and explain how some of its parts function.	Light/Heat Explain that white light is a mixture of the different spectrum colors. Understand how the eye enables people to see and explain how some of its parts function. Explain ways heat can move from one object to another. Understand that most objects that emit light also emit heat. Identify the three things necessary to produce a shadow. Recognize the Sun is the primary source of light and food energy on Earth. Identify sources of natural light. Identify sources of artificial light. Understand	Mixtures and Solutions Develop a model to describe that matter is made of particles too small to be seen. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. Make observations and measurements to identify materials based on their properties. Conduct an investigation to determine whether the mixing of two	Structures and Properties of Matter Develop models to describe the atomic composition of simple molecules and extended structures. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	Chemical Reactions Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	Waves and Electromagnetic Spectrum Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.
				Electricity Explain that heat results when substances burn, when certain kinds of materials rub against each other, and when electricity flows through wires. The flow of electricity is controlled by open and	Forces and Interactions Construct	Energy Construct			

				<p>closed circuits. Construct and diagram a complete electric circuit by using a battery, wires, and bulb. Understand that electricity flows in a circuit that follows a circular path. Classify materials as conductors or insulators of electricity.</p> <p>Simple Machines/Forces List the six simple machines and examples of each. Understand that two or more simple machines can make a complex machine. Describe the shape of a wedge and how it affects its function. Explain how an inclined plane can make moving a heavy</p>	<p>that light is a form of energy that travels in a straight line. Metals are good conductors of heat and electricity. Increasing the temperature of any substance requires the addition of heat energy.</p>	<p>or more substances results in new substances.</p>	<p>Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.</p> <p>Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.</p> <p>Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting</p>	<p>and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.</p> <p>Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.</p> <p>Apply scientific principles to design, construct, and test a device that either minimizes or maximizes the thermal energy transfer.</p> <p>Plan an investigation to determine the relationships among the</p>	
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Earth Science	Earth, Moon and Sun Depict land vs. water on Earth. Name and make model of the layers of the Earth. State fact about the	Recycling List ways they can reuse something rather than throwing it away. Categorize items to recycle. Sun, Moon,	Rocks and Minerals Test different rocks for hardness, magnetism, and buoyancy. Observe and describe the physical properties	Conservation/ Recycling Understand the difference between conservation and preservation. Appreciate the need for national parks.	Weather and Water Cycle Demonstrate that air has mass, takes up space, and exerts pressure. Explain the difference between	Water Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere	Weather and Climate Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in	Space Systems Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar	History of Earth Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to

	<p>Sun. State fact about the Moon. Explore the phases of the Moon. Describe how day and night happen.</p> <p>Dinosaurs Name two facts about dinosaurs. Make a dinosaur diorama using realistic habitat. Compare carnivores and herbivores. Make a fossil.</p>	<p>Earth Know the positions of the earth, sun, and moon in the solar system. Recognize the moon is a reflector of light. Recognize there is a day/night cycle every 24 hours. Understand that the observable shape of the moon changes from day to day in a cycle.</p>	<p>and different components of soils. Observe and describe the physical properties of rocks. Observe and describe ways humans use Earth's materials in daily life.</p> <p>Dinosaurs Understand that fossils provide evidence about the plants and animals that lived long ago. Describe the characteristics of dinosaurs. Describe the habitats and time periods in which the dinosaurs lived.</p> <p>Pollution Identify pollution problems and possible solutions. List four types of pollution.</p>	<p>Decide ways to help their immediate environment. Understand the consequences of overfishing/hunting. Be aware of animal rights. Explain alternate energy sources including solar and wind energy. Understand the difference between extinction and endangered.</p> <p>Water Understand how and why water is filtered and why chemicals are added to our drinking water. Investigate the uses of water. Become aware of the importance of water and its conservation in our lives. Recognize water</p>	<p>weather and climate. Describe how wind, a source of energy, can be used by people. Demonstrate and explain a model of Earth's water cycle, including transpiration. Identify some weather instruments and how meteorologists can use them to predict the weather. Understand the major components of a weather map</p> <p>Erosion, Earthquakes, Earth's processes Explain how the processes of erosion, weathering, and sedimentation affect the Earth. Understand that the Earth's</p>	<p>interact. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>weather conditions. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p>	<p>phases, eclipses of the sun and moon, and seasons. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. Analyze and interpret data to determine scale properties of objects in the solar system.</p> <p>Human Impacts Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. Apply scientific principles to design a method for</p>	<p>organize Earth's 4.6-billion-year-old history. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.</p> <p>Earth's Systems Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. Develop a</p>
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					that an object must meet to be considered a planet.				
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Life Science	<p>Spiders Name 2 facts about spiders. Make diagram of a spider. Name body parts and count legs of a spider.</p> <p>Trees Name seasons. Describe the look and feel of each season. Compare and contrast seasons in the Midwest to other regions. Label parts of a tree. Diagram leaves.</p> <p>Eggs/Chicks Name and label parts of a chick. Name and label parts of an egg. Dissect an unfertilized egg. State 2 facts</p>	<p>Insects Understand that an insect has three body parts and six legs. Explain the social structure of a bee and ant colony. Understand how insects communicate.</p> <p>Bats Observe that there are two types of bats. Describe the different characteristics and eating habits of bats. Explain the benefit bats provide for people.</p> <p>Senses Identify the five senses. Match various textures by touch. Describe various textures. Identify objects and</p>	<p>Vertebrates and Invertebrates Distinguish between vertebrates and invertebrates. Explain some characteristics that distinguish a mammal. Explain the kinds of food carnivores, herbivores, insectivores, and omnivores eat. Explain the characteristics of a bird, reptile, amphibian, and fish. Classify vertebrate animals into classes based on their characteristics. Understand that invertebrate animals are classified into</p>	<p>Food Chains Understand that energy from the Sun is passed to organisms through food chains. Group living organisms by various characteristics or the environment in which they live (e.g., habitats, anatomy, behaviors). Understand that decomposers are the last step in any food chain. Understand that sources of energy for all life begin with the sun. Understand that producers/plants are the beginning of each food chain. Create a food chain given a</p>	<p>Body Systems Recognize that the body has many systems that work together, including the skeletal, central nervous, respiratory, digestive, circulatory, and muscular. Describe what happens to food in the digestive process. Describe the path blood takes to the heart, to the lungs to get oxygen, back to the heart, and to the rest of the body. Understand that a cylinder shape is a strong shape for a bone. Identify some major bones</p>	<p>Matter and Energy in Organisms and Ecosystems Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. Support an argument that plants get the materials they need for growth chiefly from air and water. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Human Body and Body Systems & Cell Structure Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. Gather and</p>	<p>Genetics Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. Develop and use a model to describe why structural changes to</p>	<p>Relationships in Ecosystems Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</p> <p>Natural Selection and Adaptation Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the</p>

	<p>about egg to chick life cycle. Observe incubation period of egg to chicken.</p> <p>Corn Create life cycle of corn-seed to stalk. Observe growth of corn. List different types of foods containing corn. Watch corn pop. Make homemade cornbread and butter.</p> <p>Pond Name animals and plants in a pond. Create a pond habitat including animals. Compare ducks and chicks.</p>	<p>animals by listening to the sound they make. Match containers by smell.</p> <p>Ocean Habitats Know that fish and whales are different. Understand that there are different habitats of the ocean. Explain how some marine animals use camouflage for protection or hunting. Identify and describe some animals in the ocean.</p>	<p>classes based on their characteristics. Record observations on the life cycle of different animals. Identify and relate the similarities and differences between animal parents and their offspring.</p> <p>Seeds and Plants Observe and describe the characteristics of different leaves. Describe the basic needs of most plants (i.e., air, water, light, nutrients, and temperature). Identify the plant parts: root, stem, leaf, flower and seed. Identify some different parts of plants we eat.</p> <p>Spiders Identify the two body parts of</p>	<p>consumer, a producer, and a decomposer. Explain the difference between and give examples of omnivores, carnivores, and herbivores.</p>	<p>in the body.</p> <p>Describe how the lungs take in oxygen and release carbon dioxide.</p> <p>Plant/Animal Adaptations Understand that organisms can survive only in environments in which their needs can be met (e.g., food, shelter, air, reproduction, and water). Explain what an adaptation is. Identify some ways a seed can disperse. Describe adaptations of various plants and animals. Identify specialized structures and senses and describe how they help animals/plants survive in their environment. Define and give an example of</p>	<p>Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p> <p>Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p> <p>Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p>	<p>synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<p>genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p>	<p>assumption that natural laws operate today as in the past. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. Construct an explanation based on evidence that</p>
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			<p>arachnids. Recognize that arachnids have eight legs. Compare and contrast arachnids with insects. Explain the benefits of spiders.</p>		<p>an animal using mimicry, hibernation, migration, camouflage, and warning coloration.</p>	<p>Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.</p> <p>Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p>			<p>describes how genetic variations of traits in a population in create some individuals' probability of surviving and reproducing in a specific environment. Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</p>
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Scientific Inquiry		<p>Understand that different objects or animals can be measured in different ways.</p>	<p>Compare and/or contrast similar and/or different characteristics (e.g., color, shape, size, texture) for two animals or objects. Measure objects or animals to nearest inch/centimeter</p>	<p>Compare and/or contrast similar and/or different characteristics (e.g., color, shape, size, texture) for three animals or objects. Measure objects using a ruler in to nearest half centimeter or</p>	<p>Use a variety of measurement tools and technology. Formulate a general statement to represent the data. Report data using tables, line, bar, and/ or simple circle graphs.</p>	<p>Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>Generate and</p>	<p>Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential</p>	<p>Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential</p>	<p>Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential</p>

			ter.	inch. Measure objects using a balance scale.	Interpret data tables, line, bar, and/or simple circle graphs. Make predictions based on patterns in experimental data. Communicate the results of investigations and/ or give explanations based on data. Conduct a simple scientific investigation. Recognize potential hazards and practice safety procedures in all science investigations. Arrange objects, organisms, and/or events in serial order (e.g., least to greatest, fastest to slowest). Measure liquids accurately using a graduated cylinder.	compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	impacts on people and the natural environment that may limit possible solutions. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. Develop a model to generate data for iterative testing and	impacts on people and the natural environment that may limit possible solutions. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. Develop a model to generate data for iterative	impacts on people and the natural environment that may limit possible solutions. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. Develop a model to generate data for iterative testing and
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							modification of a proposed object, tool, or process such that an optimal design can be achieved.	testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	modification of a proposed object, tool, or process such that an optimal design can be achieved.
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