

	NGSS	California Science Standards
<b>PHYSICAL SCIENCE</b>	<p>Energy</p> <ul style="list-style-type: none"> <li>Use evidence to construct an explanation relating the speed of an object to the energy of that object.</li> <li>Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.</li> <li>Ask questions and predict outcomes about the changes in energy that occur when objects collide.</li> <li>Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.</li> <li>Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.</li> </ul>	<p>1. Electricity and magnetism are related effects that have many useful applications in everyday life. As a basis for understanding this concept, students know:</p> <ol style="list-style-type: none"> <li>how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.</li> <li>how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.</li> <li>electric currents produce magnetic fields and know how to build a simple electromagnet.</li> <li>the role of electromagnets in the construction of electric motors, electric generators, and simple devices, such as doorbells and earphones.</li> <li>electrically charged objects attract or repel each other.</li> <li>that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other.</li> <li>electrical energy can be converted to heat, light, and motion.</li> </ol>
	<p>Waves</p> <ul style="list-style-type: none"> <li>Develop a model of waves to describe patterns of waves in terms of amplitude and wavelength, and that waves can cause objects to move.</li> <li>Generate and compare multiple solutions that use patterns to transfer information.</li> </ul>	

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<b>EARTH SCIENCE</b>	<p>Processes that Shape the Earth</p> <ul style="list-style-type: none"> <li>Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</li> <li>Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</li> <li>Analyze and interpret data from maps to describe patterns of Earth's features.</li> <li>Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</li> </ul>	<p>4. The properties of rocks and minerals reflect the processes that formed them. As a basis for understanding this concept, students know:</p> <ol style="list-style-type: none"> <li>how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).</li> <li>how to identify common rock-forming minerals (including quartz, calcite, feldspar, mica, and hornblende) and ore minerals by using a table of diagnostic properties.</li> </ol> <p>5. Waves, wind, water, and ice shape and reshape Earth's land surface. As a basis for understanding this concept:</p> <ol style="list-style-type: none"> <li>some changes in the earth are due to slow processes, such as erosion, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.</li> <li>natural processes, including freezing and thawing and the growth of roots, cause rocks to break down into smaller pieces.</li> <li>moving water erodes landforms, reshaping the land by taking it away from some places and depositing it as pebbles, sand, silt, and mud in other places (weathering, transport, and deposition).</li> </ol>

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<b>LIFE SCIENCE</b>	<ul style="list-style-type: none"> <li>Develop a model to describe that an object can be seen when light reflected from its surface enters the eye.</li> <li>Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</li> <li>Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways</li> </ul>	<p>2. All organisms need energy and matter to live and grow. As a basis for understanding this concept, students know:</p> <ol style="list-style-type: none"> <li>plants are the primary source of matter and energy entering most food chains.</li> <li>producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.</li> <li>decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.</li> </ol> <p>3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept, students know:</p> <ol style="list-style-type: none"> <li>ecosystems can be characterized by their living and nonliving components.</li> <li>that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</li> <li>many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.</li> <li>that most microorganisms do not cause disease and that many are beneficial.</li> </ol>

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<b>SCIENCE PROCESSES</b>	<ul style="list-style-type: none"> <li>The crosscutting concepts of patterns; cause and effect; energy and matter; systems and system models; interdependence of science, engineering, and technology; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas</li> <li>Demonstrate grade-appropriate proficiency in asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information.</li> </ul>	<p>5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.</p> <p>a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.</p> <p>b. Measure and estimate the weight, length, or volume of objects.</p> <p>c. Formulate and justify predictions based on cause-and-effect relationships.</p> <p>d. Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.</p> <p>e. Construct and interpret graphs from measurements.</p> <p>f. Follow a set of written instructions for a scientific investigation.</p>

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<b>ENGINEERING DESIGN GRADES 3-5</b>	<p>Students who demonstrate understanding can:</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 compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>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.</p>	