

3rd /4th / 5th Grade Essential Standards

Science- Based on State Key Content Standards compiled by the Pulliam Group

Strand	Standard 3 rd Grade	Standard 4 th Grade	Standard 5 th Grade
Physical Science	<p>1. Energy and matter have multiple forms and can be changed from one form to another.</p> <p>a. Students know that energy comes from the Sun to Earth in the form of light.</p> <p>b. Students know that sources of stored energy take many forms, such as food, fuel, and batteries.</p> <p>d. Students know that energy can be carried from one place to another by waves, such as water waves and sound waves, by electric current, and by moving objects.</p> <p>e. Students know that matter has three forms: solid, liquid, and gas.</p> <p>f. Students know that evaporation and melting are changes that occur when the objects are heated.</p> <p>2. Light has a source and travels in a direction.</p> <p>a. Students know that sunlight can be blocked to create shadows.</p> <p>b. Students know that light is reflected from mirrors and other surfaces.</p> <p>d. Students know that an object is seen when light traveling from the object enters the eye.</p>	<p>1. Electricity and magnetism are related effects that have many useful applications in everyday life.</p> <p>a. Students know how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.</p> <p>b. Students know how to build a simple compass and use it to detect magnetic effects, including Earth's magnetic field.</p> <p>c. Students know electric currents produce magnetic fields and know how to build a simple electromagnet.</p>	<p>1. Elements and their combinations account for all the varied types of matter in the world.</p> <p>a. Students know that during chemical reactions the atoms in the reactants rearrange to form products with different properties.</p> <p>b. Students know all matter is made of atoms, which combine to form molecules.</p> <p>c. Students know that metals have properties in common, such as high electrical and thermal conductivity. Some metals, such as aluminum (Al), iron (Fe), nickel (Ni), copper (Cu), silver (Ag), and gold (Au), are pure elements; other, such as steel and brass, are composed of a combination of elemental metals.</p>
Life Science	<p>3. Adaptations in physical structure or behavior may improve an organism's chance for survival.</p> <p>a. Students know that plants and animals have structures that serve different functions in growth, survival, and reproduction.</p> <p>b. Students know examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.</p> <p>d. Students know that when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.</p>	<p>2. All organisms need energy and matter to live and grow.</p> <p>a. Students know that plants are the primary source of matter and energy entering most food chains.</p> <p>b. Students know that 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.</p> <p>c. Students know that decomposers, including many fungi, insects and microorganisms, recycle matter from dead plants and animals.</p> <p>3. Living organisms depend on one another and on the environment for survival.</p> <p>a. Students know that ecosystems can be characterized by their living and nonliving components.</p> <p>b. Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.</p>	<p>2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.</p> <p>a. Students know that many multi-cellular organisms have specialized structures to support the transport of materials.</p> <p>b. Students know how blood circulates through the heart, lungs, and body and how carbon dioxide and oxygen are exchanged in the lungs and tissues.</p> <p>c. Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.</p>
Earth Science	<p>4. Objects in the sky move in regular and predictable patterns.</p> <p>a. Students know that the patterns of stars stay the same, although they appear to move across the sky nightly, and different stars can be seen in different seasons.</p> <p>b. Students know the way in which the Moon's appearance changes during the four-week lunar cycle.</p> <p>d. Students know that Earth is one of several planets that orbit the Sun and that the Moon orbits the Earth.</p> <p>e. Students know that the position of the Sun in the sky changes during the course of the day and from season to season.</p>	<p>4. The properties of rocks and minerals reflect the processes that formed them.</p> <p>a. Students know how to differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation (the rock cycle).</p> <p>5. Waves, wind, water, and ice shape and reshape Earth's land surface.</p> <p>a. Students know 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.</p> <p>c. Students know that moving water erodes landforms,</p>	<p>3. Water on Earth moves between the oceans and land through the processes of evaporation and condensation.</p> <p>a. Students know that most of Earth's water is present as salt water in the oceans, which cover most of Earth's surface.</p> <p>b. Students know that when liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.</p> <p>c. Students know that water vapor in the air moves from one place to another and can form fog or clouds, which are tiny droplets of water or ice, and can fall to Earth as rain, hail, sleet, or snow.</p>

		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).	<p>4. Air movements cause changing weather patterns.</p> <p>a. Students know that uneven heating of Earth causes air movements.</p> <p>b. Students know the influence that the ocean has on the weather and the role that the water cycle plays in weather patterns.</p> <p>d. Students know how to use weather maps and data to predict local weather and know that weather forecasts depend on many variables.</p> <p>5. The solar system consists of planets and other bodies that orbit the sun in predictable paths.</p> <p>a. Students know that the Sun, and average star, is the central and largest body in the solar system and is composed primarily of hydrogen and helium.</p> <p>b. Students know that the solar system includes the planet Earth, the Moon, the Sun, eight other planets and their satellites, and smaller objects such as asteroids and comets.</p>
Investigations and Experimentation	<p>d. Students will predict the outcome of a simple investigation and compare the result with the prediction.</p> <p>e. Students will collect data in an investigation and analyze those data to develop a logical conclusion.</p>	<p>b. Students will measure and estimate the weight, length, or volume of objects.</p> <p>e. Students will construct and interpret graphs from measurements.</p> <p>f. Students will follow a set of written instruction for a scientific investigation (or building project).</p> <p>From standards for grade five:</p> <p>a. Students will classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria.</p>	<p>c. Students will plan and conduct a simple investigation from a student-developed question and write instructions so others can carry out the procedure.</p> <p>f. Students will select appropriate tools and make quantitative observations.</p> <p>g. Students will record data by using appropriate graphic representations and make inferences based on those data.</p> <p>i. Students will write a report of an investigation that includes conducting test, collecting data or examining evidence, and drawing conclusions.</p>