



Fifth Grade Science

Description: In fifth grade students will formulate answers to questions focusing on systems. They will learn that objects and organisms do not exist in isolation and are connected to, interact with, and are influenced by each other.

Physical Sciences

<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Structure and Properties of Matter</u>	- Develop a model to describe that matter is made of particles too small to be seen (for example, show that matter is made of microscopic particles by adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, or evaporating salt water). (5-PS1-1) - Make observations and measurements to identify materials based on their properties (for example, identify various materials—such as baking soda and other powders, metals, minerals, and liquids—based on their color, hardness, reflectivity, electrical conductivity, thermal conductivity, solubility, and response to magnetic forces). (5-PS1-3)	Students will: Explore the properties of matter that can be seen and those that are too small to see.
<u>Gravity</u>	Support an argument that the gravitational force exerted by Earth on objects is directed down (for example, use evidence to show that an object near Earth's surface is drawn "down" to the center of the spherical planet due to its gravitational force). (5-PS2-1)	Students will: Use evidence to support the idea that gravitational force exerted by the Earth on objects is directed down.
<u>Conservation of Matter</u>	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 (for example, weigh a substance before and after it goes through a phase change, dissolves, or mixes with another substance to form a new one, and	Students will: Prove that matter is conserved by measuring



	then graph the results). (5-PS1-2)	and graphing the quantities of change.
<u>Chemical Reactions</u>	Conduct an investigation to determine whether the mixing of two or more substances results in new substances (for example, observe the mixing of two or more substances and decide whether a chemical reaction has occurred). (5-PS1-4)	Students will: Conduct an investigation and determine whether a new substance was created.
<i>Life Sciences</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	
<u>Matter and Energy in Organisms</u>	- 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 (for example, use diagrams and flowcharts to explain that the energy in animals' food originally came from the sun). (5-PS3-1) - Support an argument that plants get the materials they need for growth chiefly from air and water (for example, make and defend the claim that plant matter comes mostly from air and water, not soil). (5-LS1-1)	Students will: Explain the cycle of energy, from sun and plants to animals.
<u>Matter and Energy in Ecosystems</u>	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment (for example, create a model that shows the cycle of organisms changing matter that is not food [such as air, water, or decomposed materials in soil] into matter that is food, animals eating plants [or eating the animals that eat plants] for food, and then all organisms releasing waste matter [gas, liquid, or solid] back into the environment). (5-LS2-1)	Students will: Describe the transfer (movement) of matter among plants, animals, decomposers, and the environment. by creating a model.
<i>Earth and Space Science</i>		



<u>Reporting Topic</u>	<u>Grade Level Standards</u>	
<u>Humans and Earth Systems</u>	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment (for example, gather and synthesize information from books or other reliable media about ways individuals and communities use science to protect the Earth). (5-ESS3-1)	Students will: Identify how communities use science to protect Earth's resources and environment.
<u>The Solar System</u>	Represent data in graphical displays 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 (for example, display data in a bar graph, pictograph, or pie chart to reveal patterns of daily changes, such as the position and motion of Earth with respect to the sun, the length and direction of shadows, the length of day and night, and the seasonal appearance of some stars in the night sky). (5-ESS1-2)	Students will: Share data in a graph that reveals patterns of daily change in the length and direction of shadow, seasons, and stars
<u>The Universe and Stars</u>	Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth (for example, defend the claim that some stars seem brighter than others because of their relative distances from Earth, rather than their size). (5-ESS1-1)	Students will: Prove that sun and stars appear brighter based on their distances from Earth
<u>Water and Earth's Surface</u>	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 (for example, describe and graph the amounts [area and volume] and percentages of freshwater and overall water in various reservoirs on Earth [such as oceans, lakes, rivers, glaciers, groundwater, and polar ice caps] to provide evidence that most fresh water is in glaciers or underground, while only a tiny fraction is in streams, lakes, wetlands, and the atmosphere). (5-ESS2-2)	Students will: Graph and explain water distribution on Earth based on percentages of water and freshwater in reservoirs.
<u>Earth Systems</u>	Develop a model using an example to describe ways the geosphere,	Students will:



	biosphere, hydrosphere, and/or atmosphere interact (for example, create a model that uses an example to describe how Earth's systems interact). (5-ESS2-1)	Create a model showing the interactions between the geosphere, biosphere, hydrosphere, and/or atmosphere.
<i>Engineering</i>		
<u>Reporting Topics</u>	<u>Grade Level Standards</u>	
<u>Defining Problems</u>	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost (for example, define a simple design problem that includes constraints [available materials and resources that limit possible solutions to a problem] and criteria [the desired features of a solution that determine its success]). (5-ETS1-1)	Students will: Identify a simple design problem that can be solved and includes possible constraints.
<u>Designing Solutions</u>	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 (for example, after researching a problem, test different solutions by investigating how well they perform under a range of likely conditions, and communicate with peers about proposed solutions, understanding that shared ideas can lead to improved designs). (5-ETS1-2)	Students will: Generate possible solutions to a problem including constraints of the design.
<u>Evaluating and Testing Solutions</u>	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 (for example, design and conduct tests to identify failure points or difficulties in various design solutions, with the failure points and difficulties identifying the elements of the design that need to be improved and ultimately determining which solution best solves the problem given the criteria and the constraints). (5-ETS1-3)	Students will: Plan and carry out fair tests considering failure spots and variables in order to improve a prototype.