

Content: Science	Grade or Course: 5th Grade	Date Developed: May 2019
<p>Overview:</p> <p>In fifth grade, students are able to describe that matter is made of particles too small to be seen through the development of a model. Students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. Through the development of a model using an example, students are able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. They describe and graph data to provide evidence about the distribution of water on Earth. Students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment and that energy in animals' food was once energy from the sun. Students are expected to develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. Fifth grade students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate an understanding of the core ideas.</p>		
<p><u>Essential Questions:</u></p> <p>When matter changes, does its weight change? Can new substances be created by combining other substances? Where does the energy in food come from and what is it used for?</p> <p>How much water can be found in different places on Earth? How do lengths and directions of shadows or relative lengths of day and night change from day to day, and how does the appearance of some stars change in different seasons?</p> <p>How does matter cycle through ecosystems?</p>		
<p><u>EO's addressed to proficiency level:</u></p> <p>Asking Questions and Defining Problems:</p> <ol style="list-style-type: none"> Ask questions about what would happen if a variable were changed. Identify scientific (testable) and not-scientific (non-testable) questions. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. Use prior knowledge to describe problems that can be solved. Design a simple design problem that can be solved through the development of an object, tool, process, or system. <p>Planning and carrying out investigations:</p> <ol style="list-style-type: none"> Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence. 		

- b. Use fair tests in which variables are controlled and the numbers of trials considered.
- c. Evaluate appropriate methods and/or tools for collecting data.
- d. Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
- e. Make predictions about what would happen if a variables changes.
- f. Test different models of the same proposed object, tool, or process to determine which better meets criteria for success.

Analyzing and interpreting data:

- a. Represent data in tables and/or various graphical representations to reveal patterns that indicate relationships.
- b. Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
- c. Analyze data to refine a problem statement or design.
- d. Use data to evaluate and refine design solutions.

Mathematics and Computational Thinking:

- a. Organize simple data sets to reveal patterns that suggest relationships.
- b. Describe, measure, estimate, and/or graph quantities such as area, volume, weight, and the time to address scientific and engineering questions and problems.
- c. Create and/or use graphs and/or charts to compare alternative solutions to an engineering problem

Obtaining, evaluating, and communicating information:

- a. Read and comprehend grade-appropriate complex texts and/or reliable media to summarize, obtain scientific and technical ideas, and describe how they are supported by evidence.
- b. Combine information in written text with that contained in tables, diagrams, and/or charts to support.
- c. Obtain and combine information from books and/or reliable media to explain phenomena or solutions to a design problem.
- d. Communicate scientific and/or technical information orally, and/or in written format.

Standards:

Matter

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.

5-PS1-2. 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.

5-PS1-3. Make observations and measurements to identify materials based on their properties.

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances

5-PS3-1. 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.

Matter and Energy in Organisms and Ecosystems

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Earth's Systems

5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

5-ESS2-2. 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.

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Space Systems: Stars and the Solar System

5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.

5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.

5-ESS1-2. 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.

Units:

Earth and Sun
Mixtures and Solutions
Living Systems

Assessments:

TBD
Earth and Sun
Mixtures and Solutions
Living Systems