

**SCIENCE OVERVIEW**  
**GRADE: FIFTH**  
**Lemont-Bromberek CSD 113A**

*What is the story a fifth grader is able to tell by the end of the year?*

Our world can be investigated on many scales. When we look at our diverse and complex world our understandings are informed by investigating the scale, proportion and quantity of our observations. Scientists inform their understanding of the world by looking at various phenomenon through multiple and diverse scales. The world is an intricate system with interacting parts. Once we understand scale, proportion and quantity we can better understand the complex ways in which systems interact.

<b>UNITS of STUDY</b>	<b>SCIENTIFIC &amp; ENGINEERING PRACTICES</b> <i>The actual doing of science and engineering piques student interest</i>	<b>DISCIPLINARY CORE IDEAS</b> <i>Key ideas that build conceptually throughout the K-8 experience</i>	<b>CROSSCUTTING CONCEPTS</b> <i>Important themes that pervade science, engineering and mathematics</i>
<p style="text-align: center;"><b>LIFE SCIENCE</b>  <i>Matter and Energy in  Organisms and Ecosystems  Earth Systems</i></p>	<p><b>Developing and Using Models</b>  Develop a model to describe phenomena.</p> <p style="text-align: center;">Develop a model to describe a scientific principle.</p> <p><b>Engaging in Argument from Evidence</b>  Support an argument with evidence, data, or a model.</p> <p><b>Obtaining, Evaluating, and Communicating Information</b>  Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.</p> <p><b>Using Mathematics and Computational Thinking</b>  Describe and graph quantities such as area and volume to address scientific questions.</p>	<p><b>Earth Materials and Systems</b>  Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes.</p> <p>The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.</p> <p><b>Human Impacts on Earth Systems</b>  Human activities in agriculture, industry (acid rain), and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.</p> <p><b>The Roles of Water in Earth's Surface Processes</b>  Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.</p>	<p><b>Scale, Proportion, and Quantity</b>  Standard units are used to measure and describe physical quantities such as weight, and volume.</p> <p><b>Systems and System Models</b>  A system can be described in terms of its components and their interactions.</p> <p><b>Energy and Matter</b>  Matter is transported into, out of, and within systems.</p> <p>Energy can be transferred in various ways and between objects.</p>

<p><b>Life Science Continued</b></p>		<p><b>Energy in Chemical Processes and Everyday Life</b>  The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).</p> <p><b>Organization for Matter and Energy Flow in Organisms</b>  Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.</p> <p>Plants acquire their material for growth chiefly from air and water.</p> <p><b>Interdependent Relationships in Ecosystems</b>  The food of almost any kind of animal can be traced back to plants.</p> <p>Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil.</p> <p>Organisms can survive only in environments in which their particular needs are met.</p> <p>A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life.</p> <p>Newly introduced species can damage the</p>	
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<p><b>Life Science Continued</b></p>		<p>balance of an ecosystem.</p> <p><b>Cycles of Matter and Energy Transfer in Ecosystems</b> Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.</p>	
<p><b>PHYSICAL SCIENCE</b> <i>Structure and Properties of Matter</i></p>	<p><b>Developing and Using Models</b> Develop a model to describe phenomena.</p> <p><b>Planning and Carrying Out Investigations</b>  Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.</p> <p>Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.</p> <p><b>Using Mathematical and Computational Thinking</b> Measure and graph quantities such as weight to address scientific and engineering questions and problems.</p>	<p><b>Structures &amp; Properties of Matter</b>  Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model shows that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon; the effects of air on larger particles or objects.</p> <p>The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.</p> <p>Measurements of a variety of properties can be used to identify materials.</p>	<p><b>Cause and Effect</b>  Cause and effect relationships are routinely identified, tested, and used to explain change.</p> <p><b>Scale, Proportion, and Quantity</b>  Natural objects exist from the very small to the immensely large.</p> <p>Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.</p>

<p><b>EARTH/SPACE SCIENCE</b>  <i>Earth Systems: Processes That Shape the Earth</i></p>	<p><b>Analyzing &amp; Interpreting Data</b>  Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2)</p> <p><b>Engaging in Argument from Evidence</b>  Support an argument with evidence, data, or a model.</p>	<p><b>Types of Interactions</b>  The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center.</p> <p><b>The Universe and its Stars</b>  The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth.</p> <p><b>Earth and the Solar System</b>  The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.</p>	<p><b>Patterns</b>  Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.</p> <p><b>Cause and Effect</b>  Cause and effect relationships are routinely identified and used to explain change.</p> <p><b>Scale, Proportion, and Quantity</b>  Natural objects exist from the very small to the immensely large.</p>