

## Bemidji Area Schools

### Grade 4 Science Outcomes

Strand	Standard "Understand that ...	Code	Benchmark "The student will ...
Substrand			
<b>1. The Nature of Science and Engineering</b> 2. The Practice of Engineering	1. Engineers design, create, and develop structures, processes, and systems that are intended to improve society and may make humans more productive.	4.1.2.1.1	Describe the positive and negative impacts that the designed world has on the natural world as more and more engineered products and services are created and used.
	2. Engineering design is the process of identifying problems, developing multiple solutions, selecting the best possible solution, and building the product.	4.1.2.2.1	Identify and investigate a design solution and describe how it was used to solve an everyday problem. <i>For example:</i> Investigate different varieties of construction tools.
		4.1.2.2.2	Generate ideas and possible constraints for solving a problem through engineering design. <i>For example:</i> Design and build an electromagnet to sort steel and aluminum materials for recycling.
		4.1.2.2.3	Test and evaluate solutions, considering advantages and disadvantages for the engineering solution, and communicate the results effectively.
<b>1. The Nature of Science and Engineering</b> 3. Interactions Among Science, Engineering, Technology and Society	3. The needs of any society influence the technologies that are developed and how they are used.	4.1.3.3.1	Describe a situation in which one invention led to other inventions.
<b>2. Physical Science</b> 1. Matter	1. Objects have observable properties that can be measured.	4.2.1.1.1	Measure temperature, volume, weight and length using appropriate tools and units.
	2. Solids, liquids and gases are states of matter that each have unique properties.	4.2.1.2.1	Distinguish between solids, liquids and gases in terms of shape and volume. <i>For example:</i> Liquid water changes shape depending on the shape of its container.
		4.2.1.2.2	Describe how the states of matter change as a result of heating and cooling.

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<b>2. Physical Science</b> 3. Energy	1. Energy appears in different forms, including heat and electromagnetism.	4.2.3.1.1	Describe the transfer of heat energy when a warm and a cool object are touching or placed near each other.
		4.2.3.1.2	Describe how magnets can repel or attract each other and how they attract certain metal objects.
		4.2.3.1.3	Compare materials that are conductors and insulators of heat and/or electricity. <i>For example:</i> Glass conducts heat well, but is a poor conductor of electricity.
	2. Energy can be transformed within a system or transferred to other systems or the environment.	4.2.3.2.1	Identify several ways to generate heat energy. <i>For example:</i> Burning a substance, rubbing hands together, or electricity flowing through wires.
		4.2.3.2.2	Construct a simple electrical circuit using wires, batteries, and light bulbs.
		4.2.3.2.3	Demonstrate how an electric current can produce a magnetic force. <i>For example:</i> Construct an electromagnet to pick up paperclips.
<b>3. Earth Science</b> 1. Earth Structure and Processes	3. Rocks are an Earth material that may vary in composition.	4.3.1.3.1	Recognize that rocks may be uniform or made of mixtures of different minerals.
		4.3.1.3.2	Describe and classify minerals based on their physical properties. <i>For example:</i> Streak, luster, hardness, reaction to vinegar.

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<b>3. Earth Science</b> 2. Interdependence within the Earth system	3. Water circulates through the Earth's crust, oceans and atmosphere in what is known as the water cycle.	4.3.2.3.1	Identify where water collects on Earth, including atmosphere, ground, and surface water, and describe how water moves through the Earth system using the processes of evaporation, condensation and precipitation.
<b>3. Earth Science</b> 4. Human Interaction with Earth Systems	1. In order to maintain and improve their existence, humans interact with and influence Earth systems.	4.3.4.1.1	Describe how the methods people utilize to obtain and use water in their homes and communities can affect water supply and quality.
	2. Microorganisms can get inside one's body and they may keep it from working properly.	4.4.4.2.1	Recognize that the body has defense systems against germs, including tears, saliva, skin, and blood.
		4.4.4.2.2	Give examples of diseases that can be prevented by vaccination.