

## *First Grade Science*

**Science Content Standard 1. Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.**

Benchmark	Essential Learning Expectations	Essential Vocabulary
1. Develop the abilities necessary to safely conduct scientific inquiry, including (a step-by-step sequence is not implied): (a) asking questions about objects, events, and organisms in the environment, (b) planning and conducting simple investigations	<p><b>A. Record observations using the five senses</b></p> <p><b>B. Write a testable question with teacher guidance</b></p> <p><b>C. Follow appropriate safety rules</b></p> <p><b>D. Follow step-by-step directions in a simple guided investigation</b></p> <p><b>E. Identify the purpose of the investigation</b></p>	<p><b>procedure, question, testable, observation, investigation, experiment</b></p>
2. Select and use appropriate tools including technology to make measurements (including metric units) and represent results of basic scientific investigations	<p><b>A. Identify differences and similarities between customary and metric measuring tools</b></p> <p><b>B. Use tools to measure time, mass, volume, length, and temperature</b></p>	<p><b>metric, length, temperature, mass, volume, beaker, ruler, scale, thermometer, clock</b></p>
3. Use data to describe and communicate the results of scientific investigations	<p><b>A. Communicate observations made during inquiry process.</b></p>	
4. Use models that illustrate simple concepts and compare those models to the actual phenomenon	<p><b>Benchmark is addressed in grade 2</b></p>	
5. Identify a valid test in an investigation	<p><b>Benchmark is addressed in grade 3</b></p>	
6. Identify how observations of nature form an essential base of knowledge among the Montana American Indians	<p><b>A. Identify examples of Montana American Indians making use of natural resources</b></p> <p><b>B. Discuss Montana American Indians' explanations of the natural world</b></p>	<p><b>natural resources, natural world</b></p>

**Science Content Standard 2. Students, through the inquiry process, demonstrate the knowledge of properties, forms, changes and interactions of physical and chemical systems.**

<b>1. Create mixtures and separate them based on different physical properties (e.g., salt and sand, iron filings and soil, oil and water)</b>	<b>Benchmark is addressed in grade 2</b>	
<b>2. Examine, measure, describe, compare and classify objects in terms of common physical properties</b>	<b>A. Identify objects based on color, shape, size, texture, weight B. Describe objects based on their physical properties C. Sort objects based on their physical properties.</b>	<b>texture, weight</b>
<b>3. Identify the basic characteristics of light, heat, motion, magnetism, electricity, and sound</b>	<b>A. Observe and describe the behavior of light (refraction and reflection) B. Conduct simple experiments with light (shadows)</b>	<b>bent (refraction), bounced (reflection), shadow mirror, prism, magnifying lens</b>
<b>4. Model and explain that matter exists as solids, liquids, and gases and can change from one form to another</b>	<b>A. Define measurement B. Recognize simple measurement tools C. Select appropriate tools for measurement of matter D. Manipulate tools for measurement of matter</b>	<b>scale, balance, thermometer, beaker, measuring tape, ruler</b>
<b>5. Identify that the position of an object can be described by its location relative to another object and its motions described, and measured by external forces action upon it</b>	<b>Benchmark is addressed in grade 3</b>	
<b>6. Identify, build, and describe mechanical systems and the forces acting within those systems</b>	<b>Benchmark is addressed in grade 2 and 4</b>	
<b>7. Observe, measure and manipulate forms of energy:</b>	<b>Benchmark is addressed in grade 3</b>	

sound, light, heat, electrical, magnetic

**Science Content Standard 3. Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.**

<b>Benchmark</b>	<b>Essential Learning Expectations</b>	<b>Essential Vocabulary</b>
<b>1. Identify that plants and animals have structures and systems that serve different functions for growth, survival, and reproduction</b>	<b>Benchmark is addressed in grade 2</b>	
<b>2. Identify, measure, and describe basic requirements of energy and nutritional needs for an organism</b>	<b>A. Define herbivore and carnivore B. Classify herbivore/carnivore C. Define a food chain D. Illustrate a food chain</b>	<b>food chain, herbivore, carnivore</b>
<b>3. Describe and use models that trace the life cycles of different plants and animals and discuss how they are differ from species to species</b>	<b>Benchmark is addressed in grade 2</b>	
<b>4. Explain cause and effect relationships between nonliving and living components with ecosystems; and explain individual response to the changes in the environment including identifying differences between inherited,instinctual, and learned behaviors</b>	<b>Benchmark is addressed in grade 4</b>	
<b>5. Create and use a classification system to group a variety of plants and animals according to their similarities and differences</b>	<b>Benchmark is addressed in Grade 2</b>	

**Science Content Standard 4: Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space.**

Benchmark	Essential Learning Expectations	Essential Vocabulary
1. Describe and give examples of earth's changing features	A. Identify examples of land features B. Identify examples of water features	Earth, planet, star, sun, land, water, lake, pond, river, mountain, desert, valley, volcano, ocean
2. Describe and measure the physical properties of earth's basic materials (including soil, rocks, water and gases) and the resources they provide	Benchmark is addressed in grade 2	
3. Investigate fossils and make inferences about life, the plants, animals, and the environment at that time	Benchmark is addressed in grade 2	
4. Observe and describe the water cycle and the local weather and demonstrate how weather conditions are measured	A. Identify elements of weather B. Observe daily weather conditions	weather, temperature, wind, rain, snow, clouds
5. Identify seasons and explain the difference between weather and climate	Benchmark is addressed in grade 2	
6. Identify objects (e.g., moon, stars, meteors) in the sky and their patterns of movement and explain that light and heat comes from a star called the sun	A. Identify that there are objects in the sky, including stars, moon, and planets B. Identify the sun as a star C. Describe the cause of day and night as a result of the sun shining on Earth as it rotates D. Define a constellation as a group of stars that form a pattern E. Identify shapes of common constellations	star, moon, planet, day, night, rotate, light, dark, sky, Earth, sun, star, constellation, pattern, Big Dipper, North Star
7. Identify technology and methods used for space exploration (e.g., star patterns, space shuttles, telescopes)	A. Identify types of technology used to observe objects in space	telescope, satellite, space shuttle, star chart

**Science Content Standard 5: Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures and societies**

<b>Benchmark</b>	<b>Essential Learning Expectations</b>	<b>Essential Vocabulary</b>
<b>1. Describe and discuss examples of how people use science and technology</b>	<b>A. Identify technology as the knowledge, processes and products used to solve problems and make lives easier</b> <b>B. Identify technology in the school</b> <b>C. Explain how technology is used in the school</b>	<b>technology</b>
<b>2. Describe a scientific or technological innovation that impacts communities, cultures, and societies</b>	<b>Benchmark is addressed in grade 3</b>	
<b>3. Simulate scientific collaboration by sharing and communicating ideas to identify and describe problems</b>	<b>Benchmark is addressed in grade 4</b>	
<b>4. Use scientific knowledge to make inferences and propose solutions for simple environmental problems</b>	<b>A. Identify an environmental problem</b> <b>B. Discuss the scientific issues relevant to the environmental problem</b>	<b>environment, issue, problem</b>
<b>5. Create and use a classification system to group a variety of plants and animals according to their similarities and differences</b>	<b>A. Identify that a process can be a form of technology</b> <b>B. Identify examples of processes used by Montana American Indians that served as technology.</b>	<b>process, technology</b>

**Science Content Standard 6. Students understand historical developments in science and technology.**

Benchmark	Essential Learning Expectations	Essential Vocabulary
1. Give historical examples of scientific and technological contributions to communities, cultures and societies, including Montana American Indian examples	<b>Benchmark is addressed in grade 3</b>	
2. Describe how scientific inquiry has produced much knowledge about the world and a variety of contributions toward understanding events and phenomenon within the universe	<b>A. Identify that knowledge is gained through questioning and observations.</b>	<b>question, observe, knowledge</b>
3. Describe science as a human endeavor and an ongoing process	<b>A. Identify that everybody can do science.</b>	