

WYOMING SCIENCE CONTENT STANDARDS

GRADE 4 BENCHMARKS

1. CONCEPTS AND PROCESSES - *In the context of unifying concepts and processes, students develop a understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation. Concepts in LIFE SYSTEMS, EARTH and SPACE SYSTEMS, and PHYSICAL SYSTEMS are taught within the context of the following Unifying Concepts and Processes of Science:*

- Systems, classification, order and organization
- Evidence, models, and explanations
- Cycles and change over time
- Measurement
- Form and function

LIFE SYSTEMS

- **SC4.1.1** Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
- **SC4.1.2** Life Cycles of Organisms: Students sequence life cycles of living things, and recognize that plants and animals resemble their parents.
- **SC4.1.3** Organisms and Their Environments: Students show connections between living things, their basic needs, and the environments.

EARTH AND SPACE SYSTEMS

- **SC4.1.4** Properties of Earth Materials: Students investigate water, air, rocks, and soils to compare basic properties of earth materials.
- **SC4.1.5** Objects in the Sky: Students describe observable objects in the sky and their patterns of movement.
- **SC4.1.6** Changes in Earth and Sky: Students describe observable changes in earth and sky, including rapid and gradual changes to the earth's surface, and daily and seasonal changes in the weather.

PHYSICAL SYSTEMS

- **SC4.1.7** Properties of Objects: Students classify objects by properties that can be observed, measured, and recorded, including color, shape, size, weight, volume, texture, and temperature.
- **SC4.1.8** Changes in States of Matter: Students demonstrate that the processes of heating and cooling can change matter from one state to another.
- **SC4.1.9** Physical Phenomena: Students investigate physical phenomena commonly encountered in daily life, including light, heat, electricity, sound, and magnetism.

- **SC4.1.10** Position and Motion of Objects: Students demonstrate that pushing and pulling can change the position and motion of objects.

2. SCIENCE AS INQUIRY - *Students demonstrate knowledge, skills, and habits of mind necessary to safely perform scientific inquiry. Inquiry is the foundation for the development of content, teaching students the use of processes of science that enable them to construct and develop their own knowledge. Inquiry requires appropriate field, classroom, and laboratory experiences with suitable facilities and equipment.*

- **SC4.2.1** Students research answers to science questions and present findings through appropriate means.
- **SC4.2.2** Students use the inquiry process to conduct simple scientific investigations.
 - ~ Collect and organize data.
 - ~ Use data to construct simple graphs, charts, diagrams, and/or models.
 - ~ Draw conclusions and accurately communicate results, making connections to daily life.
 - ~ Pose or identify questions and make predictions.
 - ~ Conduct investigations to answer questions and check predictions.
- **SC4.2.3** Students identify and use appropriate scientific equipment.
- **SC4.2.4** Students properly use safety equipment and recognize hazards and safety symbols while practicing standard safety procedures.

3. HISTORY AND NATURE OF SCIENCE IN PERSONAL AND SOCIAL DECISIONS - *Students recognize the nature of science, its history, and its connections to personal, social, economic, and political decisions. Historically, scientific events have had significant impacts on our cultural heritage.*

- **SC4.3.1** Students recognize the nature and history of science.
 - ~ Discuss how scientific ideas change over time.
 - ~ Describe contributions of scientists.
- **SC4.3.2** Students recognize how scientific information is used to make decisions.
 - ~ Identify and describe local science issues, such as environmental hazards or resource management.
 - ~ Suggest feasible solutions and personal action plans to address an identified issue.

GRADE 8 BENCHMARKS

1. CONCEPTS AND PROCESSES - *In the context of unifying concepts and processes, students develop an understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation. Concepts in LIFE SYSTEMS, EARTH and SPACE*

SYSTEMS, and PHYSICAL SYSTEMS are taught within the context of the following Unifying Concepts and Processes of Science:

- Systems, classification, order and organization
- Evidence, models, and explanations
- Change, constancy, and measurement
- Evolution and equilibrium
- Form and function

LIFE SYSTEMS

- **SC8.1.1** Levels of Organization in Living Systems: Students model the cell as the basic unit of a living system. They realize that all functions that sustain life act within a single cell and cells differentiate into specialized cells, tissues, organs, and organ systems.
- **SC8.1.2** Reproduction and Heredity: Students describe reproduction as a characteristic of all living systems, which is essential to the continuation of species, and identify and interpret traits, patterns of inheritance, and the interaction between genetics and environment.
- **SC8.1.3** Evolution as a Theory: Students explain evolution as a theory and apply the theory to the diversity of species, which results from natural selection and the acquisition of unique characteristics through biological adaptation.
- **SC8.1.4** Diversity of Organisms: Students investigate the interconnectedness of organisms, identifying similarity and diversity of organisms through a classification system of hierarchical relationships and structural homologies.
- **SC8.1.5** Behavior and Adaptation: Students recognize behavior as a response of an organism to an internal or environmental stimulus and connect the characteristics and behaviors of an organism to biological adaptation.
- **SC8.1.6** Interrelationships of Populations and Ecosystems: Students illustrate populations of organisms and their interconnection within an ecosystem, identifying relationships among producers, consumers, and decomposers.

EARTH AND SPACE SYSTEMS

- **SC8.1.7** The Earth in the Solar System: Students describe Earth as the third planet in the Solar System and understand the effects of the sun as a major source of energy, gravitational forces, and motions of objects in the Solar System.
- **SC8.1.8** The Structure of the Earth System: Students examine the structure of the Earth, identifying layers of the Earth, considering plate movement and its effect, and recognizing landforms resulting from constructive and destructive forces.
- **SC8.1.9** The Earth's History: Students systematize the Earth's history in terms of geologic evidence, comparing past and present Earth processes and identifying catastrophic events and fossil evidence.

PHYSICAL SYSTEMS

- **SC8.1.10** The Structure and Properties of Matter: Students identify characteristic properties of matter such as density, solubility, and boiling point and understand that elements are the basic components of matter.
- **SC8.1.11** Physical and Chemical Changes in Matter: Students evaluate chemical and physical changes, recognizing that chemical change forms compounds with different properties and that physical change alters the appearance but not the composition of a substance.
- **SC8.1.12** Forms and Uses of Energy: Students investigate energy as a property of substances in a variety of forms with a range of uses.
- **SC8.1.13** The Conservation of Matter and Energy: Students identify supporting evidence to explain conservation of matter and energy, indicating that matter or energy cannot be created or destroyed but is transferred from one object to another.
- **SC8.1.14** Effects of Motions and Forces: Students describe motion of an object by position, direction, and speed, and identify the effects of force and inertia on an object.