

Billings Public Schools
Science
Sixth Grade

I. Space Systems

Students who demonstrate understanding can:

- A. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons (ESS1-1)
- B. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar systems (ESS1-2)
- C. Analyze and interpret data to determine scale properties of objects in the solar system (ESS1-3)

II. History of Earth

Students who demonstrate understanding can:

- A. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion year old history (ESS1-4)
- B. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales (ESS2-2)
- C. Analyze and interpret data on the distributions of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions (ESS2-3)

III. Earth's Systems

Students who demonstrate understanding can:

- A. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process (ESS2-1)
- B. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity (ESS2-4)
- C. Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes (ESS3-1)

*IEFA Standard

IV. Weather and Climate

Students who demonstrate understanding can:

- A. Collect data to provide evidence for how motions and complex interactions of air masses result in changes in weather conditions (ESS2-5)
- B. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates (ESS2-6)
- C. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century (ESS3-5)

V. Human Impacts

Students who demonstrate understanding can:

- A. Analyze and interpret data on hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects (ESS3-2)
- B. Apply scientific principles to design a method of monitoring and minimizing a human impact on the environment (ESS3-3)
- C. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems including indigenous populations *(ESS3-4)

VI. Engineering Design

Students who demonstrate understanding can:

- A. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account, relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions (ETS1-1)
- B. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem (ETS1-2)
- C. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success (ETS1-3)
- D. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved (ETS1-4)

*IEFA Standard