Alabama Science

Grade 6

Earth's Place in the Universe

Sun, Earth, and Moon

Patterns

1 Manipulate models to demonstrate the patterns of motion of the sun, Earth, and moon. 6.1

Sun, Earth, and Moon

Cause and Effect

The Solar System and the Universe

Patterns

2 Evaluate information to compare and contrast past and current views about the structure of the universe and show how these views have changed over time. 6.2

The Solar System and the Universe

Systems and System Models

3 Construct an evidence-based explanation of the role of gravity on the movement of natural and manmade objects within galaxies and the solar system. 6.3

The Solar System and the Universe

Scale, Proportion, and Quantity

4 Analyze and use data to determine scale properties and characteristics of objects in the solar system including sizes, distances, orbital periods, basic composition, and ability to support life. 6.4

Construct an evidence-based explanation of how the relative positions of the sun and Earth result in observable phenomena, including day and night cycles, length of year, an

a **Construct an evidence-based explanation of how the relative positions of the sun and Earth result in observable phenomena, including day and night cycles, length of year, and seasons.** 6.1.A

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Construct an evidence-based explanation of how the relative positions of the sun, moon, and Earth result in observable phenomena, including lunar cycles, eclipses, and tidal cycles. 6.1.B

b **Construct an evidence-based explanation of how the relative positions of the sun, moon, and Earth result in observable phenomena, including lunar cycles, eclipses, and tidal cycles.** 6.1.B

Earth's Systems: Materials and Processes

Earth's Processes

Cause and Effect

5 Obtain, evaluate, and communicate evidence that explains how constructive and destructive processes shape Earth's surface. 6.5

- a Develop and use models to demonstrate the processes that form rocks and cycle Earth's materials. 6.5.A
- b Construct an evidence-based explanation of how rocks are classified as metamorphic, igneous, or sedimentary based on their characteristics and the process of the rock cycle. 6.5.B
- c Develop and use models to demonstrate types of weathering, effects of agents of erosion and transportation, and the formation of environments of deposition. 6.5.C
- d Use research-based evidence to propose a scientific explanation of how the distribution of Earth's resources, including minerals, fossil fuels, and groundwater, results from ongoing geoscience processes. 6.5.D

Plate Tectonics

Energy and Matter

6 Construct an evidence-based explanation of how tectonic plate movement impacts Earth's surface over geological time. 6.6

- a Construct an evidence-based explanation of how Earth's internal energy flows between its surface and its interior. 6.6.A
- b Construct a scientific explanation of how the movement of lithospheric plates can cause major geologic events and form Earth's surface features, including convergent, divergent, and transform boundaries; earthquakes; and volcanoes. 6.6.B
- c Provide evidence of past plate movements, using data regarding the distribution of fossils, rocks, continental shapes, and seafloor structures. 6.6.C

7 Analyze data from rock strata and the fossil record to construct a chronology of occurrences in Earth's history. 6.7

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Ea **nergy Transfer**

and weather

Systems and System Models

8 Construct an evidence-based explanation of how the sun's energy drives the motion and cycling of water through the hydrosphere. 6.8

- a Plan and carry out an investigation to determine the differences in rates of energy transfer from the sun to air, to land, and to water via conduction, convection, and radiation. 6.8.A
- b Develop and use a model that illustrates how differences in heat and pressure affect density and the relationship between density and convection. 6.8.B

Weather

Stability and Change

9 Use data analysis to monitor and predict weather changes and the impact of weather events, including severe weather. 6.9

- a Obtain, evaluate, and communicate data that describes characteristics of air masses, including temperature, pressure, and humidity. 6.9.A
- b Construct an explanation of how air pressure, weather fronts, and air masses are related to weather events. 6.9.B
- c Design solutions to mitigate the impact of severe weather. 6.9.C

Climate

Patterns

10 Use observations and data from investigations to demonstrate how the sun, air, land, and water affect Earth's climate. 6.10

- a Develop models demonstrating how unequal heating and the rotation of the Earth cause local and global wind systems and oceanic currents. 6.10.A
- b Construct explanations of how the tilt and curvature of the Earth cause unequal heating of its surface, resulting in regional climates based on patterns of latitude. 6.10.B
- c Construct an explanation of how altitude, geothermal activity, and oceanic distribution of heat produce typical regional climate patterns. 6.10.C

Earth and Human Activity

Human Impact

Cause and Effect

11 Obtain, evaluate, and communicate information concerning the relationships between human activities and natural processes and how those relationships affect Earth's systems, including human population growth and its impact on the global environment over time. 6.11

- a Define problems and design solutions to monitor and mitigate human impact on the environment. 6.11.A