

SIXTH GRADE SCIENCE

Science and Engineering Practices

- Asking Questions or Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Analyzing and Interpreting Data
- Using Mathematics and Computational Thinking
- Constructing Explanations and Designing Solutions
- Engaging in Argument from Evidence
- Obtaining, Evaluating, and Communicating Information

Structure and Motion Within the Solar System: Develop and use models to describe patterns caused by the Sun-Earth-Moon System and to analyze the motions within and the scale of the Solar System.

- Develop and use a model of the Sun-Earth-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons.
- Develop and use a model to describe the role of gravity and inertia in orbital motions of objects in our solar system.
- Use computational thinking to analyze data and determine the scale and properties of objects in the solar system.

Energy Affects Matter: Develop models on the molecular level to explain the effect of thermal energy on states of matter and density.

- Develop models to show that molecules are made of different kinds, proportions and quantities of atoms.
- Develop a model to predict the effect of thermal energy on states of matter and density.
- Plan and carry out an investigation to determine the relationship between temperature, the amount of thermal energy transferred, and the change of average particle motion in various types or amounts of matter.
- Design an object, tool, or process that minimizes or maximizes thermal energy transfer.

Earth's Weather Patterns and Climate: Develop models to explain how Earth's atmosphere and the unequal heating of Earth causes patterns of weather and climate.

- Develop a model to describe how the cycling of water through Earth's systems is driven by thermal energy from the Sun, gravitational forces, and density.
- Investigate the interactions between air masses that cause changes in weather conditions to collect and analyze weather data to provide evidence for how air masses flow from regions of high pressure to low pressure causing a change in weather.
- Develop and use a model to show how unequal heating of the Earth's systems causes patterns of atmospheric and oceanic circulation that determine regional climates.
- Construct an explanation supported by evidence for the role of the natural greenhouse effect in Earth's energy balance, and how it enables life to exist on Earth.



Stability and Change in Ecosystems: Analyze data to construct an explanation describing how interactions occur within and between species that influence the flow of energy through an ecosystem and determine the stability of that system.

- Analyze data to provide evidence for the effects of resource availability on organisms and populations in an ecosystem and predict how changes in resource availability affects organisms in those ecosystems.
- Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- Construct an argument supported by evidence that the stability of populations is affected by changes to an ecosystem.
- Evaluate competing design solutions for preserving ecosystem services that protect resources and biodiversity based on how well the solutions maintain stability within the ecosystem.

