

New York State Science Learning Standards Exploring the Solar System

4th Grade

- **4-PS3-1.** Use evidence to construct an explanation relating the speed of an object to the energy of that object.
- **4-ESS3-1.** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- **4-PS4-2.** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

Cross-cutting concepts:

- Energy can be transferred in various ways and between objects. (4-PS3-1), (4-PS3-2), (4-PS3-3), (4-PS3-4)

5th Grade

- **5-PS1-3.** Make observations and measurements to identify materials based on their properties.
- **5-ESS2-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- **5-ESS1-1.** Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from Earth.
- **5-ESS1-2.** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Cross-cutting concepts:

- Natural objects exist from the very small to the immensely large. (5-PS1-4), (5-ESS1-1)
- Standard units are used to measure and describe physical quantities such as weight, temperature, time, and volume. (5-PS1-2), (5-PS1-3), (5-ESS2-2)
- Science assumes consistent patterns in natural systems. (5-PS1-2)



Middle School

- **MS-PS2-4.** Conduct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of the interacting objects and the distance between them.
- **MS-ESS1-1.** 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.
- **MS-ESS1-2.** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- **MS-ESS1-3.** Analyze and interpret data to determine scale properties of objects in the Solar System.
- **MS-ESS2-4.** Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity.

Cross-cutting concepts:

- Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. (MS-PS1-1), (MS-ESS1-3), (MS-ESS1-4), (MS-ESS2-2)
- Cause and effect relationships may be used to predict phenomena in natural systems. (MS-PS2-2), (MS-PS2-4), (MS-LS1-8), (MS-LS2-1), (MS-LS3-2), (MS-ESS3-1), (MS-ESS2-5), (MS-ESS3-4)
- Models can be used to represent systems and their interactions. (MS-PS3-2), (MS-ESS1-2), (MS-ESS2-6)
- Advances in technology influence the progress of science and science has influenced advances in technology. (MS-PS4-3)
- Patterns can be used to identify cause and effect relationships. (MS-LS4-2), (MS-ESS1-1)
- Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-ESS1-1), (MS-ESS1-2)