

New York State Science Learning Standards EXOPLANETS — Discovering New Worlds

Middle School

- **MS-PS2-2.** Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- **MS-PS2-4.** Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects and the distance between them.
- **MS-ESS1-2.** Develop and use a model to describe the role of gravity in motions within galaxies and the solar system.
- **MS-ESS1-3.** Analyze and interpret data to determine scale properties of objects in the solar system.

Disciplinary Core Ideas:

- PS2.A: Forces and Motion
- PS2.B: Types of Interactions
- PS4.B: Electromagnetic Radiation
- PS4.C: Information Technologies and Instrumentation
- ESS1.A: The Universe and Its Stars
- ESS1.B: Earth and the Solar System
- ESS3.A: Natural Resources

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Stability and Change
- Systems and System Models
- Scale, Proportion, and Quantity
- Interdependence of Science, Engineering, and Technology
- Science Addresses Questions About the Natural and Material World
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems

High School

- **HS-PS2-1.** Analyze data to support the claim that Newton's Second Law of Motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
- **HS-ESS1-3.** Communicate scientific ideas about the way stars, over their life cycle, produce elements.
- **HS-ESS1-4.** Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.
- **HS-ESS1-6.** Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.



High School (cont'd)

Disciplinary Core Ideas:

- PS2.A: Forces and Motion
- PS2.B: Types of Interactions
- PS4.C: Information Technologies and Instrumentation
- PS4.B: Electromagnetic Radiation
- ESS1.A: The Universe and Its Stars
- ESS1.B: Earth and the Solar System
- ESS1.C: The History of Planet Earth

Crosscutting Concepts:

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