

Key Idea 5:

Energy and matter interact through forces that result in changes in motion.

Students should be able to observe and describe relative positions between objects in their world. Exploring the observable effects of gravity and magnetism may help students develop an understanding of the reason for the direction of an object's motion. Manipulation and application of simple tools and machines may help students learn about the relationships between forces and motion.

PERFORMANCE INDICATOR 5.1 Describe the effects of common forces (pushes and pulls) of objects, such as those caused by gravity, magnetism, and mechanical forces.

Major Understandings:

5.1a The position of an object can be described by locating it relative to another object or the background (e.g., on top of, next to, over, under, etc.).

5.1b The position or direction of motion of an object can be changed by pushing or pulling.

5.1c The force of gravity pulls objects toward the center of Earth.

5.1d The amount of change in the motion of an object is affected by friction.

5.1e Magnetism is a force that may attract or repel certain materials.

5.1f Mechanical energy may cause change in motion through the application of force and through the use of simple machines such as pulleys, levers, and inclined planes.

PERFORMANCE INDICATOR 5.2 Describe how forces can operate across distances.

Major Understandings:

5.2a The forces of gravity and magnetism can affect objects through gases, liquids, and solids.

5.2b The force of magnetism on objects decreases as distance increases.