

6-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. [AR Clarification Statement: Examples of empirical evidence used in arguments could include a diagram, flowchart, or other representation of the energy before and after the transfer in the form of temperature changes or motion of an object.] [Assessment Boundary: Assessment does not include calculations of energy.]

Misconception 1: Kinetic energy is the only form of energy that matters when an object is moving.

How to address this misconception: Explain that kinetic energy is just one type of energy. Introduce other forms of energy, such as potential energy, thermal energy, and mechanical energy. Use examples such as a roller coaster to show how energy transforms from potential to kinetic and vice versa, emphasizing that energy can be transferred and converted between different types.

Misconception 2: When an object slows down, it loses all its energy.

How to address this misconception: Clarify that energy is not lost but rather transferred. Use a practical demonstration, like a ball rolling up a ramp, to illustrate how the ball converts kinetic energy to potential energy as it rises. Reinforce the idea that energy is conserved in a closed system, even if it changes forms.

Misconception 3: Energy transfer only occurs when an object is in motion.

How to address this misconception: Discuss scenarios where energy transfers occur without visible motion, such as when heating an object. Use everyday examples, such as warming hands by a fire or how a battery powers a toy without moving itself. This can help students understand that energy can be transferred in various ways, even when objects seem stationary.