Name _____

Unlocking Energy: Understanding Potential and Kinetic Energy

Open-Ended Response Answer Key

1. The law of conservation of energy states that energy cannot be created or destroyed, only converted from one form to another. In the context of potential and kinetic energy, as potential energy decreases (e.g., when an object falls), kinetic energy increases. For instance, a pendulum swinging exhibits this conservation as potential energy at the highest point is converted into kinetic energy at the lowest point.
2. As you swing on a playground swing, at the highest point, you have maximum potential energy, which is transformed into kinetic energy as you descend. At the lowest point, your kinetic energy is at its peak, and potential energy is minimal.
3. Practical applications of potential and kinetic energy include using the potential energy of water in hydroelectric power plants, and the kinetic energy of wind in wind turbines for electricity generation. Additionally, vehicles like cars and bicycles convert chemical potential energy in fuel into kinetic energy for motion.
4. To create an exciting and safe roller coaster, I would design steep hills for potential energy build-up and thrilling descents for kinetic energy release. High-quality brakes would ensure safety during rapid descents, and well-designed curves would maintain passenger comfort.