

Energy, Work, & Simple Machines

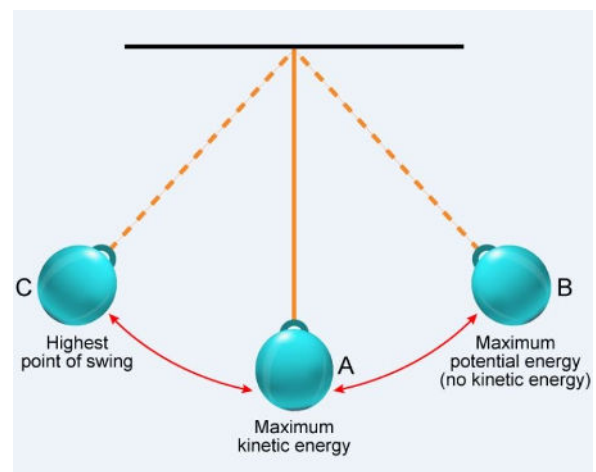
Section 2: Conservation of Energy

Energy can change from one form into another. This process is called an energy transformation. For example, electrical energy in a light bulb changes into light energy so you can see. Some of the electrical energy also changes into thermal energy, which is why a light bulb feels warm after being on for a while.

Mechanical energy is the sum of a system's kinetic and potential energy. It depends on both the motion and the position of an object. The **law of conservation of energy** states that energy cannot be created or destroyed, but it can change from one form into another. Energy is always conserved, even when it transfers between objects or changes forms.

A swing is a good example of conservation of energy. At the highest point of the swing, the rider has the greatest amount of gravitational potential energy and very little kinetic energy because the swing is moving slowly. As the swing moves downward, potential energy changes into kinetic energy. At the bottom of the swing, kinetic energy is at its greatest because the rider is moving the fastest, while potential energy is lower. As the swing continues to move, friction and air resistance slowly convert some of the mechanical energy into thermal energy. Because some energy is transferred to the surroundings as heat, the swing gradually slows down and eventually stops.

The law of conservation of energy can also be seen in a campfire. Wood contains chemical potential energy stored in its chemical bonds. When the wood burns, the stored energy converts into thermal and light energy. The thermal energy from the fire can then be used to cook food, such as roasting marshmallows for s'mores.



Review:

1. What is mechanical energy?
2. Explain the law of conservation of energy.