

8D Energy Conversions—Extra Practice

Read:

You have learned that the amount of energy in the universe is constant and that in any situation requiring energy, all of it must be accounted for. This is the basis for the law of conservation of energy. In this skill sheet you will analyze different scenarios in terms of what happens to energy. Based on your experience with the CPO energy car, you already know that potential energy can be changed into kinetic energy and vice versa.

As you study the scenarios below, specify whether kinetic energy is being changed to potential energy, potential is being converted to kinetic, or neither. Explain your answers.

For each scenario, see if you can also answer the following questions: Are other energy conversions occurring? In each scenario, where did all the energy go?

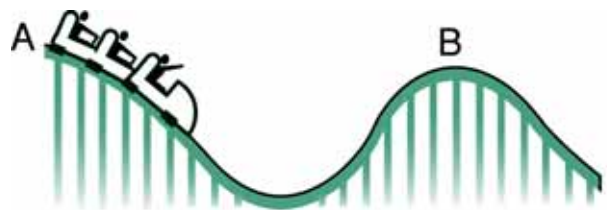
Example:

- A roller coaster car travels from point A to point B.

Solution:

First, potential energy is changed into kinetic energy when the roller coaster car rolls down to the bottom of the first hill. But when the car goes up the second hill to point B, kinetic energy is changed to potential energy.

Some energy is lost to friction. That is why point B is a little lower than point A.



Practice:

- A bungee cord begins to exert an upward force on a falling bungee jumper.



2. A football is spiraling downward toward a football player.



3. A solar cell is charging a battery.



Energy Scenarios

Read each scenario below. Then complete the following for each scenario:

- Identify which of the following forms of energy are involved in the scenario: **mechanical, radiant, electrical, chemical, and nuclear.**
- Make an *energy flow diagram* that shows how the energy changes from one form to another, in the correct order. Use a separate paper and colored markers to make your diagrams more interesting.

Example:

- In Western states, many homes generate electricity from windmills. In a particular home, a young boy is using the electricity to run a toy electric train.



Solution:

Mechanical energy of the windmill is changed to electrical energy which is changed to the mechanical energy of the toy train.

Practice:

1. A camper is using a wood fire to heat up a pot of water for tea. The pot has a whistle that lets the camper know when the water boils.



2. The state of Illinois generates some of its electricity from nuclear power. A young woman in Chicago is watching a broadcast of a sports game on television.



3. A bicyclist is riding at night. He switches on his bike's generator so that his headlight comes on. The harder he pedals, the brighter his headlight glows.

