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## Different Forms of Energy

The examples of energy you have read about so far involve objects being moved or physically changed. But both kinetic energy and potential energy have a variety of different forms. **Some of the major forms of energy are mechanical energy, thermal energy, chemical energy, electrical energy, electromagnetic energy, and nuclear energy.**

**Mechanical Energy** The school bus you ride in, a frog leaping through the air, and even the sounds you hear all have mechanical energy. **Mechanical energy** is the energy associated with the motion or position of an object. Mechanical energy can occur as kinetic energy or potential energy.

**Thermal Energy** All matter is made up of small particles, called atoms and molecules. These particles have both potential energy and kinetic energy due to their arrangement and motion. **Thermal energy** is the total energy of the particles in an object. When the thermal energy of an object increases, its particles move faster, making it feel warm to the touch. Ice cream melts when its thermal energy increases.

**Chemical Energy** Chemical compounds, such as chocolate, wood, and wax, store **chemical energy.** Chemical energy is potential energy stored in chemical bonds that hold chemical compounds together. Chemical energy is stored in the foods you eat and in a match that is used to light a candle. Chemical energy is even stored in the cells of your body.

**Electrical Energy** When you receive a shock from a metal doorknob, you experience electrical energy. Moving electric charges produce electricity, or **electrical energy.** You rely on electrical energy from batteries or power lines to run electrical devices such as radios, lights, and computers.

**Electromagnetic Energy** The light that you see each day is a form of **electromagnetic energy.** Electromagnetic energy travels in waves. These waves have some electrical properties and some magnetic properties. In addition to visible light, ultraviolet radiation, microwaves, and infrared radiation are all examples of electromagnetic energy.

**Nuclear Energy** Another type of potential energy, called **nuclear energy,** is stored in the core, or nucleus, of an atom. One kind of nuclear reaction occurs when a nucleus splits (nuclear fission). Another kind occurs when nuclei fuse, or join together (nuclear fusion). These reactions release tremendous amounts of energy. Nuclear power plants use fission reactions to produce electricity. Nuclear fusion occurs in the sun and other stars.

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## Section 1 Review

1. Are energy and work the same thing? Explain.
2. How are kinetic and potential energy different?
3. List the forms of energy and give an example of each.
4. **Thinking Critically** **Problem Solving** A boulder that weighs 200 N is poised at the edge of a 100-meter cliff. What is its gravitational potential energy? Draw a diagram showing how its potential energy changes as it falls to 50 m, 20 m, and 10 m.

**Check Your Pr**
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