

**Lesson Outline****LESSON 2****Energy Transformations and Work****A. Energy Transformations**

1. When energy is converted from one form to another, a(n) \_\_\_\_\_ has occurred.
2. Energy is \_\_\_\_\_ when it moves from one \_\_\_\_\_ to another.

**B. Energy Conservation**

1. The statement that energy can be transformed from one form to another, but it cannot be created or destroyed is called the law of \_\_\_\_\_.
2. The total amount of \_\_\_\_\_ in the universe does not change, but it can change \_\_\_\_\_.
3. The energy transformations that occur on a roller coaster include the change from \_\_\_\_\_ energy to \_\_\_\_\_ energy as you travel to the top of a big hill and from gravitational \_\_\_\_\_ to kinetic energy as you descend the hill.
4. The energy transformations that occur in the human body include the transformation of \_\_\_\_\_ energy in the bonds in \_\_\_\_\_ of the food people eat into energy for \_\_\_\_\_, temperature control, and other life processes.
5. Plants carry out \_\_\_\_\_; in this process, the plants change \_\_\_\_\_ energy from the Sun into \_\_\_\_\_ energy in molecular bonds.
  - a. With time and \_\_\_\_\_, ancient plants that had been buried under sediments turned into \_\_\_\_\_.
  - b. When fossil fuels are burned in power plants, the \_\_\_\_\_ energy in the molecules of the plants is transformed into \_\_\_\_\_ energy people use in schools and their homes.

**C. Energy and Work**

1. The transfer of energy that occurs when a force makes an object or a particle move is called \_\_\_\_\_.

### Lesson Outline continued

2. A(n) \_\_\_\_\_ is a push or a pull; if you move an object, the object gains \_\_\_\_\_ energy because it is moving; it may also gain gravitational \_\_\_\_\_ energy, depending on its position.
3. If you hold an object in place, you are not doing \_\_\_\_\_ on the object; to do work on an object, the object must \_\_\_\_\_ in the direction of the \_\_\_\_\_.
4. The amount of work done on an object depends on the size of the \_\_\_\_\_ applied to the object; the \_\_\_\_\_ the force, the more work done.
5. The amount of work done on an object depends on the \_\_\_\_\_ the object moves during the time the \_\_\_\_\_ is applied to the object.
6. The \_\_\_\_\_ for calculating the amount of work done on an object involves multiplying the \_\_\_\_\_ times the \_\_\_\_\_ the object moves in the \_\_\_\_\_ of the force while the force is being applied.
7. In the work equation, the force is measured in \_\_\_\_\_, the distance is measured in \_\_\_\_\_, and work is measured in \_\_\_\_\_, which are also called joules.

#### D. Energy and Heat

1. \_\_\_\_\_ is a force between two surfaces that are in \_\_\_\_\_ with each other.
2. The \_\_\_\_\_ of the force of friction is opposite the direction of \_\_\_\_\_ of the object.
3. Friction transforms some of the energy of the moving object into \_\_\_\_\_ energy.
4. In energy \_\_\_\_\_ and energy transfers, some energy is transformed into \_\_\_\_\_ energy; if this energy moves from a region where the \_\_\_\_\_ is higher to a region where the temperature is lower, the energy is sometimes called heat or \_\_\_\_\_ energy.