

Chapter 15 Energy

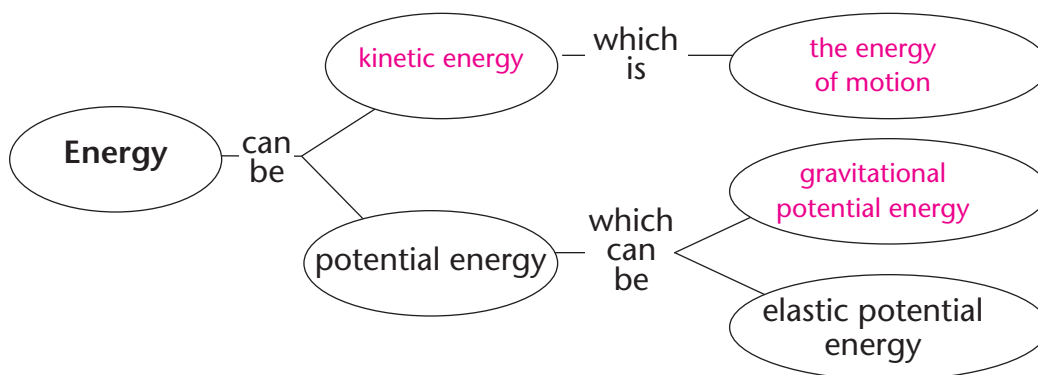
## Section 15.1 Energy and Its Forms

(pages 446–452)

*This section describes how energy and work are related. It defines kinetic energy and potential energy, and gives examples for calculating these forms of energy. It also discusses examples of various types of energy.*

### Reading Strategy (page 446)

**Building Vocabulary** As you read, complete the concept map with vocabulary terms and definitions from this section. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.



### Energy and Work (page 447)

1. What is energy? Energy is the ability to do work.
2. When work is done on an object, \_\_\_\_\_ is transferred to that object. Circle the correct answer.  
 energy     heat     height
3. Circle the letter of each sentence that is true about work and energy.
  - a. Energy in food is converted into muscle movement.
  - b. Both work and energy are usually measured in joules.
  - c. One joule equals one meter per newton.

### Kinetic Energy (pages 447–448)

4. The energy of motion is called kinetic energy.
5. Is the following sentence true or false? You can determine the kinetic energy of an object if you know its mass and its volume. false

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6. Circle the letter of the formula used to calculate an object’s kinetic energy.

- a. Kinetic energy =  $\frac{1}{2} mv^2$
- b. Kinetic energy =  $mv^2$
- c. Kinetic energy =  $\frac{v^2}{m}$

**Potential Energy (pages 448–450)**

7. What is potential energy? It is energy that is stored as a result of position or shape.

8. Is the following sentence true or false? The work done by a rock climber going up a cliff decreases her potential energy.

false

9. An object’s gravitational potential energy depends on its \_\_\_\_\_, its \_\_\_\_\_, and the acceleration due to gravity. Circle the correct answers.

- height      mass      size

10. Is the following sentence true or false? Gravitational potential energy of an object increases as its height increases. true

11. The potential energy of an object that is stretched or compressed is known as elastic potential energy.

**Forms of Energy (pages 450–452)**

For numbers 12 through 17, write the letter of the form of energy that best matches the description.

Descriptions	Forms of Energy
<u>b</u> 12. Energy stored in gasoline, coal, and wood	a. mechanical energy
<u>a</u> 13. The sum of an object’s potential energy and kinetic energy, excluding atomic-scale movements	b. chemical energy
<u>e</u> 14. Produces the sun’s heat and light	c. electrical energy
<u>f</u> 15. Travels through space in the form of waves	d. thermal energy
<u>c</u> 16. Produces lightning bolts	e. nuclear energy
<u>d</u> 17. Increases as atoms within an object move faster	f. electromagnetic energy