

Name _____

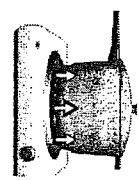
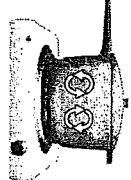
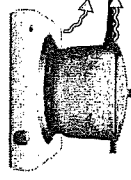
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Applying Knowledge
Section 10.1

Use with textbook pages 427-431.

Thermal energy transfer

1. Using the illustrations, complete the following table.

| | Type of thermal energy transfer | What is happening in the diagram |
|--|---------------------------------|----------------------------------|
|  | | |
|  | | |
|  | | |

2. What materials are good thermal conductors?

3. Give three examples of materials that are considered to be insulators.

4. Explain what causes the movement of the liquid in a lava lamp.

5. What is radiant energy?

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Assessment
Section 10.1

Temperature, thermal energy, and heat

Use with textbook pages 424-431.

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

| Term | Descriptor |
|-----------------------------|--|
| 1. conduction | A. the transfer of thermal energy within a fluid and with the movement of fluid from one place to another |
| 2. convection | B. the theory that all matter is composed of particles moving constantly in random directions |
| 3. electromagnetic spectrum | C. the transfer of energy by waves travelling outward in all directions from a source |
| 4. heat | D. the transfer of thermal energy from one substance to another or within a solid by direct contact of particles |
| 5. kinetic energy | E. the total energy of all the particles in a solid, liquid, or gas |
| 6. kinetic molecule theory | F. a measure of the average kinetic energy of all the particles in a sample of matter |
| 7. temperature | G. the transfer of thermal energy from an area or object of high temperature to an area or object of low temperature |
| 8. thermal energy | H. the energy of a particle or object due to its motion. |

Circle the letter of the best answer.

9. As the temperature of an object decreases, the kinetic energy of the object

- A. decreases
- B. increases
- C. remains the same
- D. fluctuates

10. Which of the following best describes heat?

- A. stored energy of an object
 - B. transfer of thermal energy
 - C. energy of a particle due to its motion
 - D. total energy of all particles involved
11. A temperature reading of 273° Kelvin is equivalent to
- A. 0°C
 - B. 100°C
 - C. 212°F
 - D. -459°F

12. Which type of thermal energy accounts for the movement of clouds?

- A. heat
- B. conduction
- C. convection
- D. radiation

13. Which of the following are sources of thermal energy?

| | |
|------|-------------------|
| I. | Earth's formation |
| II. | radioactive decay |
| III. | humans |

- A. I only
- B. II only
- C. I and II only
- D. I, II, and III

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Illustrating Concepts
Section 10.1

Use with textbook pages 424-431.

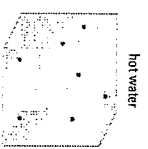
Kinetic molecular theory and temperature

1. Define the term kinetic energy.
2. Complete the following table by describing the three states of matter in terms of the space between the particles, speed of movement of the particles, and relative amount of kinetic energy.

| | Solid | Liquid | Gas |
|-----------------------------|--|--|--|
| spaces between particles |  |  |  |
| movement of particles | | | |
| kinetic energy of particles | | | |

3. Define the term temperature.

4. In the diagrams below, draw arrows to show how fast the water molecules are moving and in what direction they move in hot and cold water.



5. Three different scales are used to measure temperature. Complete the table below comparing the measurements for absolute zero, freezing of water, and boiling of water on the various scales.

| | Fahrenheit | Celsius | Kelvin |
|---------------|------------|---------|--------|
| absolute zero | | | |
| water freezes | | | |
| water boils | | | |

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Comprehension
Section 10.1

Use with textbook pages 426-431.

Thermal energy, kinetic energy, potential energy

1. What is thermal energy?

2. What is kinetic energy?

3. What is potential energy?

4. What happens to the thermal energy of an object as its temperature rises?

5. What happens to molecules as their kinetic energy increases?

6. What happens to molecules as their potential energy increases?

7. What is heat?

8. Give an example that illustrates the above definition of heat.

9. State three ways in which thermal energy is transferred.

