Name Date Class

Directed Reading for Content Mastery

Section 1 ▪ Temperature and Thermal Energy
Section 2 ▪ States of Matter

Directions: *Match the term in column I with the definition in column II. Write the letter of the correct definition in the blank at left.*

Column I	Column II
_____ 1. kinetic theory of matter	**a.** a measure of the average kinetic energy of the particles of an object
_____ 2. plasma	**b.** state of matter with no definite shape but with definite volume
_____ 3. temperature	**c.** thermal energy needed to change 1 kg of a solid to a liquid at the melting point
_____ 4. heat	**d.** thermal energy needed to change 1 kg of a liquid to a gas at the boiling point
_____ 5. solid	**e.** state of matter that has no definite shape and no definite volume
_____ 6. heat of vaporization	**f.** all matter contains particles that are always in random motion
_____ 7. specific heat	**g.** state of matter with definite shape and definite volume
_____ 8. thermal energy	**h.** state of matter without a definite shape or volume made of charged particles
_____ 9. liquid	**i.** thermal energy that flows from a higher temperature to a lower temperature
_____ 10. gas	**j.** thermal energy needed to raise the temperature of 1 kg of a material 1°C
_____ 11. heat of fusion	**k.** sum of the kinetic and potential energy of the particles in a material

Meeting Individual Needs

Name Date Class

SECTION 1 Reinforcement

Temperature and Thermal Energy

Directions: *Determine whether the italicized term makes each statement true or false. If the statement is true, write* **true** *in the blank. If the statement is false, write in the blank the term that makes the statement true.*

_____ 1. Particles that make up matter are in *constant* motion.

_____ 2. The faster particles move, the *less* kinetic energy they have.

_____ 3. *Temperature* is the measure of the average kinetic energy of the particles in an object.

_____ 4. When temperature *increases*, the average kinetic energy of the particles decreases.

_____ 5. The thermal energy of an object is the *total* energy of the particles in a material.

_____ 6. A *thermometer* is used to measure the specific heat of a material.

_____ 7. Thermal energy flows from a *higher* temperature to a lower temperature.

_____ 8. Heat is measured in *newtons*.

_____ 9. The same amount of different materials need *the same* amount of heat to have the same change in temperature.

_____ 10. The amount of energy it takes to raise the temperature of 1 kg of a material 1 kelvin is the *specific heat* of the material.

_____ 11. Water has a relatively *low* specific heat.

_____ 12. Materials with a high specific heat can absorb a lot of energy and show *little* change in temperature.

Directions: *Answer the following questions about the thermal energy equation.*

13. Change in thermal energy can be calculated using the equation $Q = m \times (T_f - T_i) \times C$.

a. In this equation, what does Q represent? _____

b. What does m represent? _____

c. What does T_f represent? _____

d. What does T_i represent? _____

e. What does C represent? _____

Meeting Individual Needs

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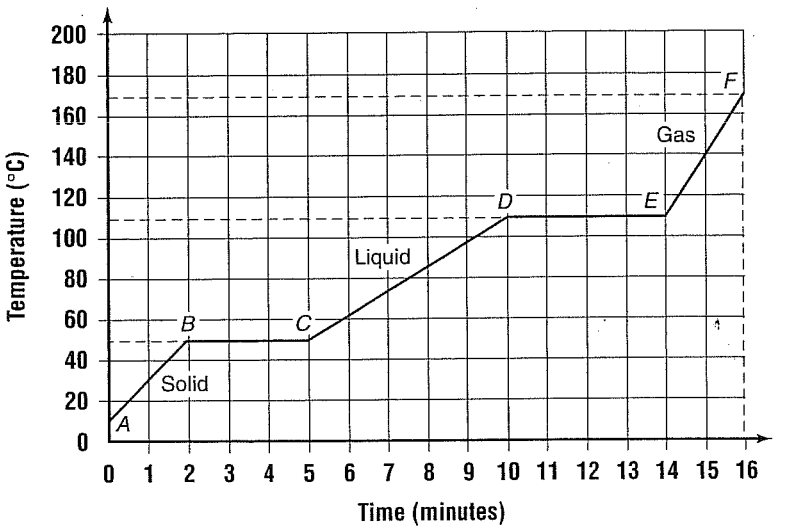
SECTION 2 Reinforcement

States of Matter

Directions: *Look carefully at the graph. It was drawn from the data collected when a substance was heated at a constant rate. To heat at a constant rate means to add heat evenly as time passes. Use the graph to complete the paragraphs that follow.*



At the start of observations, Point A, the substance exists in the **1.** _____ state. The temperature at this point is **2.** _____. As energy is absorbed, the temperature of the substance rises at a constant rate for two minutes. At Point B, the temperature is **3.** _____, and the solid begins to **4.** _____. The temperature remains constant until the change from solid to **5.** _____ is complete. It has taken three minutes to add enough energy to melt the solid completely. From Point C to Point D, the substance is in the **6.** _____ state. Its temperature rises at a constant rate to **7.** _____. The temperature remains constant while the liquid changes to a **8.** _____. At Point E, the substance exists as a **9.** _____. Its temperature rises as energy is added.

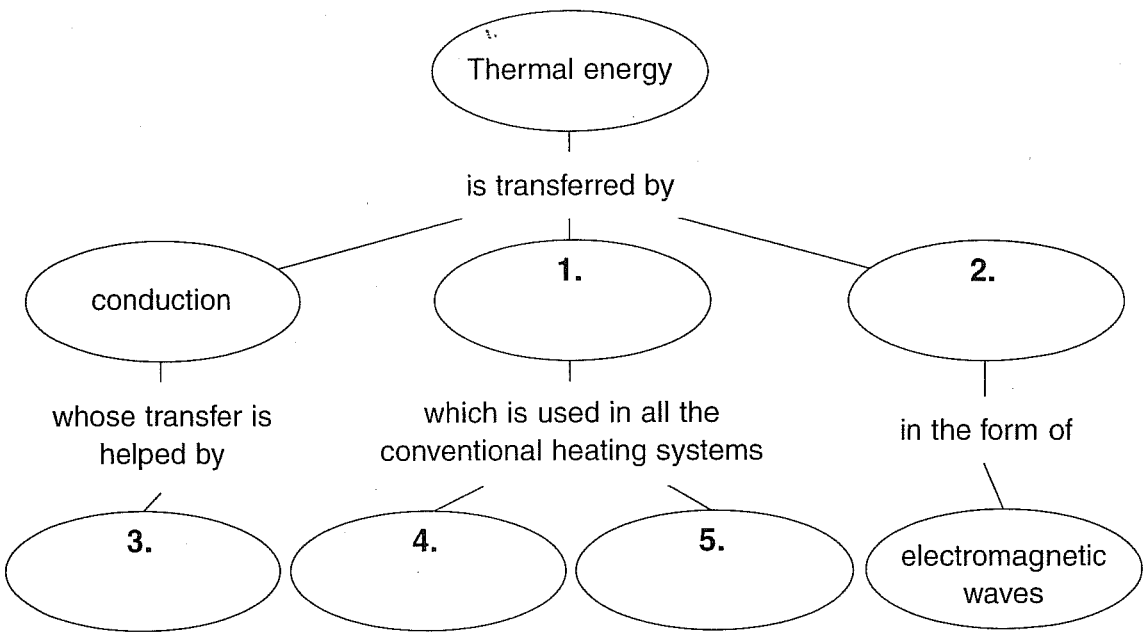
When the gas cools, it releases energy. The cooling curve will be the reverse of the warming curve. Energy will be released as the substance changes from a **10.** _____ to a **11.** _____ and also from a **12.** _____ to a **13.** _____. The amount of energy released during condensation will be the same as the amount absorbed during vaporization.

Directed Reading for Content Mastery

Overview
Heat and States of Matter

Directions: *Complete the concept map using the terms listed below.*

radiation **forced-air** **electrical** **conductors** **convection**



Directions: *Complete the concept map using the terms listed below.*

particles **liquids** **define shape and volume** **gases**