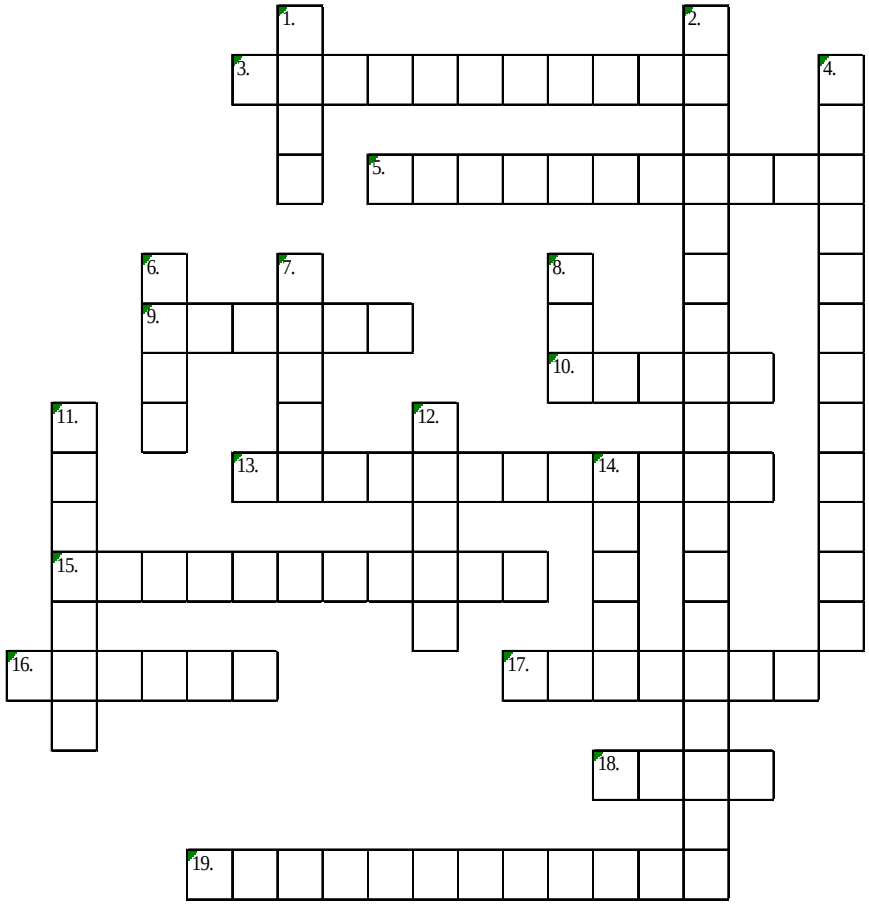
NAME_____ DATE_____ CLASS_____

# STUDY GUIDE Chapter 16

## Changes in State

*Solve the following crossword puzzle by using the clues provided.*



**Across**

3. The state of a material depends on this.
5. change of a solid directly to a gas
9. When ice melts, the particles of solid water _____ energy.
10. gaseous water
13. energy needed to change a material from solid to liquid (3 words)
15. change of a liquid to gas below the boiling point
16. has definite volume but no definite shape
17. The temperature of a substance is the _____ kinetic energy of its particles.
18. to change from a liquid to a gas at temperatures above those normal to the liquid state
19. process that occurs during boiling

**Down**

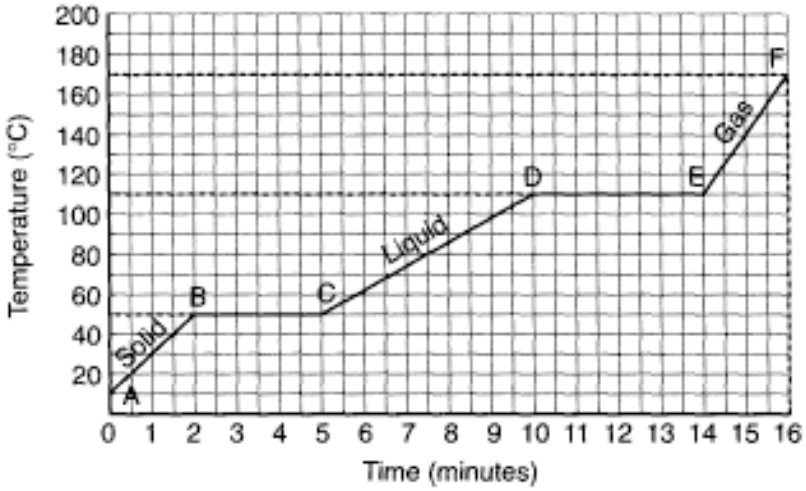
1. to change from solid to liquid
2. energy needed to change a material from liquid to gas (3 words)
4. occurs when a gas cools and changes to a liquid
6. Liquids have a definite volume and _____ .
7. a unit of heat
8. no definite shape, no definite volume
11. theory used to explain changes of state
12. has a definite volume and shape
14. determined by motion and spacing of particles

NAME_____ DATE_____ CLASS_____

# REINFORCEMENT Chapter 16

## Changes in State

*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_____ state. The temperature at this point is _____ . As energy is _____ , the temperature of the substance rises at a constant rate for two minutes. At Point B, the temperature is _____ , and the solid begins to _____ . The temperature remains constant until the change from solid to _____ 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 _____ state. Its temperature rises at a constant rate to _____ . The temperature remains constant while the liquid changes to a _____ . At Point E, the substance exists as a _____ . Its temperature rises _____ as energy is added.

When the gaseous substance is allowed to cool, it _____ energy. The cooling curve will be the reverse of the warming curve. Energy will be released as the substance changes from a _____ to a _____ and also from a _____ to a _____ . The amount of energy released during condensation will be the same as the amount _____ during vaporization.