Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

P. \_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CHAPTER 3 SECTION 2: CHANGES OF STATE pages 68-73**

INTRO PARAGRAPH (p. 68)

1. When a substance changes from one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form to another, we say the substance has had a change of state.

2. List the five changes of state. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

ENERGY AND CHANGES OF STATE (p. 68)

3. What changes during a change of state— *the identity of the substance* or the e*nergy level*? (Circle one)

4. Temperature is the measure of the speed of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. One type of transfer of energy is \_\_\_\_\_\_\_\_\_\_ which can lead to a change of state.

6. Which has the most energy?

a. particles in steam c. particles in ice

b. particles in liquid water d. particles in freezing water

MELTING: SOLIDS TO LIQUIDS (p. 69)

7. Could you use gallium to make jewelry? Why or why not?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a characteristic property because it is the same for different amounts of the same substance.

9. If I had a ten-pound block of chocolate and a 1 ounce piece of chocolate, would they start melting at the same time? Yes or No (Circle one)

FREEZING: LIQUIDS TO SOLIDS (p. 69

10. A substance’s freezing point is the temperature at which it changes from a \_\_\_\_\_\_\_\_\_\_

to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. What happens if energy is added or removed from the ice water in Figure 15?

If energy is added, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. If energy is removed, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. Freezing is considered an exothermic change because energy is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

from the substance.

VAPORIZATION: LIQUIDS TO GASES (p. 70)

Choose the term in column B that best matches the description in Column A, and write the corresponding letter in the space provided.

|  |  |
| --- | --- |
| Column A | Column B |
| \_\_\_\_ 13. Vaporization at the surface of a liquid below its  boiling point  \_\_\_\_ 14. The change of state from a liquid to a gas  \_\_\_\_ 15. Vaporization that occurs throughout a liquid  \_\_\_\_ 16. The product of vaporization of liquid water  \_\_\_\_ 17. Temperature at which a liquid boils | a. boiling point  b. vaporization  c. steam  d. evaporation  e. boiling |

CONDENSATION: GASES TO LIQUIDS (p. 71)

18. Condensation is the change of state from a \_\_\_\_\_\_\_\_to a \_\_\_\_\_\_\_\_\_\_\_\_.

19. The condensation point of a substance is the temperature at which the gas becomes a liquid and is the same temperature as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_at a given pressure.

20. If I am at sea level, will my condensation point and boiling point be the same temperature? Yes or No (Circle one)

21. Condensation is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_change therefore energy is \_\_\_\_\_\_\_\_\_\_\_\_from the gas to slow the particles down.

SUBLIMATION: SOLIDS DIRECTLY TO GASES (P. 72)

22. Solid carbon dioxide isn’t ice. So why is it called “dry ice”?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

23. The change of state from a solid to a \_\_\_\_\_\_\_\_\_\_\_is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

24. Energy must be \_\_\_\_\_\_\_\_\_\_\_\_\_for sublimation to occur, so it is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ change.

COMPARING CHANGES OF STATE (P. 72)

25. Look at the table on page 72. Which two changes of state occur at the same temperature?

a. condensation and melting

b. sublimation and freezing

c. vaporization and condensation

d. melting and vaporization

TEMPERATURE CHANGE VERSUS CHANGE OF STATE (P. 73)

26. The speed of a particles in a substance changes when the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ changes.

27. Which occurs first: the temperature of a substance changing or the completion of the change of state? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

28. Energy must be \_\_\_\_\_\_\_\_\_\_\_to a substance to move its temperature from the melting point to the boiling point.

EXPLAIN YOUR ANSWERS FOUND IN SECTION 2 THAT YOU JUST READ.

29. How are evaporation and boiling different?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

30. How are evaporation and boiling similar? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_