

___ 20. Can energy be added without changing temperature? Explain. (Hint consider boiling water being heated or ice melting)

Yes, during phase changes, energy goes to break bonds

D 21. Matter in which the particles are free to move in all directions until they have spread evenly throughout their container is a ____.

- a. solid
- b. liquid
- c. buoyant
- d. gas

___ 22. Most matter expands when heated.

C 23. As a sample of matter is heated, its particles ____.

- a. stop moving
- b. move more slowly
- c. move more quickly
- d. are unaffected

___ 24. What instrument is normally used to measure atmospheric pressure? barometer

C 25. What is the SI unit of pressure?

- a. candela
- b. mole
- c. pascal
- d. newton

A 26. According to the kinetic theory, collisions between molecules in a gas ____.

- a. are perfectly elastic
- b. are inelastic
- c. never occur
- d. cause a loss of total kinetic energy

___ 27. Convert 1 atm to kPa

$$\frac{1 \text{ atm}}{1 \text{ atm}} \times \frac{101.3 \text{ kPa}}{1 \text{ atm}} = \boxed{101.3 \text{ kPa}}$$

___ 28. Standard conditions when working with gases are defined as 0 °C and 101.3 kPa

C 29. What causes gas pressure in a container such as a helium balloon?

- a. the walls of the container
- b. the vacuum maintained in the container
- c. the simultaneous collisions of fast-moving particles in the container
- d. atmospheric pressure acting on the outside walls of the container

___ 30. Convert 152 mm Hg to atm:

$$\frac{152 \text{ mmHg}}{760 \text{ mmHg}} \times 1 \text{ atm} = \boxed{0.200 \text{ atm}}$$

Kelvin 31. With which temperature scale is temperature directly proportional to average kinetic energy?

B 32. What happens to the temperature of a liquid as it evaporates?

- a. It increases.
- b. It decreases.
- c. It does not change.
- d. The change cannot be determined.

___ 33. Describe the motion of particles in a piece of steel: vibrating

___ 34. Ionic compounds have (higher lower) melting points compared to molecular compounds.

D 35. Which of the following elements has the ability to undergo sublimation?

- a. oxygen
- b. carbon
- c. sodium
- d. iodine

B 36. Which of the following is an example of a phase?

- a. pressure
- b. water vapor
- c. temperature
- d. triple point

Name: CALVIN Date: 2/25/13 Hour: _____

Chemistry Ch.13 REVIEW

Matching

- evaporation 1. vaporization at the surface of a liquid that is not boiling
boiling point 2. the temperature at which the vapor pressure of a liquid is equal to the external pressure
normal boiling pt. 3. the temperature at which the vapor pressure of a liquid is equal to 1 atmosphere
melting pt. 4. the temperature at which a solid changes into a liquid
sublimation 5. the change of a solid directly to a vapor

Match each item with the correct statement below.

- a. kinetic theory
b. atmospheric pressure
c. vapor pressure
d. barometer
e. kinetic energy

- A 6. All matter consists of tiny particles that are in constant motion.
E 7. the energy an object has due to its motion
D 8. a device used to measure atmospheric pressure
B 9. the pressure resulting from the collision of atoms and molecules with objects
C 10. a measure of the force exerted by a gas above a liquid

Match each item with the correct statement below.

- a. unit cell
b. crystal
c. allotropes
d. amorphous solid

- A 11. the smallest group of particles within a crystal that retains the shape of the crystal
B 12. a solid in which the particles are arranged in an orderly, repeating pattern
D 13. a solid that lacks an ordered internal structure
C 14. two or more different molecular forms of an element in the same physical state
C 15. Which of the following statements is NOT true, according to the kinetic theory?
a. There is no attraction between particles of a gas.
b. Only particles of matter in the gaseous state are in constant motion.
c. The particles of a gas collide with each other and with other objects.
d. All of the statements are true.

- _____ 16. What is absolute zero? OK, lowest possible temp, all particle motion would stop
_____ 17. What happens to the average kinetic energy of the particles in a sample of matter as the temperature of the sample is increased? increases

- C 18. Consider an iron cube and an aluminum cube. If the two cubes were at the same temperature, how would the average kinetic energy of the particles in iron compare with the average kinetic energy of the particles in aluminum?
a. The average kinetic energy of the iron particles would be greater.
b. The average kinetic energy of the aluminum particles would be greater.
c. There would be no difference in the average kinetic energies.
d. No determination can be made based on the information given.
_____ 19. Which states of matter can flow?

gas + liquid