Name: _____

Physical Science Unit 4 Practice Sheet

***Chapter 2:**

Classify the following as a substance or a mixture.

1. sodium
2. tap water
3. carbon dioxide
4. table salt
5. air
6. coffee

Classify the following as a homogeneous or heterogeneous mixture.

7. salad dressing
8. paint
9. pure air
10. beach sand

Classify the following as a physical or a chemical property.

11. flammable
12. red color
13. melting point
14. reacts with a base to form water
15. hardness

Classify the following as a physical or a chemical change.

16. Ice melts.
17. Milk sours.
18. Iron rusts.
19. A pellet of sodium is sliced in two.
20. Water is heated and changed to steam.

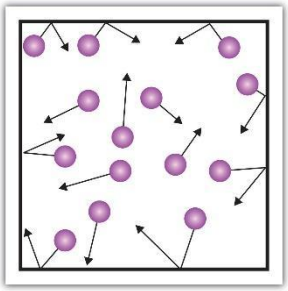
***Chapter 3:**

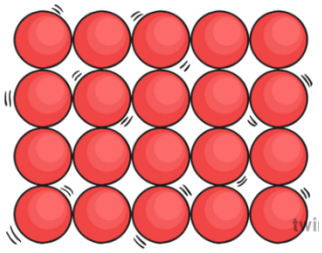
21. Define the following phase changes.

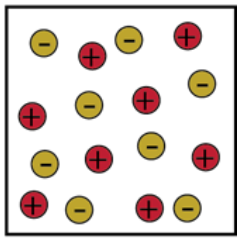
melting	

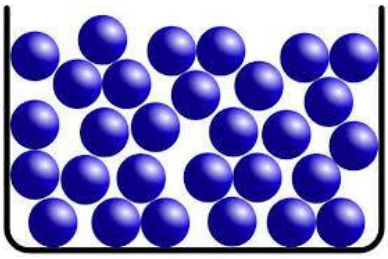
sublimation	
condensation	
boiling	
deposition	
freezing	

22. Match each state of matter with the correct picture of its particle arrangement.









A B C D

____ solid
____ liquid
____ gas
____ plasma

23. Ideal gas laws relate pressure, volume, and temperature in pairs. How are Charles' Law and Boyle's Law related?

a. They both occur when pressure is constant.
b. They only occur in closed systems.
c. The only occur in open systems.
d. The both occur with temperature is constant.

24. Some solid air fresheners go directly to a gas instead of passing through the liquid phase. Which of the following describes that process correctly?

a. melting; the process is endothermic
b. melting; the process is exothermic
c. sublimation; the process is endothermic
d. sublimation; the process is exothermic

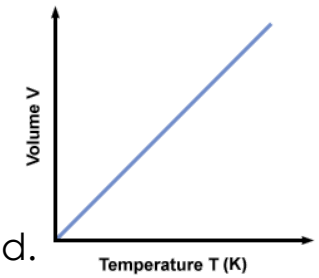
25. A science teacher heated liquid ethanol for an experiment. When he turned up the temperature, the ethanol quickly disappeared, and a strong aroma filled the room. What happened to the ethanol?

a. Heating the particles in the ethanol caused them to react and bond with gases in the air and be carried around the room.
b. Heating the particles in the ethanol removed some of their mass which decreased their density causing them to flow across the room.
c. Heating the particles in the ethanol energized them, and they escaped to fill the room as a gas.
d. Heating the particles in the ethanol removed some of their energy and they began to slow causing them to condense as a solid.

26. Which change would cause the volume of a balloon to increase?

a. increasing the temperature of the balloon
b. increasing the atmospheric pressure
c. removing gas from the balloon
d. placing the balloon under water

27. What does the graph on the right show? □



a. The volume and temperature of a gas are not related.
b. Volume and pressure are inversely proportional.
c. Volume and temperature are directly proportional.
d. Volume and temperature are indirectly proportional.

28. What occurs when air is subjected to less pressure?

a. The air becomes compressed.
b. The air expands.

c. The air rises in temperature.
d. The air condenses.

29. Atoms and molecules are constantly in motion. In which state of matter do the atoms and molecules have the LEAST kinetic energy?
    a. gas
    b. solid
    c. liquid
    d. plasma

30. If a balloon is taken outside on a very cold day, what will occur?
    a. The volume of the balloon will decrease.
    b. Gas will flow into the balloon.
    c. The volume of the balloon will increase.
    d. The pressure inside the balloon will increase.

***Chapter 4:**

31. Fill in the following chart.

Symbol	Atomic #	Mass #	Charge	Protons	Neutrons	Electrons
Mg		24	0			
K^+					20	
	16	32	-2			
			0	9	10	

32. Draw the Bohr's model of the following atoms:

    a. $^{23}_{11}Na$

b. $^{4}_{2}He$

c. $^{7}_{3}Li$

33. What observation would lead to the conclusion that an atom has a negative charge?
    a. The atom is repelled by a second atom that has a neutral charge.
    b. The atom is repelled by a second atom that has a positive charge.
    c. The atom is attracted to a second atom that has a positive charge.
    d. The atom is attracted to a second atom that has a negative charge.

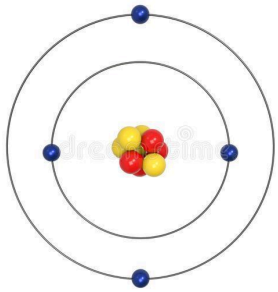
34. Which subatomic particles have no effect on the net charge of an atom?
    a. electrons
    b. neutrons
    c. protons
    d. nuclei

35. An atom of an element contains 6 protons, 6 neutrons, and 6 electrons. An atom that is a different isotope of this element would contain
    a. 6 protons, 7 neutrons, and 6 electrons.
    b. 6 protons, 6 neutrons, and 7 electrons.
    c. 7 protons, 6 neutrons, and 6 electrons.
    d. 7 protons, 7 neutrons, and 7 electrons.

36. Which element has atoms that contain 50 protons in their nuclei?
    a. strontium (Sr)
    b. tin (Sn)
    c. titanium (Ti)
    d. vanadium (V)

37. An element's periodic table identity is defined by its number of
    a. protons.
    b. neutrons.
    c. isotopes.
    d. electrons.

38. The diagram shows a neutral atom of an element from the periodic table. This atom is MOST LIKELY



    a. potassium (K)
    b. beryllium (Be)
    c. fluorine (F)
    d. boron (B)

39. The modern model of the atom shows that electrons are
    a. combined with neutrons in the nucleus.
    b. located in a solid sphere covering the nucleus.
    c. orbiting the nucleus in fixed paths.
    d. found in regions called orbitals.

40. Experiments with gold foil indicated that atoms
    a. contain a positively charged, dense center.
    b. usually have a uniform distribution of positive charges.
    c. contain a negatively charged, dense center.
    d. usually have a uniform distribution of negative charges.

41. Which of the following describes an atom with a positive net charge?
    a. It contains more protons than electrons.
    b. It contains more electrons than protons.
    c. It contains more protons than neutrons.
    d. It contains more neutrons than protons.

42. The heaviest particles in an atom are found within the
    a. electron.
    b. neutron.
    c. nucleus.
    d. proton.

43. The number of electrons in a neutral carbon atom
    a. can be determined by adding the atomic number to the atomic mass.

b. can be determined by dividing the atomic mass by the atomic number.
c. is equal to the number of protons in carbon.
d. is equal to the mass number of carbon.

44. Which of the following describes the nucleus of an atom?
a. small, dense, and positively charged
b. large and positively charged
c. small and negatively charged
d. large, dense, and negatively charged

45. Which statement BEST describes an aluminum atom?
a. The nucleus has a charge of +13 and is surrounded by a total of 10 electrons.
b. The nucleus has a charge of +13 and is surrounded by a total of 13 electrons.
c. The nucleus has a charge of -13 and is surrounded by a total of 10 electrons.
d. The nucleus has a charge of -13 and is surrounded by a total of 13 electrons.