Chemistry Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dalton & Grahms Gas Laws

1) A container holds three gases: oxygen, carbon dioxide, and helium. The partial pressures of the three gases are 2.00 atm, 3.00 atm, and 4.00 atm, respectively. What is the total pressure inside the container?

2) A container with two gases, helium and argon, is 30.0% by volume helium. Calculate the partial pressure of helium and argon if the total pressure inside the container is 4.00 atm.

3) A tank contains 480.0 grams of oxygen and 80.00 grams of helium at a total pressure of 7.00 atmospheres. Calculate the following.

a) How many moles of O2 are in the tank?

b) How many moles of He are in the tank?

c) Total moles of gas in tank.

d) Partial pressure of O2.

e) Partial pressure of He.

4) A mixture of 14.0 grams of hydrogen, 84.0 grams of nitrogen, and 2.0 moles of oxygen are placed in a flask. When the partial pressure of the oxygen is 78.00 mm of mercury, what is the total pressure in the flask?

5) If equal amounts of helium and argon are placed in a porous container and allowed to escape, which gas will escape faster and how much faster?

6) What is the molecular weight of a gas which diffuses 1/50 as fast as hydrogen?

7) Two porous containers are filled with hydrogen and neon respectively. Under identical conditions, 2/3 of the hydrogen escapes in 6 hours. How long will it take for half the neon to escape?

8) If the density of hydrogen is 0.090 g/L and its rate of diffusion is 5.93 times that of chlorine, what is the density of chlorine?

9) How much faster does hydrogen escape through a porous container than sulfur dioxide?

10) Compare the rate of diffusion of carbon dioxide (CO2) & ozone (O3) at the same temperature.

11) 2.278 x 10-4 mol of an unidentified gaseous substance effuses through a tiny hole in 95.70 s. Under identical conditions, 1.738 x 10-4 mol of argon gas takes 81.60 s to effuse. What is the molar mass of the unidentified substance?

12) A compound composed of carbon, hydrogen, and chlorine diffuses through a pinhole 0.411 times as fast as neon. Select the correct molecular formula for the compound:

a) CHCl3

b) CH2Cl2

c) C2H2Cl2

d) C2H3Cl