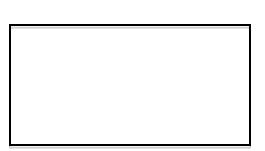**Working with the Kinetic Molecular Theory**

Name: _____

Date: _____ Per: _____

Graham's Law of Effusion

1. Write the formula for Graham's Law in the box to the right.

2. Calculate the ratio of effusion rates for nitrogen (N_2) and Neon (Ne).

3. Calculate the ratio of diffusion rates for carbon monoxide (CO) and carbon dioxide (CO_2).

4. What is the molar mass of a gas that takes three times longer to effuse than helium? (The ratio of the rates is 3/1).
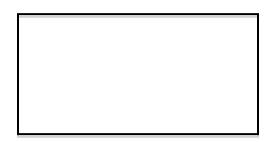
5. What is the ratio of effusion rates of krypton and neon at the same temperature and pressure?

6. Calculate the molar mass of a gas that diffuses three times faster than oxygen under similar conditions. (The ratio of the rates is 1/3).

7. Calculate the ratio of effusion rates for methane (CH_4) and nitrogen.

Dalton's Law of Partial Pressures

1. Write the formula for Dalton's Law in the box to the right.

2. Find the total pressure for a mixture that contains four gasses with partial pressures of 5.00kPa, 4.56kPa, 3.02kPa, and 1.20kPa.

3. Find the partial pressure of carbon dioxide in a gas mixture with total pressure of 30.4kPa if the partial pressures of the other two gasses in the mixture are 16.5kPa and 3.7kPa.

4. What is the total gas pressure in a sealed flask that contains oxygen at a partial pressure of 0.41atm and water vapor at a partial pressure of 0.58atm?

5. Find the partial pressure of oxygen in a sealed vessel that has a total pressure of 2.6atm and also contains carbon dioxide at 1.3atm and helium at 0.22atm.

Pressure Conversions: Perform the following conversions then summarize your answer in the table at the bottom.

1. Convert 33.6 kilopascals to the following units:

   a. Atmospheres

   b. Millimeters of Mercury

   c. Pounds per Square Inch

2. Convert 8.4 atmospheres to the following units:

   a. Kilopascals

   b. Millimeters of Mercury

   c. Pounds per Square Inch

3. Convert 16.5 psi to the following units:
   a. Atmospheres

   b. Kilopascals

   c. Millimeters of Mercury

	Atmospheres (atm)	Kilopascals (kPa)	Millimeters of Hg (mm Hg)	Pounds per Square Inch (psi)
	1 atm	**101.3 kPa**	**760 mm Hg**	**14.7 psi**
1.		33.6 kPa		
2.	8.4 atm			
3.				16.8 psi