Dougherty Valley HS Chemistry - AP
Gas Laws – Graham's Law of Effusion Intro

Worksheet #7

Name: **Period:** **Seat#:**

Effusion

$$\frac{Rate\ of\ Effusion\ of\ Gas\ 1}{Rate\ of\ Effusion\ of\ Gas\ 2} = \frac{\sqrt{M_2}}{\sqrt{M_1}}; M = Molar\ mass$$

Diffusion

$$\frac{Distance\ traveled\ of\ Gas\ 1}{Distance\ traveled\ of\ Gas\ 2} = \frac{\sqrt{M_2}}{\sqrt{M_1}}; M = Molar\ mass$$

Directions:
Solve the following problems. Assume all number are 3 significant figures. Remember to show your work!

1) Under the same conditions of temperature and pressure, how many times faster will hydrogen effuse compared to carbon dioxide? *4.69 times faster*

2) If the carbon dioxide in Problem 1 takes 32 sec to effuse, how long will the hydrogen take? *6.8 sec*

3) What is the relative rate of diffusion of NH_3 compared to He? Does NH_3 effuse faster or slower than He? *0.485 times*

4) If the He in Problem 3 takes 20 sec to effuse, how long will the NH_3 take? *40 sec*

5) An unknown gas diffuses 0.25 times as fast as He. What is the molecular mass of the unknown gas? *64 g/mol*

6) Find the molar mass of a gas that diffuses about 4.45 times faster than argon gas. *2.01 g/mol*