**Name: Period: Seat#:**

**Worksheet #4**

**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!

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| 1. Under the same conditions of temperature and pressure, how many times faster will hydrogen effuse compared to carbon dioxide? *4.69 times faster*
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| 1. If the carbon dioxide in Problem 1 takes 32 sec to effuse, how long will the hydrogen take? *6.8 sec*
 |
| 1. What is the relative rate of diffusion of NH3 compared to He? Does NH3 effuse faster or slower than He? *0.485 times*
 |
| 1. If the He in Problem 3 takes 20 sec to effuse, how long will the NH3 take? *40 sec*
 |
| 1. An unknown gas diffuses 0.25 times as fast as He. What is the molecular mass of the unknown gas? *64 g/mol*
 |
| 1. Find the molar mass of a gas that diffuses about 4.45 times faster than argon gas. *2.01 g/mol*
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