Name: **Date:**   **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

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

Must show work for each problem:

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

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

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)

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

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

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