**Dougherty Valley HS AP Chemistry**

**WORKSHEET #7**

**Gas Laws – Graham’s Law of Effusion Intro**

**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 NH3 compared to He? Does NH3 effuse faster or slower than He? (0.485 times) |  |
| If the He in Problem 3 takes 20 sec to effuse, how long will the NH3 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) |  |