Worksheet #13 Chem177 Awino

**Tomorrows Quiz:**
- Gas Laws
- Gas Density
- Dalton’s Partial Pressure

**VERY IMPORTANT:** The real gas equations that were shown to you guys at the end of lecture will show up on an exam, you will most likely not have to do any calculations with them but you may have to describe what each equation represents.

1.) Arrange the following gases in order of increasing rates of effusion
   - N₂
   - O₂
   - CO₂
   - He

2.) Real gases approach ideal gas behavior at what type of conditions?
3.) Calculate the molar mass of a gas if equal volumes of oxygen gas and an unknown gas take 0.645 m/s and 0.321 m/s, respectively, to effuse through a small hole at constant pressure and temperature.

4.) Calculate the $U_{\text{rms}}$ speed of an oxygen gas molecule, $\text{O}_2$, at 31.0 °C

5.) What is the ratio of the average velocity of krypton gas atoms to that of nitrogen molecules at the same temperature and pressure?
6.) An unknown gas effuses 1.66 times more rapidly than CO2. What is the molar mass of the unknown gas? Can you make a reasonable guess as to its identity?

7.) At the same temperature, which molecule travels faster, O\textsubscript{2} or N\textsubscript{2}? How much faster?