Name: **Honors Chemistry**

Section: Ideal Gas Law Problems

The ideal gas law is even more useful than the combined gas law! It not only states a relationship among pressure, volume, and temperature of a gas (as does the combined gas law), but it also relates these quantities to the number of gas particles present.

PV = n R T where R is the universal gas constant
R = 0.0821 L atm /mol K or R = 8.31 L kPa/mol K

1. How many moles of a gas will a 1250 mL flask hold at 35.0°C and a pressure of 95.4 kPa? (0.0466 moles)

2. Calculate the density of carbon dioxide at 15°C and 1.2 atm. Assume you have 1 mole of the gas. (2.2 g/L)

3. How many moles of oxygen are present in a 750.0 cm^3 flask at 27°C and a pressure of 99.0 kPa? (0.0288 mol)

4. Calculate the volume occupied by 3.00 mol H_2 at 24°C and a pressure of 100.5 kPa. (73.7 L)

5. What mass of carbon dioxide is contained in a 3.00 L flask at –15°C and 103.1 kPa? (6.34 g)

6. 150.0 g of chlorine gas are stored at –12.5°C and a pressure of .972 atm. What is the volume of the gas? (46.5 L)

7. A flask has a volume of 258 cm^3. A gas with a mass of 1.475 g is introduced into the flask at a temperature of 302.0 K and a pressure of 9.86 x 10^4 Pa. What is the gfm of the gas? (146 g/mol)

8. A 0.670 gram sample of an unknown gas filled a 0.500 L flask at 0°C and 1.00 atm. Which of the following could the gas be, and why? N_2, O_2, NO or CO (NO)