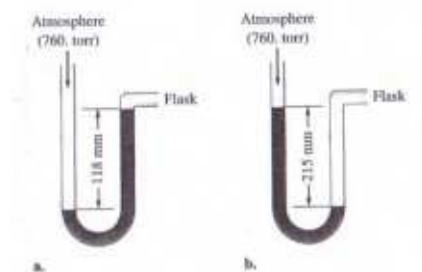


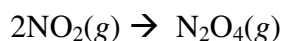
CHEM 101
Work Sheet # 5 (Properties of Gases)

Dr. Al-Saadi

1) For each of the following situations, calculate the pressure inside the flask in torr, mm Hg, atmospheres, and pascals.



2) Consider the following chemical equation:

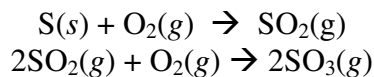


If 25.0 mL of NO_2 gas is completely converted to N_2O_4 gas under the same conditions, what volume would the N_2O_4 gas occupy?

3) A 2.50 L container is filled with 175 g argon. If the pressure is 10.0 atm, what is the temperature?

4) A compressed gas cylinder contains 1.00×10^3 g of argon gas. The pressure inside the cylinder is 2050. psi (pounds per squared inch) at a temperature of 18°C . How much gas remains in the cylinder if the pressure is decreased to 650. psi at a temperature of 26°C .

5) Sulfur trioxide is produced in a two-step reaction according to:

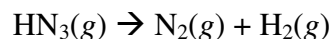


What volume of $\text{O}_2(g)$ at $350.^\circ\text{C}$ and a pressure of 5.25 atm is needed to completely convert 5.00 g of sulfur to sulfur trioxide?

6) An unknown diatomic gas has a density of 3.146 g/L at STP. What is the identity of the gas?

7) A 1.00-L gas sample at $100.^\circ\text{C}$ and $600. \text{ torr}$ contains 50.0% helium and 50.0% xenon by mass. What are the partial pressures of the individual gases?

8) Hydrogen azide, HN_3 , decomposes on heating by the following unbalanced equation:



If 3.0 atm of pure $\text{HN}_3(g)$ is decomposed initially:

- What is the final total pressure in the reaction container?
- What are the partial pressures of nitrogen and oxygen gases?

Assume that the volume and temperature of the reaction container are constant.