WOC Objectives Chem I Chapter 13 Gases

1. State the postulates of the Kinetic-Molecular Theory .

2. List the unit used to measure each of the following gas variables and the letter used to represent that variable in an equation:
   Amount of gas Volume Pressure Temperature

3. Describe how gas pressure can be measured
   a. in the atmosphere
   b. in a closed container

4. List the equivalents of units of pressure in atmospheres and be able to convert from one to another.

5. Write out Boyle's Law, Charles Law, Avogadro's Law, and Dalton's Law of Partial Pressure in words and as equations. Be able to solve problems involving all four laws.

6. What is the Ideal Gas Law and how is it applied? Write an equation for the Ideal Gas Law. Be able to solve problems using the ideal gas law.

7. How do real gases deviate from ideal behavior? How would the world be different if all gases behaved ideally under all conditions?

8. Describe the variables on which gas density depends.

9. Define these terms: ideal gas real gas STP elastic effusion
   partial pressure absolute zero manometer barometer

10. Before solving each problem, identify the variables involved and the law that will be used to solve the problem.

    A. Law _____ A weather balloon at launch is partially inflated with 3.00×10^4 L of helium at STP. What will be the volume of helium at an altitude of 7 km, where the pressure is 0.41 atm and the temperature is -20°C?

    B. Law _____ A balloon has a volume of 1.75 L at a temperature of 25°C. What will be the volume of the balloon if you take it out to the winter cold air at -15°C?

    C. Law _____ To what temperature would you have to heat a 1.90 mol sample at 1.05 atm pressure to get its volume up to 50.0 L?

    D. Law _____ How many moles of (N_2) are contained in 1.00L of nitrogen gas at 1.00 atm and 273 K?

11. The atmospheric pressure is measured to be 758 mmHg. A U-shaped mercury-filled tube is attached to a closed container of helium gas. The mercury level is 30 mm lower on the side of the tube attached to the container than it is on the side that is open to the atmosphere.
    What is the pressure in the container in mm Hg? What is the pressure in the container in atm?