Gas Laws Accelerated Worksheet Name: _____ Period: _____

Combined Gas Law

Solve the following problems showing formula, setup, and answer with units.

1. A helium-filled balloon has a volume of 50.0 L at 25°C and 820 mmHg. What volume will it occupy at 650 mmHg and 10°C?

2. A 700 mL gas sample at STP is compressed to a volume of 200 mL and the temperature is increased to 30°C. What is the new pressure (in atm) of the gas?

3. A certain mass of oxygen was collected over water after a chemical reaction. The volume of the oxygen sample was 720 mL at 25°C and a pressure of 755 mmHg. What would the volume of the oxygen be at STP?

4. A meteorological balloon contains 250 L of He at 22°C and 740 mmHg. If the volume of the balloon can vary according to external conditions, what volume would it occupy at an altitude at which the temperature is -52°C and the pressure is 0.750 atm?

5. A sample of oxygen at 40°C occupies 820 mL. If this sample occupies 1250 mL at 60°C and 1.40 atm, what was the original pressure?

Molar Volume

1. What is the volume in liters at STP:
   a. 1.00 mol O_2

   b. 0.0400 mol CO_2

   c. 1.20×10^{-6} mol He

2. How many moles are contained in each of the following at STP?
   a. 22.4 L N_2

   b. 70.0 mL NH_3

3. Find the mass, in grams of each of the following at STP:

   a. 2.8 L CO_2

   b. 15.0 mL SO_2

   c. 3.40 cm^3 F_2