Homework #6

You must show your entire work on a separate sheet(s) of paper to get full credit.

Chapter 6

1. A gas system has an initial volume of 2400mL with the pressure unknown. When the volume changes to 1470mL the pressure is found to be 8.96 atm. What was the initial pressure in atm?

2. A gas system has an initial temperature of 377.0K with the volume unknown. When the temperature changes to 223.0K the volume is found to be 6.68L. What was the initial volume in mL?

3. A gas system has an initial volume of 5.44L with the number of moles unknown. When the volume changes to 3980mL, under conditions of constant P and T, the number of moles is found to be 0.627 moles. What was the initial number of moles?

4. A closed gas system initially has volume and temperature of 4360mL and 646.0°C with the pressure unknown. If the same closed system has values of 0.689 atm, 7670mL and 619K, what was the initial pressure in torr?

5. A gas system has an initial pressure of 10.3 atm at a temperature of 325°C. If the pressure is increased to 21.65 torr, what is the temperature of the gas?

6. A closed gas system initially has pressure and volume of 0.612 atm and 6.44L with the temperature unknown. If the same closed system has values of 0.666 atm, 4.09L and 61.0°C, what was the initial temperature in °C?

7. A gas system has initial volume and temperature of 8160mL and 467.0K. If the temperature changes to -151°C, what will the resultant volume be in mL?

8. In a gas mixture, the partial pressures are nitrogen 0.559 atm, oxygen 115 torr, and helium 0.296 mm Hg. What is the total pressure (in torr) exerted by the gas mixture?

9. What is the kinetic molecular theory of gases for the behavior of a gas?

10. Use the kinetic molecular theory of gases to explain each of the following:
    a. Gases move faster at higher temperatures.
    b. Gases can be compressed much more than liquids or solids.
11. A gas system has volume, moles, and temperature of 6.60L, 0.477 moles and 
-47.00°C, respectively. What is the pressure in torr?

12. A gas system has pressure, volume, and moles of 1410 torr, 6.85L and 0.253 moles, 
respectively. What is the temperature in °C?