Gas Laws Practice One

1. A sample of nitrogen gas, N_2, occupies 3.0 L at a pressure of 3.0 atm. What volume will it occupy when the pressure is changed to 0.50 atm and the temperature remains constant? (Boyle's Law)

2. A sample of methane gas, CH_4, occupies 4.50 L at a temperature of 20°C. If the pressure is held constant, what will be the volume of the gas at 100.0°C? (Charles' Law)

3. The pressure of hydrogen gas in a constant-volume cylinder is 4.25 atm at 0°C. What will the pressure be if the temperature is raised to 80.0°C? (Gay-Lussac's Law)

4. A 325 mL sample of air is at 720.0 torr and 30.0°C. What volume will this gas occupy at 800.0 torr and 75.0°C? (Combined Gas Law)

5. A sample of gas occupies 500.0mL at STP. What volume will the gas occupy at 85.0°C and 525 torr? (Combined Gas Law)

6. A quantity of oxygen occupies a volume of 19.2L at STP. How many moles of oxygen are present? (Ideal Gas Law)

7. A 425 mL volume of hydrogen chloride gas, $HCl_{(g)}$, is collected at 25°C and 720.0 torr. What volume will it occupy at STP? (Combined Gas Law)

8. What volume would 10.5 g of nitrogen gas, N_2, occupy at 200.0K and 2.02 atm? (Ideal Gas Law and Molar Mass)

9. Calculate the density of sulfur dioxide, SO_2, at STP. (Ideal Gas Law and Density)

10. In a laboratory experiment, 133mL of gas was collected over water at 24°C and 742 torr. Calculate the volume that the dry gas would occupy at STP. (Ideal Gas Law and Water Vapor Pressure)

11. A volume of 122 mL of argon, Ar, is collected at 50.0 °C and 758 torr. What does this sample weigh? (Ideal Gas Law and Molar Mass)