CH 7: Worksheet Name:

CHM 102

1. Boyles Law: holding temperature constant
   1. A 2.3 L sample of N2 gas exerts a pressure of 5.6 atm. What is the pressure (in atm) if the volume is decreased to 1.8 L?
   2. A 0.872 L sample of O2 gas exerts a pressure of 456.22 mm Hg. What is the volume (in L) if the pressure is increased to 682.1 mm Hg?
2. Charles Law: holding pressure constant
   1. A 567 L sample of argon gas is heated from 35°C to 65°C. What is the new volume (in L)?

* 1. A 0.289 L sample of Cl2 gas at 25°C is compressed to 0.154 L. What is the new temperature (in °C)?

1. Gay-Lussac’s Law: holding volume constant
   1. An iron container of O2 gas at 0.542 atm is heated from 56°C to 78°C. What is the new pressure (in atm)?
   2. A container of NO2 gas at 145 mm Hg and 78°C is pressurized to 268 mm Hg. What is the new temperature (in °C)?
2. Combined Gas Law
   1. A 12.3 L sample of Ar gas at 25°C has a pressure of 0.435 atm. The volume is allowed to expand to 45.2 L at 25°C. What is the new pressure (in atm)?
   2. A 5.52 L sample of Ne gas at 65°C has a pressure of 3.54 atm. The temperature is raised to 154°C and the pressure increases to 5.24 atm. What is the new volume (in L)?
   3. A 0.0275 L sample of CO2 gas at 15°C has a pressure of 0.246 atm. The pressure is increased to 0.627 atm, while the volume decreases to 0.0149 L . What is the new temperature (in °C)?
3. Ideal Gas Law
   1. How many moles of CO gas are in a 23 L sample of CO gas at 146°C and a pressure of 2.68 atm?
   2. What is the temperature of a 4.68 L sample of 2.56 mole H2O gas at a pressure of 0.894 atm?
   3. What is the volume of a 1.56 mole sample of Helium gas at 345°C and 5.62 atm?
   4. What is the pressure of a 0.0825 L sample of 1.76 mole SO2 gas at 84°C?