PAL Worksheet – Chem 6A

Gas Laws: Ideal Gas Law and Dalton's Law of Partial Pressure

I. Ideal Gas Law

1. What is the Ideal Gas Law equation? Label what each variable represents (each represents a different measurement). Include the units that each variable must be in when using this equation.

2. A birthday balloon holds 0.918 moles of helium at 1.02 atm and 26.1 °C. What is the volume of the balloon? (Be sure to include the units.)

3. A 0.67 mole sample of radon gas is in a 5.0 L vessel at 3.23 atm. What is the temperature of the gas, in units of °C?

4. A sample of nitrogen gas, N_2, is in a 2.45 L container, at 1.84 atm, and -175 °C. How much nitrogen is there in this sample? What are the units? How many grams are there?

II. Dalton's Law of Partial Pressures

1. Describe Dalton's Law of Partial Pressures in words and then provide an equation that represents it.

2. a. An air sample contains argon, at 0.013 atm, oxygen, at 0.768 atm, and nitrogen, at 0.217 atm. What is the pressure of this sample of air?

   b. How does your answer compare with standard atmospheric pressure?

3. A gaseous sample consists of xenon at 459 mmHg, helium at 124 mmHg, and neon. The gas pressure of the sample is 772 mmHg. What is the pressure of the neon?

4. Isofluorane, $C_3H_2ClF_5O$, is a commonly used anesthetic in general anesthesia. It is administered with a partial pressure of 76 mm Hg. How many grams of isofluorane are present in a 2.2 L volume of inhaled anesthesia mix, assuming at temperature of 98.6°F?