Gas Practice Sheet Key

1. Complete the following conversion of 55.8 psi to kPa
2. A gas mixture contains each of the following gases at the indicated partial pressure. N2 (385 torr), O2 (458 torr), and H2 (682 torr). What is the total pressure of the mixture in atm?
3. A 6.75 L flask contains a fixed amount of gas at 31oC and a constant pressure. If the temperature is increased to 125oC, what will the volume of the gas be?



*As temperature increases, Volume should increase if pressure and amount are constant.*

1. A vacuum pump exhausts a heavy-walled 1.50-L round-bottomed flask to a pressure of 3.55 x 10-6torr. How many particles are present if the temperature is 273 K?
2. It is found that 250. mL of an unknown ideal gas at STP has a mass of 2.50 g. What is the molar mass of the unknown gas?

V = 0.250 L, T = 273 K, P = 1 atm, mass = 2.50 g what is n?

OR

1. Two bottles, with identical mass and volume are filled with helium at constant temperature. Bottle A is filled to a pressure of 810 torr, and bottle B is filled to 358 torr. Which bottle weighs more? Explain your answer.

We notice that bottle A has more pressure than bottle B. This increased pressure is due to increased collisons with the inside surface of the bottle. Both bottles are at the same temperature so it can not be a temperature effect. Could this occur if their were more molecules of gas in bottle A than bottle B. The more molecules you have the more collisions with the inside surface of the bottle so the greater the pressure. If bottle A has more molecules of gas than bottle B than bottle a will weigh more than bottle B.

1. 25.0 g of oxygen react with 25.0 g of acetylene (C2H2). How many L of CO2 at 22°C and 760 torr are formed?

2C2H2 + 5O2 🡪 4CO2 + 2H2O

Twp part problem: Limiting reactant than gas law

25.0 g O2x 1 mol O2 x 4 mol CO2 = **0.625 mol CO2**

32.00.g O25 mol O2

25.0 g C2H2x 1 mol C2H2 x 4 mol CO2 = 1.92 mol CO2

26.04 g C2H22 mol C2H2

V = 0.625 mol CO2x (0.0821 L\*atm/mol\*K) x 295 K = 15.1 L CO2

1. tm
2. Hexane gas burns in the presence of oxygen gas to produce water and carbon dioxide.

2 C6H14 (g) + 19 O2(g) 🡪 14 H2O(g) + 12 CO2(g)

How many L of water will be produced if 5.00 L of hexane are burned in the presence of excess oxygen gas if the pressure and temperature are held constant?