**HENRYS LAW EXAMPLE**

1. How many grams of carbon dioxide gas is dissolved in a 1 L bottle of carbonated water if the manufacturer uses a pressure of 2.4 atm in the bottling process at 25 °C?
Given: KH of CO2 in water = 29.76 atm/(mol/L) at 25 °C

**Solution**

 When a gas is dissolved in a liquid, the concentrations will eventually reach equilibrium between the source of the gas and the solution. Henry's Law shows the concentration of a solute gas in a solution is directly proportional to the partial pressure of the gas over the solution.

P = KHC where

P is the partial pressure of the gas above the solution
KH is the Henry's Law constant for the solution
C is the concentration of the dissolved gas in solution

C = P/KH
C = 2.4 atm/29.76 atm/(mol/L)
C = 0.08 mol/L

since we only have 1 L of water, we have 0.08 mol of CO2.

Convert moles to grams

mass of 1 mol of CO2 = 12+(16x2) = 12+32 = 44 g

g of CO2 = mol CO2 x (44 g/mol)
g of CO2 = 8.06 x 10-2 mol x 44 g/mol

g of CO2 = 3.52g.

**Questions**







(4) A gas has a solubility of 0.66g/L at 10atm pressure. What is the pressure on a 1L sample that contains 1.5g of gas?

(5) The solubility of a gas is 2g/L at 50kpa of pressure. How much gas will dissolve in 1L at a pressure of 10kpa?