Measuring concentration molarity (M)

Molarity

comparison of moles of solute to liters of solutions

water will pull the individual elements apart

$M = mol/L$

ex what is the molarity of Br- in 3.0L of solution containing 267.0g of AlBr3?

$AlBr3 -> Al3(aq) + 3Br(aq)$

do t-chart to find the amount of mol in 267g of AlBr3

= 3.004 mol Br-

3.004mol/3.0L = 1.0 M Br-

Parts per Million (ppm)

used when referring to very minor components.

1ppm means that out of 1 million particles there will be 1 of the specified molecule

$$ 1ppm = solute/solvent = 1 solute unit/1,000,000 solvent units$$

if you had .03g of solute in 1000g of solvent what is the concentration in ppm?

x/1,000,000 = .03g/1000

x = 30 ppm

Mass Percent (%)

mostly used by biologists

$$ percent = gramssolute/grams solution * 100$$

grams solution is a total

ex what is the mass percent of NaCl if 15.0 g are added to 50.0g of water

15.0/50+15 *100 = 23.1% NaCl

how would you make 100mL of .15 M Na2S2O3 solution

M = mol/L

.15 = mol/ .1L

mol = .015

.015 mol Na2S2O3 convert to grams --> 2.4g Na2S2O3

take 2.4g Na2S2O3 and add 100mL of water

you need a sentence explination for these types of problems

Dilutions

changing the concentration of a solution so that there are less solute particles dissolved in the solvent

$$M1V1 = M2V2$$

M1 must be bigger than m2

how would you make a .060 M solution of Na2S2O3 if you had 100Ml of a .15M stock solution

$$MV=MV$$

.15(V) = (.060)(100mL)

V = 40mL

Take 40mL of the original "stock solution" and add 60mL of H2o *ask him about this last problem*