

Measuring concentration molarity (M)

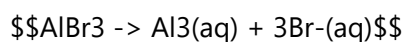
Molarity

comparison of moles of solute to

water will pull the individual elements apart

$M = \text{mol/L}$

ex what is the molarity of Br^- in 3.0L of solution containing 267.0g of AlBr_3 ?



do t-chart to find the amount of mol in 267g of AlBr_3

$= 3.004 \text{ mol Br}^-$

$3.004\text{mol}/3.0\text{L} = 1.0 \text{ M Br}^-$

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

$1\text{ppm} = \text{solute/solvent} = 1 \text{ solute unit}/1,000,000 \text{ solvent units}$

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

$x/1,000,000 = .03\text{g}/1000$

$x = 30 \text{ ppm}$

Mass Percent (%)

mostly used by biologists

$\text{percent} = \text{grams solute}/\text{grams solution} * 100$

grams solution is a total

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

$15.0/50+15 * 100 = 23.1\% \text{ NaCl}$

new heading

add later

how would you make 100mL of .15 M $\text{Na}_2\text{S}_2\text{O}_3$ solution

$$M = \text{mol/L}$$

$$.15 = \text{mol} / .1\text{L}$$

$$\text{mol} = .015$$

.015 mol $\text{Na}_2\text{S}_2\text{O}_3$ convert to grams --> 2.4g $\text{Na}_2\text{S}_2\text{O}_3$

take 2.4g $\text{Na}_2\text{S}_2\text{O}_3$ and add 100mL of water

you need a sentence explanation for these types of problems

Dilutions

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

$$M_1V_1 = M_2V_2$$

M_1 must be bigger than m_2

how would you make a .060 M solution of $\text{Na}_2\text{S}_2\text{O}_3$ if you had 100mL of a .15M stock solution

$$M_1V_1 = M_2V_2$$

$$.15(V) = (.060)(100\text{mL})$$

$$V = 40\text{mL}$$

Take 40mL of the original "stock solution" and add 60mL of H_2O ask him about this last problem