PURPOSE: WHAT ARE SOLUTES?

WARMUP, Fill in, if you can guess any

MEMORIZE THESE

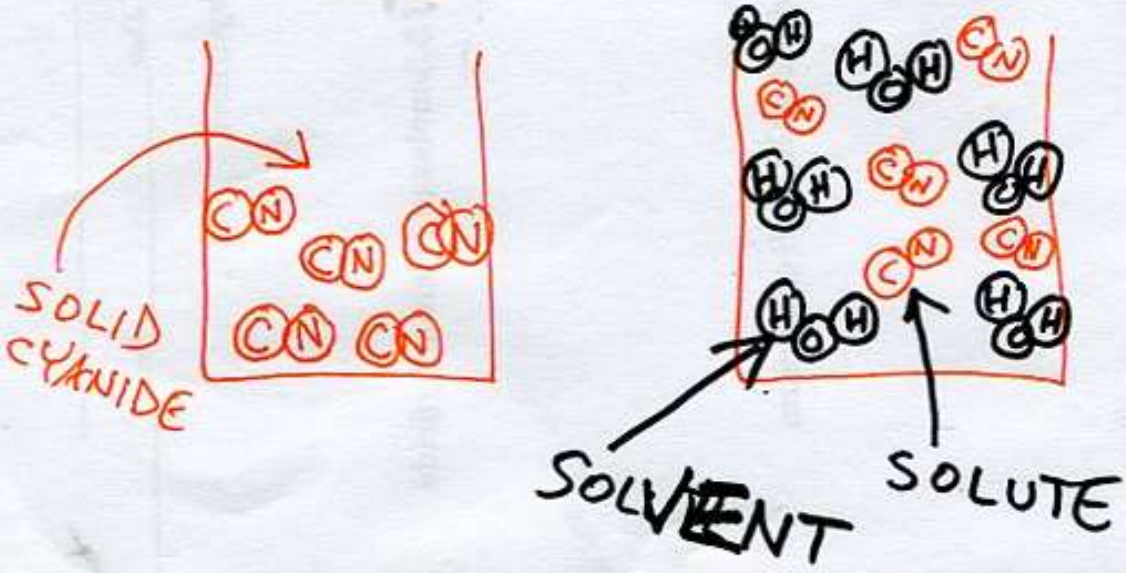
SULFURIC ACID H_2SO_4

HYDROCHLORIC ACID HCl

PHOSPHORIC ACID H_3PO_4

CARBONIC ACID H_2CO_3

HOW THINGS DISSOLVE:



CN is the solute and HOH is the solvent

Gas volume and limiting reagent

CAeMis+ry: https://genest.weebly.com

Stop in for help every day at lunch and Tues & Thurs after school!

Name

Period

ANSWERS

1. What is the volume of one mole of *any* gas at STP? 22.4 liters. Always.
2. How many grams of potassium nitrate will you need to make a solution that has a volume of 1.20 L and has a molarity of 0.75M?

KNO_3 is 101.11 g/mol on periodic table

Concent.	0.75 M
volume	1.20 L
moles	—

moles = volume × concentration

moles = $(1.20\,L) \times \left(0.75\frac{mol}{L}\right)$

moles = 0.90 moles

so...

$0.90\,mol \times \left(\frac{101.11\,g}{1\,mol}\right) = 91\,grams\ KNO_3$

Directions: Turn the following into balanced equations by filling in the blanks with the correct coefficients, formulas of ions or solids, and names.

	Cation	Anion		Formula	Name
3.	Ba^{2+}	$2I^-$	→	BaI_2	barium iodide
4.	$2NH_4^+$	SO_3^{2-}	→	$(NH_4)_2SO_3$	ammonium sulfite
5.	$2Ag^+$	O^{2-}	→	Ag_2O	silver oxide
6.	$2Fe^{3+}$	$3S^{2-}$	→	Fe_2S_3	iron (III) sulfide
7.	Mg^{2+}	$2Cl^-$	→	$MgCl_2$	magnesium chloride
8.	Ca^{2+}	CO_3^{2-}	→	$CaCO_3$	calcium carbonate
9.	$1\,Mg^{2+}$	$2\,NO_2^-$	→	$Mg(NO_2)_2$	magnesium nitrite
10.	$1\,Cu^{2+}$	$2\,OH^-$	→	$Cu(OH)_2$	copper (II) hydroxide
11.	$2K^+$	CrO_4^{2-}	→	K_2CrO_4	potassium chromate

12. How many molecules are in 22.4 liters of steam?

22.4L = 1 mole = 6.02×10^{23} H_2O molecules (no math, simple definitions from your notes)

13. What is the molarity of solution made by dissolving 0.740 moles of NH_4Br in enough water to make 840. mL of solution?

concentration	—
moles	0.740 moles
volume	0.840 L

$\text{concentration} = \frac{\text{moles}}{\text{volume}}$

$\text{Concentration} = \frac{(.740\,mol)}{(.840\,L)}$

answer, Concentration = $0.881\ \frac{mol}{L}$

14. What is the volume of 6.02×10^{23} molecules of Cl_2 gas at STP?

that's a mole! the volume at STP is 22.4 liters!