Zombie Answers

1	0.151 M	2	0.88 M
3	142 L	4	0.87 M
5	about 1.8×10^{24}	6	8.08×10^{-21} grams
7	1×10^{-11} M	8	7.79×10^{-5} M
9	3.9 M	10	91 grams

I AM A BRAIN…	YOUR NAME _____ YOUR ZOMBIE PAL'S NAME_____

one	What is the molarity of solution made by dissolving 0.340 moles of NH_4Br in enough water to make 2.25 L of solution?

three	How many liters of solution must you make if you wish to use 7.10 moles of potassium bromide and you want the molarity to be 0.0500M?

five	How many water molecules are present in the water bottle at STATION A?

seven	If you dissolved the molecules at STATION C in enough liquid to make 2.81×10^{-12} L of solution what would be the molarity of the solution?

nine	If you dissolve 35.0 grams of nitrogen monoxide in enough water to make a solution with 300 mL what wil the molarity be?

I AM A BRAIN…	YOUR NAME _____ YOUR ZOMBIE PAL'S NAME_____

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

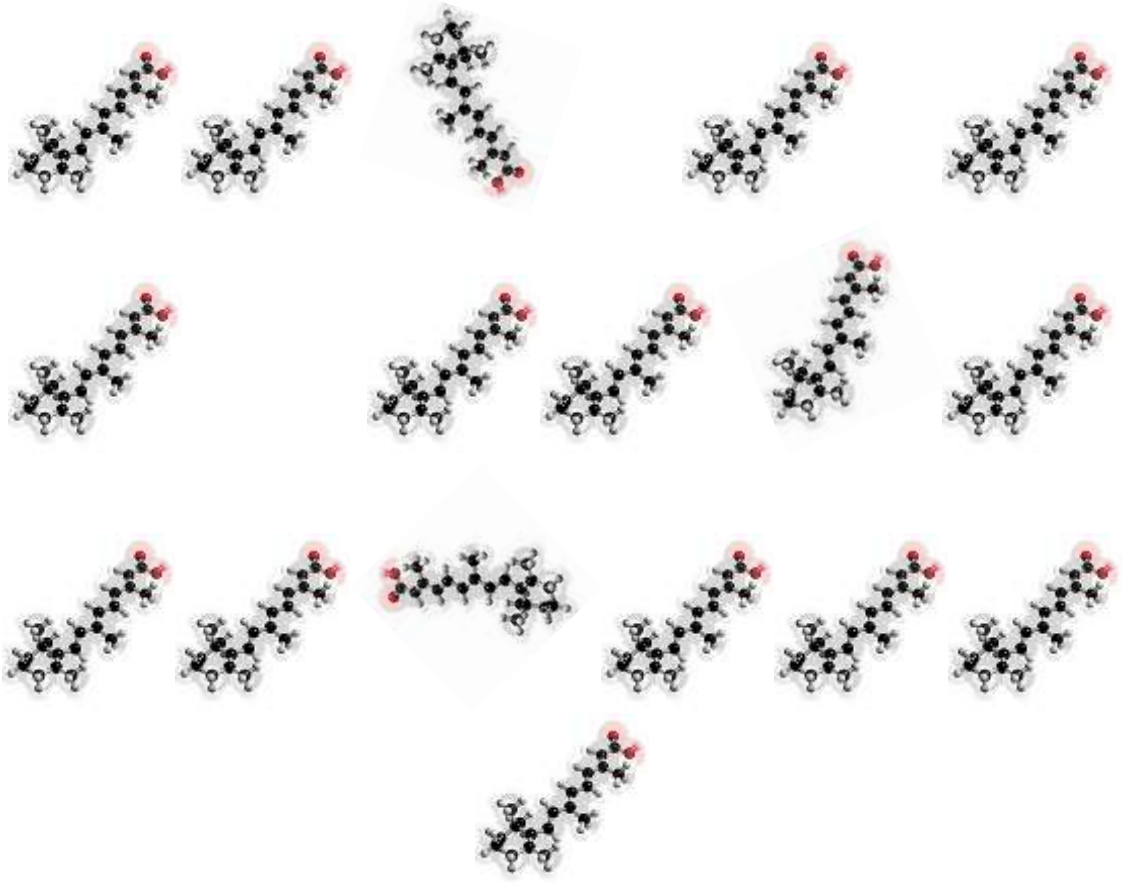
four	If you dissolve 35.0 grams of aluminum chloride in enough water to make a solution with 300 mL what wil the molarity be?

six	What is the mass, in grams, of the molecules shown at STATION C?

eight	If you dissolved 4.50×10^{-3} grams of Calcium Chloride in enough liquid to make 520. mL of solution what would be the molarity of the solution?

ten	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 ?

The molecules at Station C



"retinol", a nutrient necessary for vision

CLASS NOTES:

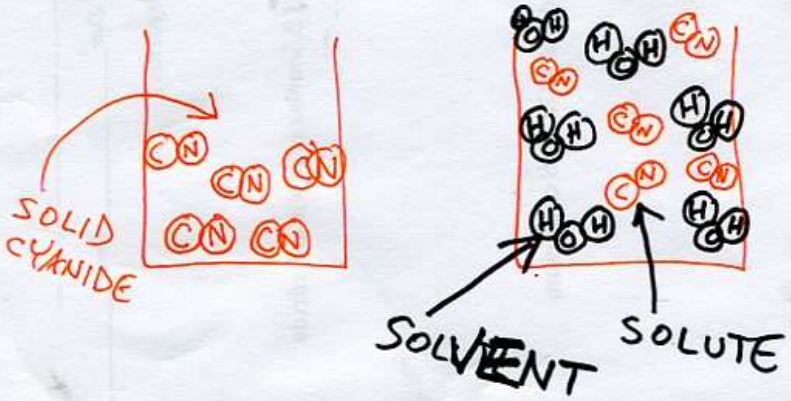
PURPOSE: WHAT ARE SOLUTES?

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

...AND I AM A ZOMBIE!

1.

inventory:

conc	—
moles	0.340 mol
volume	2.25 L

formula

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

$$\text{conc} = \frac{(.340)}{(2.25\text{L})}$$

$\text{conc} = 0.151\ \text{M}$

3.

conc	0.0500 M
moles	7.10 moles
volume	—

formula:

$$\text{Vol} = \frac{\text{moles}}{\text{conc}}$$

$$\text{vol} = \frac{7.10\ \text{mol}}{0.0500\ \frac{\text{mol}}{\text{L}}}$$

$\text{vol} = 142\ \text{L}$

5.

water is $55.62\ \text{g} \times \frac{1\ \text{mol}}{18.02\ \text{g}} \times \frac{6.02\times10^{23}\ \text{molecules}}{1\ \text{mol}} = 1.8\times10^{24}$ molecules

7.

$17\ \text{molecules} \times \left(\frac{1\ \text{mole}}{6.02\times10^{23}\ \text{molecules}}\right) = 2.82\times10^{-23}$ moles

ans 1.0×10^{-11}

9.

14.01
16
30.01

$35.0\ \text{g} \times \left(\frac{1\ \text{mole}}{30.01\ \text{g}}\right) = 1.17\ \text{mol}$

$\frac{1.17\ \text{mol}}{0.3\ \text{L}} = 3.9\ \text{M}$

...AND I AM THE ZOMBIE!

2.

$\frac{.740 \text{ mol}}{.840 \text{ L}} = 0.88$ moles per liter

Answer: 0.88 M

4

$35.0 \text{ g } AlCl_3 \times \left(\frac{1 \text{ mol}}{133.34 \text{ g}}\right) = 0.262 \text{ moles } AlCl_3$

$\frac{.262 \text{ mol}}{0.300 \text{ L}} = 0.87 \text{ M}$

6.

$17 \text{ molecules} \times \left(\frac{1 \text{ mole}}{6.02 \times 10^{23} \text{ molecules}}\right) \times \left(\frac{286.45 \text{ g}}{1 \text{ mol}}\right) = 8.08 \times 10^{-21} \text{ grams}$

6.02×10^{23}

286.45 grams/mol

8.

calcium chloride MW is 110.98 g/mol

$4.50 \times 10^{-3} \text{ g } CaCl_2 \times \left(\frac{1 \text{ mole}}{110.98 \text{ grams}}\right) = 4.05 \times 10^{-5} \text{ mol}$

Formula $\quad \text{conc} = \frac{\text{moles}}{\text{volume}} \qquad \text{conc} = \frac{4.05 \times 10^{-5} \text{ mol}}{0.520 \text{ L}}$

$\text{conc} = 7.79 \times 10^{-5} \text{ M}$

10.

moles = ———

Moles = volume × conc

$= 1.2 \text{ L} \times 0.75$

101.10 g/mol

$0.9 \text{ moles} \times 101.10 \text{ g/mol} = 91 \text{ grams}$

Gas volume and limiting reagent

CλeMis+ry: http://genest.weebly.com

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

Name ANSWERS

Period

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

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

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

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!