

Name: _____ Period: _____ Date: _____

SOLUTIONS NOTES HONORS CHEMISTRY

Directions: This packet will serve as your notes for this chapter. Follow along with the PowerPoint presentation and fill in the missing information. Important terms / ideas are in all capitals and bolded!

- SOLUTION:**

Parts of Solutions	Definition / Examples
SOLUTE:	
SOLVENT:	

- Insoluble vs. Soluble

INSOLUBLE	SOLUBLE

-What factors influence solubility?:

- AQUEOUS SOLUTION:**

-Two Types:

ELECTROLYTES	NONELECTROLYTES
Form _____, conduct electric current (ex: NaCl or MgCl ₂) / _____	Do NOT form _____ or conduct electric current (ex: Sugar or Ethanol) / _____

-DISSOCIATION:

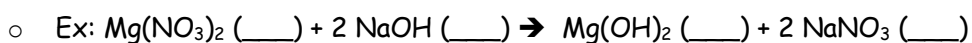
- Classification of Solutions

Type	Definition
SATURATED:	Contains _____ quantity of _____ that dissolves at that temperature
UNSATURATED:	Contains _____ than the maximum amount of _____ that can be dissolved
SUPERSATURATED:	Contains _____ than is possible to be dissolved by warming or evaporating (_____ and _____)

- **SOLUBILITY RULES**

Knowing whether compounds are soluble or insoluble from these rules tells you if a **PRECIPITATE** forms... which tells you **IF** a Double-Replacement Reaction happened or not!

Rule	Description	
#1	Salts of ammonium and alkali metals are always _____	Relate to when compounds are SOLUBLE with exceptions
#2	All chlorides, bromides, and iodides are _____ except when combined with Ag, Hg, and Pb which are _____	
#3	Chlorates, acetates, and nitrates are _____	
#4	Sulfates are _____ except with Ca, Sr, Ba, Ag, Hg, and Pb which are _____	
#5	Phosphates, carbonates, and sulfides are _____ except ammonium and alkali metal compounds are _____	Relate to when compounds are INSOLUBLE with exceptions
#6	All metallic oxides are _____ except ammonium and alkali metal compounds are _____	
#7	All hydroxides are _____ except ammonium, alkali metal compounds, and group 2A from Ca down are _____	



Solubility Rules Practice	Indicate (aq) for soluble or (s) for insoluble
Classify each of the following as soluble or insoluble.	

- NET IONIC EQUATIONS:

-SPECTATOR IONS:

<p>Steps for Writing Net Ionic Equations:</p>	<ol style="list-style-type: none"> 1) Write the _____ equation 2) Rewrite the equation showing the _____ that form in solution for each _____ compound 3) Cancel _____ ions (ALL cancel = _____!) 4) Rewrite the final equation
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- Example:

Net Ionic Practice	Show all work
<p>Predict the products (with solubility indicated), balance, and write the net ionic equation for each.</p>	<p>____ K_2CO_3 (aq) + _____ (aq) →</p>
	<p>____ $Ba(NO_3)_2$ (aq) + _____ (aq) →</p>
	<p>____ Na_2S (aq) + _____ (aq) →</p>

- Concentration of Solutions

-Reactions take place when two _____ are _____

-In order to do stoichiometric calculations, the **CONCENTRATION** (_____)
_____ must be known

-A few ways to expression concentration...

- MOLARITY (M):**

$$M =$$

Example	Show all work, units, and Sig Figs
Calculate the molarity of a solution when _____ g of NaOH is dissolved in enough water to make 1.5 liters of solution.	

- Practice

Examples	Show all work, units, and Sig Figs
How many liters of _____ M solution can be made using 125 grams of LiBr?	
What mass of oxalic acid, $H_2C_2O_4$, is needed to make _____ mL of a 0.0500 M solution?	
What is the concentration of a solution that has a volume of _____ L and contains 660 g of $Ca_3(PO_4)_2$?	

- MASS or VOLUME %**

$$\% \text{ by Mass (g) OR } \% \text{ by Volume (mL) =}$$

Example	Show all work, units, and Sig Figs
What is the percent concentration of _____ g of NaCl dissolved in 350.0 g of water?	

- Preparing Solutions

-STEP 1: To make a certain concentration of solution, the _____ should be weighed out first and then placed in a _____ flask

-STEP 2: Dissolve the _____ in SOME of the _____ then add the remaining solvent

-To save space, time, and money _____ / _____ solutions are often purchased

-Water is then added to _____ the stock solutions to the desired concentration

-Moles of solute _____ = Moles of solute _____ (no solute is added during a dilution)

-How much _____ needs to be added?...

- DILUTIONS

-EQUATION:

Examples	Show all work, units, and Sig Figs
What volume of ____ M H_2SO_4 must be used to prepare 1.5 L of 0.10 M solution?	
How many mL of stock solution should be used to prepare _____ mL of 0.750 M NaBr solution using 2.00 M stock solution?	

- Solution Stoichiometry

<p>Steps for Stoichiometry with Solution Reactions:</p>	<ol style="list-style-type: none"> 1) Write and balance the equation 2) Determine _____ (use the rules) 3) Determine the _____ of each reactant and find the _____ (if needed) 4) Find amount of product <p style="text-align: center;">Depending on _____ given, some steps can be _____!!</p>
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- Solution Stoichiometry Examples

Examples	Show all work, units, and Sig Figs
<p>How many grams of Ca(OH)_2 are required to react with _____ mL of 0.40 M HCl? Show the balanced equation.</p>	
<p>Calculate the mass of solid formed when _____ L of 0.050 M lead (II) nitrate and 2.0 L of 0.025 M sodium sulfate are mixed.</p>	
<p>If 625 mL of _____ M aluminum chloride is mixed with 245 mL of _____ M sodium sulfide, how many grams of the precipitate will form AND what is the concentration of EACH ion of the excess reagent that remains in solution after the reaction?</p>	