

AP CHEMISTRY SUMMER PACKET AND ASSIGNMENT

Welcome to AP Chemistry! I am happy that you have chosen to take this class. In this packet you will find content from your Chemistry 1 class that you will need to review. In addition, you will find resources to help you along the way. **By the first day of school, you need to have completed Flash Cards for the Solubility Rules and the questions from the Summer Assignment.**

Below is a list of what can be found in this packet:

1. **Summer Assignment Review Checklist: Read through and review the topics listed on the Checklist. (you do not have to complete anything on this part.)**
2. **Solubility Rules- Make Flash Cards (notecards) of the Solubility Rules (you do not have to memorize them by the start of the school year, but you will have to have them memorized early in the year so YOU DO HAVE TO HAVE THE NOTE CARDS MADE ON DAY 1.)**
3. **Resources-I included a list of links to videos and websites that may be helpful to you when completing this summer assignment.**

Also, I included a link to the Chemistry Reference Materials that may be helpful to you when you are completing this summer assignment.

4. **Summer Assignment- This must be completed by the first day of school. Print out the assignment and answer. If you do not have access to a printer, you can write your answers on loose-leaf.**

1. Summer Assignment Review Checklist: Read through and review these topics

1. Periodic Table Use and Understanding:

- Understand differences among atoms, isotopes, and ion with consideration for sub-atomic particles
- Review periodic property trends such as electronegativity, ionization energy, and atomic radius
- Communicate electron detail knowledge through electron configuration codes and orbital diagrams
- Connect and appreciate that valence electrons and PT trends explain property and behavior differences

2. Reaction Writing and Analysis:

- Review symbols and charges of common atoms and ions and apply this to formula writing

- Identify oxidation and reduction through consideration of oxidation numbers
- Predict products and balance chemical equations for synthesis, decomposition, and combustion
- Represent aqueous single and double displacement to include solubility rules and net-ionic form

3. Mole Math Problem Solving:

- Determine mole and mass answers for sample measurements with provided chemical formulas
- Apply reading skills and accurate algebra to solve multi-step mole math / stoichiometry problems
- Display organized work with proper units and significant digit consideration
- Challenge yourself to understand the importance of interpreting the meaning of calculated answers

2. MAKE FLASH CARDS OF THESE SOLUBILITY RULES

SOLUBILITY RULES

- The following solubility rules should be committed to memory. Knowledge of precipitates and solution chemistry is vital to a full understanding of aqueous reactions at the AP level.

- 1. Salts containing Group I elements are soluble** (Li^+ , Na^+ , K^+ , Cs^+ , Rb^+). Exceptions to this rule are rare. Salts containing the ammonium ion (NH_4^+) are also soluble.
- 2. Salts containing nitrate ion (NO_3^-) are generally soluble.**
- 3. Salts containing Cl^- , Br^- , I^- are generally soluble.** Important exceptions to this rule are halide salts of Ag^+ , Pb^{+2} , and $(\text{Hg}_2)^{+2}$. Thus, AgCl , PbBr_2 , and Hg_2Cl_2 are all INSOLUBLE.
- 4. Most silver salts are insoluble.** AgNO_3 and $\text{Ag}(\text{C}_2\text{H}_3\text{O}_2)$ are common soluble salts of silver; virtually anything else is INSOLUBLE.
- 5. Most sulfate salts are soluble.** Important exceptions to this rule include BaSO_4 , PbSO_4 , Ag_2SO_4 , and CaSO_4 which are INSOLUBLE.
- 6. Most hydroxide salts are only slightly soluble.** Hydroxide salts of Group I elements are soluble. Hydroxide salts of Group II elements (Ca , Sr , and Ba) are slightly soluble. Hydroxide salts of transition metals and Al^{+3} are INSOLUBLE. Thus, $\text{Fe}(\text{OH})_3$, $\text{Al}(\text{OH})_3$, $\text{Co}(\text{OH})_2$ are INSOLUBLE.

7. **Most sulfides of transition metals are highly INSOLUBLE.** Thus, CdS, FeS, ZnS, Ag₂S are all INSOLUBLE. Arsenic, antimony, bismuth, and lead sulfides are also INSOLUBLE.

8. **Carbonates are frequently INSOLUBLE.** Group II carbonates (Ca, Sr, and Ba) are INSOLUBLE. Some other INSOLUBLE carbonates include FeCO₃, PbCO₃. Carbonates become soluble in acid solution.

9. **Chromates are frequently INSOLUBLE.** Examples: PbCrO₄, BaCrO₄.

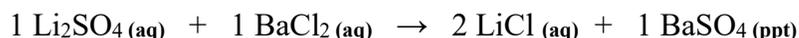
10. **Phosphates are frequently INSOLUBLE.** Examples: Ca₃(PO₄)₂, Ag₂PO₄,

11. **Fluorides are frequently INSOLUBLE.** Examples: BaF₂, MgF₂, PbF₂.

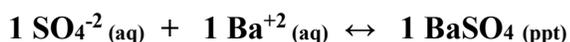
**** Solubility Rules are important when writing NET-IONIC EQUATIONS. Here is an example:**

Ex. "Aqueous solutions of lithium sulfate and barium chloride are mixed":

Double displacement with consideration for the solubility rules:



The NET IONIC EQUATION will omit spectator ions and focus on the physical state change:



3. Resources

An excellent resource can be found here: <http://www.bozemanscience.com/ap-chemistry/>

This website does a great job of breaking down all the Big Ideas and offers great explanations.

Other websites are listed below.

Some helpful websites

<http://chemteam.info/ChemTeamIndex.html>

<http://misterguch.brinkster.net/chemfiestanew.html>

http://www.collegeboard.com/student/testing/ap/sub_chem.html?chem

<http://www.chemmybear.com/>

<http://www.adriandingleschemistrypages.com/apquiz.html>

<http://www.chemtutor.com/mols.htm>

<http://www.usetute.com.au/idealgas.html>

<http://www.visionlearning.com/>

****Link to Reference Materials**

This is a link to the Reference Materials that I give my Chemistry 1 students. It includes the Periodic Table, Conversions, a list of Polyatomic Ions and their charges and helpful formulas.

https://jcaonline-my.sharepoint.com/:b:/g/personal/tbarrett_jca-online_org/EYjbXX3K1QtJqEAcCKv2Pg8BddvCG2ArXmyKCCK9pqkbWQ?e=bYNphS

