

## AP Chemistry “Things To Do” 2016 Summer Checklist

I am very excited that you are taking AP chemistry next year. It will be a challenging, but rewarding class! To get the course off to a good start, it is imperative that you review basic chemistry concepts over the summer. Take time *throughout* the summer to complete these tasks.

- ✓ Purchase a bound composition book for labs.
  - ✓ Save the class website ([www.sites.google.com/site/plackimore](http://www.sites.google.com/site/plackimore)) to your bookmarks.
  - ✓ Check accessibility to the “AP chemistry 2016-2017.”
  - ✓ Enter your **contact information** in the Google Form posted on the class website. Please complete this by June 24, 2016.
  - ✓ *Memorize* “**AP Chemical Naming**” and “**Stuff I Need to Memorize in AP Chemistry**” Handouts, which can be accessed on the Google drive.
  - ✓ *Complete* the **AP Chemistry Summer Assignment Worksheet**.
  - ✓ *Read and understand* **Chapters 1, 2 & 3 in Zumdahl, 7<sup>th</sup> ed. textbook**, which is in the Google Drive. The class website has links to helpful videos.
  - ✓ *Complete* the following **textbook problems**, and check solutions (Zumdahl, 7<sup>th</sup> ed. textbook on Google drive)
    - Ch. 1 Problems #23-27 odd, 29-33, 35, 53, 57-65 odd, 66, 77
    - Ch. 2 Problems #19, 20, 31, 43-73 odd, 77, 83, 87
    - Ch. 3 Problems #10-13, 16, 18-20, 21, 23, 25-27, 35, 51ab, 53, 57, 59, 61, 67, 71-93 odd, 97-105 odd
- (Note: Answers to questions with blue numbers are in the back of the book. Be in charge of your own learning. Check your own answers and come to school on the first day with any questions you may have for those items.)
- ✓ **If you have questions, email me at [plackeas@gmail.com](mailto:plackeas@gmail.com).**

# AP Chemistry Summer Assignment Worksheet

The following assignment is to be completed and brought on the first day of class.

## Nomenclature

### 1. Name these binary compounds of two nonmetals.

IF<sub>7</sub> \_\_\_\_\_ N<sub>2</sub>O<sub>5</sub> \_\_\_\_\_ XeF<sub>2</sub> \_\_\_\_\_  
N<sub>2</sub>O<sub>4</sub> \_\_\_\_\_ As<sub>4</sub>O<sub>10</sub> \_\_\_\_\_ SF<sub>6</sub> \_\_\_\_\_  
PCl<sub>3</sub> \_\_\_\_\_ S<sub>2</sub>Cl<sub>2</sub> \_\_\_\_\_

### 2. Name these binary compounds with a fixed charge metal.

AlCl<sub>3</sub> \_\_\_\_\_ MgO \_\_\_\_\_ BaI<sub>2</sub> \_\_\_\_\_  
KI \_\_\_\_\_ SrBr<sub>2</sub> \_\_\_\_\_ Na<sub>2</sub>S \_\_\_\_\_  
CaF<sub>2</sub> \_\_\_\_\_ Al<sub>2</sub>O<sub>3</sub> \_\_\_\_\_

### 3. Name these binary compounds of cations with variable charge.

CuCl<sub>2</sub> \_\_\_\_\_ Fe<sub>2</sub>O<sub>3</sub> \_\_\_\_\_ SnO \_\_\_\_\_ CoP \_\_\_\_\_  
PbCl<sub>4</sub> \_\_\_\_\_ Cu<sub>2</sub>S \_\_\_\_\_ HgS \_\_\_\_\_ AuI<sub>3</sub> \_\_\_\_\_

### 4. Name these compounds with polyatomic ions.

Fe(NO<sub>3</sub>)<sub>3</sub> \_\_\_\_\_ NaOH \_\_\_\_\_ Cu<sub>2</sub>SO<sub>4</sub> \_\_\_\_\_ Cu<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> \_\_\_\_\_  
Ca(ClO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_ KNO<sub>2</sub> \_\_\_\_\_ NaHCO<sub>3</sub> \_\_\_\_\_ NH<sub>4</sub>NO<sub>2</sub> \_\_\_\_\_

### 5. Name these binary acids

HCl \_\_\_\_\_ HI \_\_\_\_\_

### 6. Name these acids with polyatomic ions.

HClO<sub>4</sub> \_\_\_\_\_ H<sub>2</sub>SO<sub>4</sub> \_\_\_\_\_ HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> \_\_\_\_\_ H<sub>2</sub>CO<sub>3</sub> \_\_\_\_\_  
H<sub>3</sub>PO<sub>4</sub> \_\_\_\_\_ HNO<sub>2</sub> \_\_\_\_\_ H<sub>2</sub>CrO<sub>4</sub> \_\_\_\_\_ H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> \_\_\_\_\_

### 7. Name these compounds appropriately.

CO \_\_\_\_\_ NH<sub>4</sub>CN \_\_\_\_\_ HIO<sub>3</sub> \_\_\_\_\_ NI<sub>3</sub> \_\_\_\_\_  
AlP \_\_\_\_\_ OF<sub>2</sub> \_\_\_\_\_ LiMnO<sub>4</sub> \_\_\_\_\_ HClO \_\_\_\_\_  
SO<sub>2</sub> \_\_\_\_\_ CuCr<sub>2</sub>O<sub>7</sub> \_\_\_\_\_ K<sub>2</sub>O \_\_\_\_\_ HF \_\_\_\_\_  
FeF<sub>3</sub> \_\_\_\_\_ KC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> \_\_\_\_\_ MnS \_\_\_\_\_

### 8. Write the formulas.

Tin (IV) phosphide \_\_\_\_\_ copper (II) cyanide \_\_\_\_\_ dichromic acid \_\_\_\_\_  
Magnesium hydroxide \_\_\_\_\_ sodium peroxide \_\_\_\_\_ Zinc fluoride \_\_\_\_\_  
Sulfurous acid \_\_\_\_\_ lithium silicate \_\_\_\_\_ cobalt (II) chromate \_\_\_\_\_  
Potassium nitride \_\_\_\_\_ chromium (III) carbonate \_\_\_\_\_ gallium arsenide \_\_\_\_\_

## Solubility rules

### 9. Review solubility rules and identify each of the following compounds as soluble or insoluble in water.

Na<sub>2</sub>CO<sub>3</sub> \_\_\_\_\_ CoCO<sub>3</sub> \_\_\_\_\_ Pb(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_ FeF<sub>2</sub> \_\_\_\_\_  
K<sub>2</sub>S \_\_\_\_\_ BaSO<sub>4</sub> \_\_\_\_\_ (NH<sub>4</sub>)<sub>2</sub>S \_\_\_\_\_ Sn(SO<sub>3</sub>)<sub>4</sub> \_\_\_\_\_  
AgI \_\_\_\_\_ Ni(NO<sub>3</sub>)<sub>2</sub> \_\_\_\_\_ KI \_\_\_\_\_ AgClO<sub>3</sub> \_\_\_\_\_  
FeS \_\_\_\_\_ PbCl<sub>2</sub> \_\_\_\_\_ CuSO<sub>4</sub> \_\_\_\_\_ Cr(OH)<sub>3</sub> \_\_\_\_\_  
Li<sub>2</sub>O \_\_\_\_\_ Mn(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>2</sub> \_\_\_\_\_

10. Predict whether each of these double replacement reactions will give a precipitate or not based on the solubility of the products. If yes, identify the precipitate.

silver nitrate and potassium chloride \_\_\_\_\_

cobalt (III) bromide and potassium sulfide \_\_\_\_\_

magnesium nitrate and sodium carbonate \_\_\_\_\_

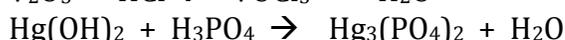
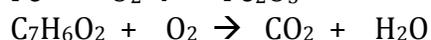
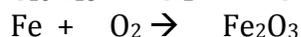
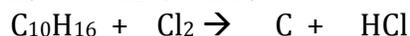
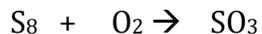
ammonium hydroxide and copper (II) acetate \_\_\_\_\_

strontium bromide and potassium sulfate \_\_\_\_\_

lithium chlorate and chromium (III) fluoride \_\_\_\_\_

### Balancing Equations

11. Balance the following equations with the lowest whole number coefficients.



### Stoichiometry and Limiting Factor

12. Given the equation below, what mass of water would be needed to react with 10.0g of sodium oxide?



13.  $2\text{NaClO}_3 \rightarrow 2\text{NaCl} + 3\text{O}_2$

What mass of sodium chloride is formed along with 45.0g of oxygen gas?

14.  $4\text{NH}_3 + 5\text{O}_2 \rightarrow 4\text{NO} + 6\text{H}_2\text{O}$

What mass of water will be produced when 100.0g of ammonia is reacted with excess oxygen?

15. If the reaction in #14 is done with 25.0g of each reactant, which would be the limiting factor?

16.  $\text{Na}_2\text{S} + 2\text{AgNO}_3 \rightarrow \text{Ag}_2\text{S} + 2\text{NaNO}_3$

If the above reaction is carried out with 50.0g of sodium sulfide and 35.0g of silver nitrate, which is the limiting factor?

What mass of the excess reactant remains?

What mass of silver sulfide would precipitate?

17.  $6\text{NaOH} + 2\text{Al} \rightarrow 2\text{Na}_3\text{AlO}_3 + 3\text{H}_2$

What volume of hydrogen gas (measured at STP) would result from reacting 75.0g of sodium hydroxide with 50.0g of aluminum?

18. Use the activity series table and the halogen activity rules and predict whether a reaction would occur in the following reactions. If a reaction occurs write the products in the correct formulas, then balance the equation. If no reaction occurs write "NR."

