

AP Chemistry Summer Assignment 2014

Ms. Wong

Welcome to AP Chemistry! You already have a background in chemistry from General Chemistry class, now you will use that knowledge as the foundation to learn the AP Chemistry concepts. In order to keep the chemistry basics fresh in your mind and be prepared for AP Chemistry this fall, you must complete the following assignment over your summer break. The assignment consists of two parts. In Part 1, you will register for an account on Chemthink.com and complete 8 tutorials and 8 question sets. Register for a ChemThink account using the provided code in this packet. The code expires June 20. Should you wait until after June 20 to register, you will need to email me so I can give you a new code. Pace yourself to ensure you finish all tutorials and question sets by the start of school. I will be checking periodically throughout the summer to monitor your progress. In Part 2, you will complete the attached review worksheet. Be sure to show all your work and circle your final answers.

Both Parts 1 & 2 of the summer assignment are due on the first day of class.

You will also be responsible for memorizing all of the polyatomic ions (formulas with charges) and solubility rules. You will need to know the polyatomic ions and solubility rules for the entire school year, so start learning them now! **There will be a quiz on polyatomic ions and solubility rules on the second day of class.**

You may reference the class website: www.wongchemistry.weebly.com for resources and class updates. Should you have any questions, I will be checking my email frequently throughout the summer. I can be reached at: megan.wong@vbschools.com In addition, I recommend that you sign up for text alerts so that you can stay up to date throughout the summer. To sign up for AP Chem text alerts, text @wongapchem to (571) 292-3625.

Have a great summer!

Ms. Wong

POLYATOMIC ION ROOTS FOR AP CHEMISTRY

OH^{-1}	HYDROXIDE	SeO_4^{-2}	SELENATE	PO_4^{-3}	PHOSPHATE
IO_3^{-1}	IODATE	CrO_4^{-2}	CHROMATE	NH_4^{+1}	AMMONIUM
MnO_3^{-1}	MANGANATE	$\text{Cr}_2\text{O}_7^{-2}$	DICHROMATE	Hg_2^{+2}	MERCURY (I)
ClO_3^{-1}	CHLORATE	SO_4^{-2}	SULFATE	O_2^{-2}	PEROXIDE
NO_3^{-1}	NITRATE	$\text{C}_2\text{O}_4^{-2}$	OXALATE		
BrO_3^{-1}	BROMATE	CO_3^{-2}	CARBONATE		
SCN^{-1}	THIOCYANATE	SiO_3^{-2}	SILICATE		
CN^{-1}	CYANIDE				
$\text{C}_2\text{H}_3\text{O}_2^{-1}$	ACETATE (OR $\text{CH}_3\text{COO}^{-1}$)				
HSO_4^{-1}	HYDROGEN SULFATE	$\text{H}_2\text{PO}_4^{-1}$	DIHYDROGEN PHOSPHATE		
HCO_3^{-1}	HYDROGEN CARBONATE	HPO_4^{-2}	HYDROGEN PHOSPHATE		

RULES FOR CHANGING THE OXYGENS AND THUS NAMES OF THESE ROOTS:

IF 1 MORE OXY. THAN THE ROOT, ADD THE PREFIX "PER" TO THE NAME:
EXAMPLE MnO_4^{-1} IS PERMANGANATE

IF 1 LESS OXY. THAN THE ROOT, CHANGE ENDING TO "ITE":
EXAMPLE ClO_2^{-1} IS CHLORITE

IF 2 LESS OXY. THAN THE ROOT, CHANGE ENDING TO "ITE" AND ADD PREFIX "HYPO": EXAMPLE NO^{-1} IS HYPONITRITE

SOLUBILITY RULES FOR AP CHEMISTRY

1. ALL COMPOUNDS CONTAINING GROUP 1 ions, H^{+1} OR NH_4^{+1} ARE ALWAYS SOLUBLE
2. ALL COMPOUNDS CONTAINING $\text{C}_2\text{H}_3\text{O}_2^{-1}$, NO_3^{-1} , OR ClO_3^{-1} ARE ALWAYS SOLUBLE
3. MOST SULFATES & CHROMATES ARE SOLUB. EXCEPT Ca^{+2} , Ba^{+2} , Sr^{+2} , Ag^{+1} , AND Pb^{+2}
4. MOST CHLORIDES, BROMIDES, & IODIDES ARE SOLUB. EXCEPT Ag^{+1} , Pb^{+2} , AND Hg_2^{+2}
5. MOST CARBONATES, PHOSPHATES, & SILICATES ARE INSOLUB. EXCEPT GROUP 1
6. MOST SULFIDES & HYDROXIDES ARE INSOLUB. EXCEPT GROUP 1 & Ca^{+2} , Ba^{+2} , Sr^{+2}

Part 1: ChemThink

Directions: Complete the tutorial and question set for each of the following 8 topics.

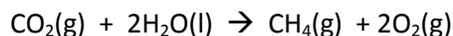
1. Atomic Structure
2. Ions
3. Ionic Bonding
4. Ionic Formulas
5. Covalent Bonding
6. Molecular Shapes
7. Behavior of Gases
8. Chemical Reactions

How to Register for ChemThink:

1. Go to the website www.chemthink.com
2. Click on "Not Registered" (on the right hand side)
3. Now enter this 12 digit code: 7403-8405-7388
4. Click register
(note: this code will only be good for registering until 6/20/2014 but once you are registered you are good for the entire year. If you forget to register before the 20th of June you will have to email me to get a new code!)
5. Now fill out your info creating a username and using the password apchem1415 and choosing the period AP Chem.
6. Now click register and then login using your username and password apchem1415.
7. You are ready to pick your topic and its tutorial. Then complete the corresponding question set. There are 8 tutorials and 8 question sets for you to do over the course of the summer.
8. After a tutorial or question set is completed, you should double check the Results tab at the top of the screen. If it does not say complete, then you will not receive credit.

Part 2: Review Worksheet

Directions: Complete #1-2 using the following balanced equation. Show all work and circle final answer!



- How many grams of CO_2 are needed to produce 57.2 grams of oxygen?
- How many liters of oxygen gas at STP could be produced from 0.879 grams of water?
- For each of the atoms or ions below, identify the number of electrons and protons. Also write the complete electron configuration (no abbreviated or noble gas configurations).

Atom or Ion	# of e^-	# of p^+	e^- configuration
Se			
Cl^-			
Ca			
Na^+			

- Write formulas for each of the following:
 - Magnesium nitride _____
 - Sodium oxide _____
 - Iron (II) nitrate _____
 - Hydrochloric acid _____
- Write the names of each of the following:
 - SnO_2 _____
 - Ca_3P_2 _____
 - HNO_3 _____
 - $\text{Al}_2(\text{SO}_4)_3$ _____

- Balance the equation then identify the type of chemical reaction. **RXN TYPE**
 - ___ Br_2 + ___ NaI \rightarrow ___ I_2 + ___ NaBr _____
 - ___ C_3H_8 + ___ O_2 \rightarrow ___ CO_2 + ___ H_2O _____
 - ___ CaO + ___ H_2O \rightarrow ___ $\text{Ca}(\text{OH})_2$ _____
 - ___ $\text{Pb}(\text{NO}_3)_2$ + ___ NaCl \rightarrow ___ PbCl_2 + ___ NaNO_3 _____

7. Write the net ionic equation for 6d. (Hint: solubility rules)

- Identify the substance being oxidized in 6a and the substance being reduced in 6a.