

AP Chemistry Summer Assignment – Whitewater High School

Dear student,

Welcome to AP chemistry, which you will find is a very stimulating subject. Summer has arrived. What are you going to do with all that free time? Ten weeks to be precise. Why not study chemistry. The earlier you start the better. I expect you will have difficulty doing some of the problems; that is natural. You will be quizzed on polyatomic ions the first day of school. Get a study buddy. Study together. Pace yourself. Start now!

Master the following chapters. Do not just scan. Your goal will be to work as many problems as possible. There are answers to the odd numbered problems at the back of the book. This material is a **review** of what you covered in general chemistry. **We will spend just over a week going over the material and then you will do your first test.**

Chapter 1: Introduction: Matter, Energy, and Measurement. Read pages 3-34

Pay attention to significant figures

Chapter 2: Atoms, Molecules, and Ions. Read pages 43-74

Pay attention to naming compounds, including acids, and writing formula. You must know the charges of common cations: page 66. You must know the charges of common anions page 68. You have covered this material in general chemistry.

You will be tested on the common, cations, anions and polyatomics the first day back. This will make up 10% of your first test. You can't do chemistry if you don't know the basics

Chapter 3: Chemical Reactions and Reaction Stoichiometry Read pages 83-110

Pay attention to balancing equations, you must be proficient in this skill.

Pay attention to Stoichiometric Calculations, which include limiting reactant, and percentage yield problems.

The following assignment is to be completed on paper; single sided only, and brought in on the first day of class. This work will make up 20% of your first test.

Nomenclature

1. Name these binary compounds of two nonmetals.

IF₇ _____ N₂O₅ _____ XeF₂ _____
N₂O₄ _____ As₄O₁₀ _____ SF₆ _____
PCl₃ _____ S₂Cl₂ _____

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

AlCl₃ _____ MgO _____ BaI₂ _____
KI _____ SrBr₂ _____ Na₂S _____ CaF₂ _____
Al₂O₃ _____

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

CuCl₂ _____ Fe₂O₃ _____ SnO _____
PbCl₄ _____ Cu₂S _____ HgS _____
AuI₃ _____ CoP _____

4. Name these compounds with polyatomic ions.

Fe(NO₃)₃ _____ NaOH _____ Cu₂SO₄ _____
Ca(ClO₃)₂ _____ KNO₂ _____ NaHCO₃ _____
NH₄NO₂ _____ Cu₂Cr₂O₇ _____

5. Name these binary acids

HCl _____ HI _____

6. Name these acids with polyatomic ions.

HClO₄ _____ H₂SO₄ _____ HC₂H₃O₂ _____
H₃PO₄ _____ HNO₂ _____ H₂CrO₄ _____
H₂C₂O₄ _____ H₂CO₃ _____

7. Name these compounds appropriately.

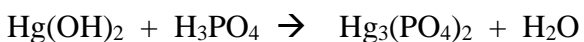
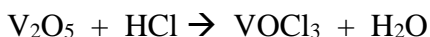
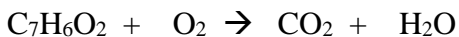
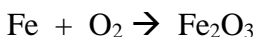
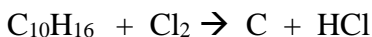
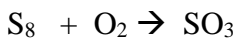
CO _____ NH₄CN _____ HIO₃ _____
NI₃ _____
AlP _____ OF₂ _____ LiMnO₄ _____ HClO _____
HF _____ SO₂ _____ CuCr₂O₇ _____ K₂O _____
FeF₃ _____ KC₂H₃O₂ _____ MnS _____

8. Write the formulas.

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

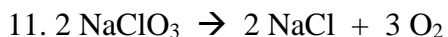
Balancing Equations

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

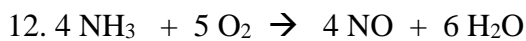


Stoichiometry and Limiting Factor

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

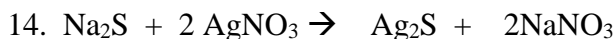


What mass of sodium chloride is formed along with 45.0g of oxygen gas?



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

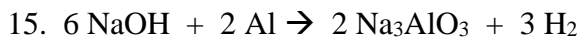
13. If the reaction in #13 is done with 25.0g of each reactant, which would be the limiting factor?



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?



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

Useful Websites:

Course Overview

<https://apstudent.collegeboard.org/apcourse/ap-chemistry>

Course and exam

<http://media.collegeboard.com/digitalServices/pdf/ap/ap-chemistry-course-and-exam-description.pdf>

Photo electron spectroscopy. Familiarize yourself with this material over Summer.

https://secure-media.collegeboard.org/digitalServices/swf/ap-webcasts/chemistry/ap_chem_pes.html

Past exam questions

<https://apcentral.collegeboard.org/courses/ap-chemistry/exam>

AP Chemistry Bozeman Science

<http://www.bozemanscience.com/ap-chemistry>

coursera offers college level courses which AP chemistry is. <https://www.coursera.org/> Search for chemistry in the search catalog field. Choose chemistry offered by the University of Kentucky and enroll in it. It's a very good website. **Try it!**

Tyler Dewitt: Has lots of You Tube videos on working chemistry problems.

<https://www.youtube.com/channel/UCj3EXpr5v35g3peVWnVLoew>

Have a great Summer!

Mr. Tuboku-Metzger

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