

**Sign contract** and return to Mr. Wood (room 371) by **Friday June 14<sup>th</sup>**!

Summer Google Classroom Code: peq1eu

1. **Reading:** You are responsible for the content in chapters 1-4 of Chemistry the Central Science. You will be given a book to sign out for the year and a pdf of the first 4 chapters will be posted to the google classroom page
2. **Problem solving:** Answer all assigned book problems in a bound COMPOSITION NOTEBOOK. You will solve all problem sets and homework for the year in this notebook. Failure to turn in a notebook on the first day of class with all the summer work completed will forfeit your seat in AP Chem. (This does not mean you need to master EVERYTHING in all 4 chapters, but you are expected to diligently work independently to understand the concepts. Remember, this is a college level course, so we move fast!)
3. **AP problems:** The AP problems attached should also be included in your Composition notebook.
4. **Online Component:** You will sign up for the running on physics website where we will be doing the majority of our homework assignments throughout the year. I will post practice problems here throughout the summer that must be completed before the school year starts. There will also be links to videos that will help to demonstrate particular concepts or topics.

Chapter 1 Objectives:

- Classify matter and understand chemical vs. physical changes as well as separation techniques.
- Master unit conversions involving metric units and temperature conversions from K to °C
- Understand the uncertainty in measurements and appropriately use significant digits.
- How to solve problems using dimensional analysis. Be able to set up, cancel units, and solve.

Problems in book: 3,5,6,8,15,24,43,58,63,67

Chapter 2 Objectives:

- Have basic knowledge of the evolution of atomic theory
- Understand and define Isotopes and atomic mass, and calculate an average atomic mass.
- Know how to use the Periodic table, how it's organized and how to predict ionic charges of monoatomic ions using the table
- Writing chemical and structural formulas.
- **\*\*NAMING\*\*** Note: this is crucial to being able to write chemical formulas!

Problems in book: 3,7,11,19,22,27,37,47,59,61,63,73,82,90

Chapter 3 Objectives

- Be able to write and balance a chemical equation and understand WHY we balance.
- Understand patterns of chemical reactivity
- Use dimensional analysis to convert moles, mass, atoms/molecules, volume.

- Perform empirical formula calculations and use empirical formulas to identify molecular formulas
- Use dimensional analysis to solve basic stoichiometry (stoy-key-om-etry) problems as well as limiting and excess reactant problems.

Problems in book: 1,5,10,13,17,25,38,45,47,49,51,60,71,91,93

#### Chapter 4 Objectives

- Identify an electrolyte compare to a non-electrolytes
- Predict products, write and balance a chemical equation for various types of reactions.
- Memorize strong acids and bases
- Use Molarity as a conversion factor and be able to perform concentration calculations.
- Understand dilution problems using  $M_1V_1=M_2V_2$
- Understand methods of chemical analysis (titrations etc.)

Problems in book: 3,5,7,10,12,13,17,23,33,35,39,43,45,51,53,56,72,85,94,106,109,113

**Memorize all polyatomic ions (page 60 and 62), and strong acids/bases (page 125). There will be a quiz on the first day of school!**

AP Problems:

#### **1982 B**

Water is added to 4.267 grams of  $UF_6$ . The only products are 3.730 grams of a solid containing only uranium, oxygen and fluorine and 0.970 gram of a gas. The gas is 95.0% fluorine, and the remainder is hydrogen.

- From these data, determine the empirical formula of the gas.
- What fraction of the fluorine of the original compound is in the solid and what fraction in the gas after the reaction?
- What is the formula of the solid product?
- Write a balanced equation for the reaction between  $UF_6$  and  $H_2O$ . Assume that the empirical formula of the gas is the true formula.

#### **2001 B**

Answer the following questions about acetylsalicylic acid, the active ingredient in aspirin.

- The amount of acetylsalicylic acid in a single aspirin tablet is 325 mg, yet the tablet has a mass of 2.00 g. Calculate the mass percent of acetylsalicylic acid in the tablet.
- The elements contained in acetylsalicylic acid are hydrogen, carbon, and oxygen. The combustion of 3.000 g of the pure compound yields 1.200 g of water and 3.72 L of dry carbon dioxide, measured at 750. mm Hg and 25°C. Calculate the mass, in g, of each element in the 3.000 g sample.
- A student dissolved 1.625 g of pure acetylsalicylic acid in distilled water and titrated the resulting solution to the equivalence point using 88.43 mL of 0.102 M  $NaOH(aq)$ . Assuming that acetylsalicylic acid has only one ionizable hydrogen, calculate the molar mass of the acid.

**\*\*Sophomores (or those who are rusty with their chemistry) – I highly recommend that you watch Kahn academy videos on youtube for extra help, especially for the subjects that you struggle with in the Flinn Prep course. In addition, the first year Glencoe text is a great resource if you need some backup to the AP text. The AP text is a college textbook after all! You want to be familiar with the entire Glencoe book up to gas laws (Chapter 10).**

You can borrow a Glencoe book for the summer or you can access the Glencoe text online at <http://www.glencoe.com/ose/>. The passcode is F3BC7F5FC1. It has a tendency not to work in the chrome browser but should work fine in either firefox or internet explorer.

# AP Chemistry

## Expectations and Requirements Contract

By signing this contract, I am aware that the online course is included in the summer assignment and must be completed by the first day of classes.

The online course will take approximately 10-15 hours to complete. The reading and problems will require an additional 10 - 15 hours of work.

I am aware that my participation in AP Chemistry requires completion of the summer work listed above. The complete summer assignment is a strict prerequisite and partial credit is not awarded.

I am aware that AP Chemistry requires extensive problem solving, which will be completed in a bound composition notebook. Late homework and labs will not be accepted. Students will have to spend time during study and afterschool to complete lab experiments and analysis.

This class potentially provides college credit and therefore is treated as a college level course. Students must be self-motivated and work well with long-term assignments and hard deadlines.

Please sign and return this contract to Mr. Wood (House 3, room 371)  
By **Friday June 15<sup>th</sup> 2018.**

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Student Signature

Date

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Parent/Guardian Signature

Date

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student email (use this email to register for the online course)

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home phone number