

Cambridge AS Level (AICE) Chemistry - Summer Assignment

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Why take AICE Chemistry?

I am so glad you have decided to take **AICE Chemistry**! This course is designed to give you a more complete experience of chemistry that will prepare you for both the AICE Chemistry exam in the Spring of next year; and for General Chemistry and Organic Chemistry in College. The only way to complete all the topics in this course is to move at a ***fairly rapid pace***. Therefore, it is critical for all students to complete the Summer Assignment to be ready to get going in August. You have probably decided to take this course for several reasons, but here are some of the reasons why this course is beneficial:

- The most obvious answer is that students who successfully pass the AICE Chemistry Exams (AS-level) next May/June are eligible to receive college credit at most colleges and universities in the United States. This can represent a considerable savings in time and money.
- Some students, regardless of whether or not they pass the AICE Chemistry Exam, elect, or are required, to take General Chemistry in college anyway. For most students, freshman college chemistry is an ***extremely difficult*** course. Students who have taken AICE Chemistry do exceedingly better than those who don't. If you are planning on majoring in ANY science, engineering, veterinary or medical field, you will be required take several college chemistry courses; AICE Chemistry will prepare you extremely well.
- AICE Chemistry will teach you to think at higher levels. You will be encouraged and taught how to analyze deeply, synthesize concepts and evaluate approaches to problems, often in new situations, sometimes even deriving your own techniques from your own knowledge base. This is exactly the type of thinking you will be expected to use in college-level courses.
- You will find it can be easier to learn Chemistry at Pasco High school over the course of one year, rather than in college (over 12 weeks) large in part due to the smaller class sizes and individual time and tutoring that I can offer you. Freshman college chemistry is usually taught in large lecture halls (up to 250 students) where individual assistance is difficult to find or expensive to attain.

The Commitment

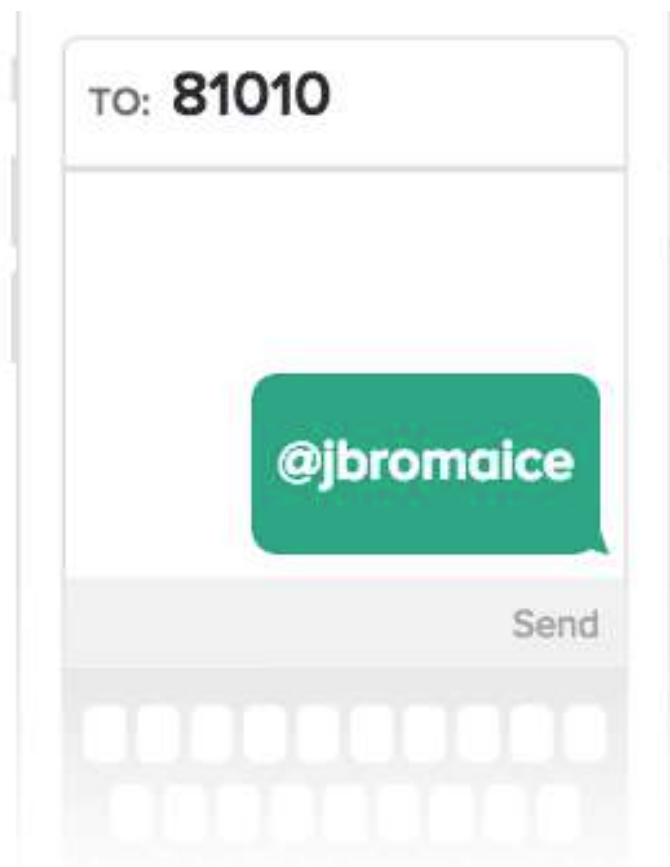
If you are taking this course, you have already enjoyed success in your academic career. Taking a course such as AICE Chemistry will be very different than courses you have taken in the past. It will involve a level of work and commitment that you may not have experienced before. There is a very specific amount of material that must be covered for the AICE Test. We absolutely **must be ready** for the AICE Tests in May/June. You must accept the fact that you will have a significant workload outside of class and will need to get help on assignments.

Please complete the Summer Assignment that follows. We will have a test on this material the first week of class... yes, seriously – the FIRST week of class. Students who do not complete this assignment and keep their skills sets “fresh” should expect to struggle during certain units in AICE Chemistry.

Some of the material is review from preAICE Chemistry or Chemistry Honors. Some of the material will be new and may seem strange.

Keep this packet handy, and take it with you into situations this summer where you are likely to find yourself with periods of free time (beach time?) Learn a little at a time. There are also some excellent reviews online / YouTube.

I will be readily available during the summer. Use the e-mail above to contact me. I will do my best to respond within a day or two. Also, you can sign up for **REMIND** for our Course for next year already! I will send out helpful links or resources throughout the summer; and you can respond back if you wish!



1 Send your text to 81010

81010 is the Remind short code we created so people can join your class without seeing your personal information.

[81010 not working?](#)

2 Text the message @jbromaice

This is the class code for AICE Chem 16-17. People can always use `jbromaice` to join this class.

L. STOICHIOMETRY (*there's no escaping it!*)

1) Draw the **displayed**, **structural** and **skeletal** formula for a molecule of butane.

2) Write the **balanced** chemical equation for the complete combustion of butane.

a) How many grams of carbon dioxide will be produced from 50 g of butane?

b) How many grams of butane (C_4H_{10}) will produce 100 g of water?

c) What volume (in dm^3) of CO_2 is produced from the combustion of 250 g of butane?

d) What mass of water is produced when 30 g of oxygen is consumed with the combustion of butane?

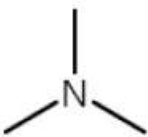
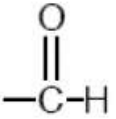

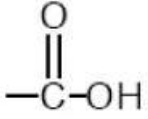
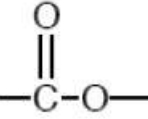
II. Chemical Reactions: Write the complete equation for the following reaction descriptions.

Include state symbols.

1. the thermal decomposition of calcium carbonate
2. the thermal decomposition of calcium hydroxide
3. the thermal decomposition of potassium nitrate
4. the neutralization of nitric acid with sodium hydroxide
5. addition of ammonium chloride to silver nitrate
6. electrolysis of water
7. synthesis of sodium chloride from its component elements
8. addition of magnesium to sulfuric acid
9. synthesis of phosphorus trichloride from its component elements
10. the Haber Process
11. the Contact Process
12. manufacture of ethanol

III. ORGANIC CHEMISTRY

- 1) Visit http://www.visionlearning.com/library/module_viewer.php?mid=60
(Google VisionLearning.com – search *Carbon Chemistry*)
- 2) **READ** the modules and **COMPLETE** the quiz.
- 3) **RESEARCH** the organic functional groups listed below; research to identify common compounds made from these chemicals. For example, most *perfumes* contain *esters*. Do some informal research by visiting **SEVERAL** websites, blogs and association websites until you are fairly familiar with these functional groups.
- 4) **CREATE A SIMPLE BUT USEFUL POSTER BOARD** identifying each functional group, featuring **JUST ONE** example of a compound containing that functional group **AND IT'S USE**.

<u>Functional Group</u>	<u>Class of Compound</u>
-OH	alcohol
-O-	ether
	amine
	aldehyde
	ketone
	carboxylic acid
	ester

Use magazine clippings, free-hand drawings, clip art or other types of illustrations to add to your poster to help you remember the structure of each functional group. USE COLOR AND SHOW YOUR WORK ETHIC by making your poster AESTHETICALLY PLEASING!

And finally...

IV. "WEIGHT TRAINING"

... well not exactly... remember in 5th - 6th grade when you had to memorize your multiplication facts? Memorizing these multiplication facts helped you to do higher-level math faster because you didn't have to pick up a calculator or count on your fingers to get an answer. While you can always "Ask Siri" or "Google it", memorizing facts STILL has relevance in your life (despite your best attempts to convince yourself that it doesn't!) Memorizing facts keeps your brain "in shape". You have to train your brain to *memorize*.

Much like wrestlers, martial artists and other athletes do weight training before a match or game, this summer, you are going to do **CHEMISTRY "WEIGHT TRAINING"**.

Please visit QUIZLET (*online*) and Search for the following sets (or click the link).

- 1) "Mrs. Bromley Element SYMBOLS" https://quizlet.com/_eynlf
- 2) "Mrs. Bromley Polyatomic Ions & Common Acids" https://quizlet.com/_1fhj43

You can also JOIN the AICE Chemistry "Class Group" on QUIZLET by clicking the link below...
<https://quizlet.com/join/jEcP9qHv8>