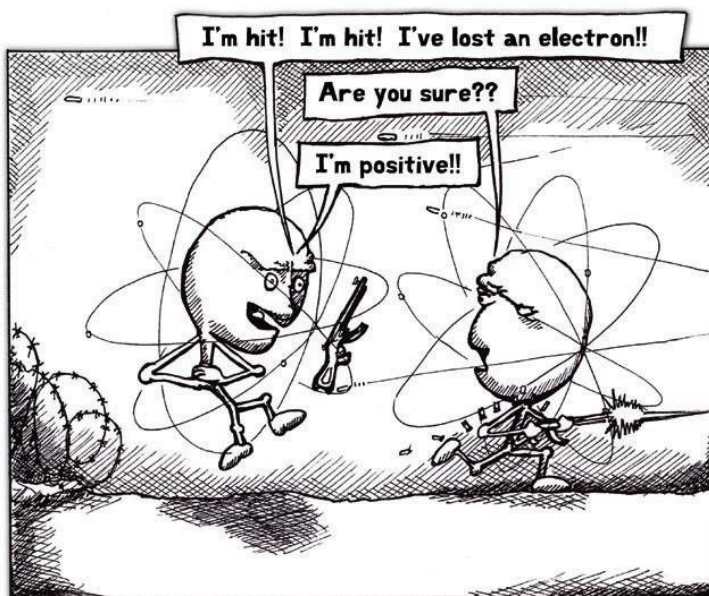


AP CHEMISTRY 2017-2018 SUMMER ASSIGNMENT



MR. COVEY
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Dear Future AP Chemistry Students and Their Parents,

It is a pleasure to have you express an interest in taking AP Chemistry course for the upcoming school year. The College Board sponsors the Advanced Placement Program, which allows students in high school to obtain college credit and/or placement above introductory course level at the college they attend. This is a program of credit by examination. The College Board hires the Educational Testing Service (ETS) to write and grade the AP Chemistry Exams. Grades are assigned on a basis of 1-5 with a 3 as a “passing” score. Over 150,000 students worldwide took the exam last year and about 57% passed with a score of 3 or higher. It is a privilege to be a part of this beneficial program.

This privilege, however, does not mean that the road to success in this class will be easy. Both the student and the parent should not be surprised at the amount of work required for this class. It will not be unusual for you to be responsible for several assignments at one time. For example, there will be regular reading assignments and problem sets, on-line assignments, labs to write up, and time to study for tests and exams. Students should spend at least five- seven hours a week outside of class studying for this class. Also, do not be surprised if some students who are accustomed to making all A's, will suddenly begin making B's or C's on tests and start to doubt themselves, their teacher, and their decision to enter this course. You must keep in mind that you are taking a college level course with standards that are higher than usual. Students do not have to make A's on every test to do very well on the AP Exam.

It is my belief that all students who are required to take General Chemistry in college need an AP Chemistry course above all others. This belief comes from the numerous students I remain in contact with who have experienced this course in the past. It is also a well-documented fact that students having AP Chemistry in high school do much better even in higher-level chemistry courses as compared to those who take only the first year equivalent course in college. In addition to these facts, colleges are known to use the first chemistry classes to “weed” out those students who are least qualified. With these considerations in mind, it is obvious that a good preparation in high school is required and will only benefit those who choose to take this course.

Not only must AP Chemistry class provide evidence of learning chemistry concepts, it must also provide a strong laboratory component. The problem comes with sufficient time in class to incorporate the appropriate labs to reinforce these concepts. The challenge here lies in the student. It is not necessary to spend class time working out large numbers of example problems when developing a specific concept. A few types of problems can be addressed and then we move on the next topic. The course can move faster and not lose quality if more of the responsibility for learning is placed on the student. Extra class time before and/or after school and on some weekends will be a must.

Because of the vast amount of time required for this class or any other AP class, your extracurricular activities should be chosen wisely. I have known many AP Chemistry students in the past who have been involved in activities such as band, athletics, or other clubs, and have done well in the class. However, you must truly be able to budget your time and keep yourself organized. Self-discipline and self-motivation is a key part of being successful in the AP Chemistry course. I look forward to next year and I hope that this information has been helpful.

As you probably already know, AP Chemistry is a very challenging course with an equally challenging AP test. The material is detailed and we have several topics to cover. You will need to refresh your memory on information that was taught in prior Chemistry classes so that we can move on to expand on your knowledge base.

Your goal should be to complete the summer assignment and email questions as they arise. We will reinforce this review with some lab activities during the beginning of the semester. We will

have an exam on the first day of class on items that are to be memorized and the first three chapters of the text.

The course will move on from the initial review into more advanced studies of first year college chemistry. The topics will build upon your knowledge from prior Chemistry classes and cover more application and detail. You will begin to place the pieces together in the jigsaw puzzle called Chemistry.

You can email me at hcovey@aacps.org if you need assistance or have questions. Also, we will use Google classroom, and other forms of technology for communication and materials as well. I encourage you to use the online sources I have created.

Have a wonderful summer and see you in August!

Sincerely,

Mr. Covey

Required materials:

1. At least one 3 Ring Binder: with Pockets – Any Color
2. A Package of Lined Notebook Paper with 3-Holes or Notebook of your choice
3. Pencils, Erasers, and Pens
5. Scientific Calculator (Standard)
6. Pocket Folder
8. Post-It Notes – Standard Size of 3x3, Multiple Colors (Recommended)

Recommended supplementary materials:

AP Chemistry Princeton Review or Barons AP Chemistry Review – These book are excellent when preparing for the actual AP Chem. Exam. It gives provides many sample questions and practice questions that will help you prepare for the AP exam.

5 Steps to a 5 – is a more basic review that you will find useful throughout the year.

- **Make sure to purchase books that are aligned to new curriculum!**

AP Chemistry Summer Assignment

1. Join my Google Classroom, the code is: **366gldn**
2. Sign up for my AP Chemistry class on quizlet.com using this link:
<https://quizlet.com/join/PW2CcbYTU>
3. Sign up with Remind using the following Class Code: **mrhcov**
4. Email me so I have a current email address for you. Please include parent email addresses.
My email is: hcovey@aacps.org
- 5.
6. Sign up for AP Chemistry Question of the Day at the following site:
<http://www.learnapchemistry.com/>
7. Download the eBook for Chemistry (Lemay) at the following site.
<http://libgen.me/view.php?id=587664>
8. If you don't have a user id for College Board, create one and explore website for the course.
The website is: <http://student.collegeboard.org/>

Familiar yourself with the two pdf documents on site:

- AP Chemistry Course Overview
- AP Chemistry Course and Exam Description

Items 1 - 8: Due by July 1, 2016.

9. You must memorize the following (at end of this document).
- names and symbols of common chemical elements
 - phases of elements at normal temperature and pressure
 - formulas of elements that require subscripts in reference form
 - oxidation numbers (charges) of monatomic and polyatomic ions including name, symbol, and charge of common ions
 - variable valences of common metals including common names
 - To aid in the memorization, use online flashcards at quizlet.com*
10. Complete the online assignments on the companion website for
- Chapters 1, 2, and 3 of the textbook:
 - Chemistry: The Central Science*
 - Use the Companion Website for the textbook:
 - http://wps.prenhall.com/esm_brown_chemistry_9/2/660/169060.cw/index.html
(Even though this is an older edition of our textbook, the website is great for review.)
 - Use “eChapter” for each chapter to learn and review basic concepts.
 - Use “Problem Solving Center” to do homework assignments 1-4 and take quiz 1.
- Once you do each of these assignments, you will be prompted to email them. These must be emailed to me to get full credit. My email: hcovey@aacps.org
- When you email me, please use complete name (first and last) in email.
11. Create a mind map or one pager for chapters 1 and 2 listed above. Make them useful to you as a student. Do not complete them for me.

Item9 -11: Must be Completed Prior to the Start of School.

Memorize

Element Names and Symbols of Common Elements & Phases

Al	aluminum	Mn	manganese
Sb	antimony	Hg	mercury
Ar	argon	Ne	neon
As	arsenic	Ni	nickel
Ba	barium	N	nitrogen
Be	beryllium	O	oxygen
B	boron	Pd	palladium
Br	bromine	P	phosphorous
Cd	cadmium	Pt	platinum
Ca	calcium	Pu	plutonium
C	carbon	K	potassium
Cs	cesium	Ra	radium
Cl	chlorine	Rn	radon
Cr	chromium	Rb	rubidium
Co	cobalt	Se	selenium
Cu	copper	Si	silicon
F	fluorine	Ag	silver
Fr	francium	Na	sodium
Ge	germanium	Sr	strontium
Au	gold	S	sulfur
He	helium	Te	tellurium
H	hydrogen	Th	thorium
I	iodine	Sn	tin
Fe	iron	W	tungsten
Kr	krypton	U	uranium
Pb	lead	Xe	xenon
Li	lithium	Zn	zinc
Mg	magnesium		

- All metals are solid except for mercury which is a liquid.

- All metalloids are solids.

- Nonmetals: carbon, phosphorus, sulfur, & selenium are solids; bromine is a liquid; and the rest are gases.

- Elements with Subscripts: Br₂, I₂, N₂, Cl₂, H₂, O₂, F₂, P₄, S₈

Common Monatomic Ions

1A	2A											3A	4A	5A	6A	7A	8A	
Li ⁺														N ³⁻	O ²⁻	F ⁻		
Na ⁺	Mg ²⁺							8B				Al ³⁺		P ³⁻	S ²⁻	Cl ⁻		
K ⁺	Ca ²⁺	3B	4B	5B	6B	7B	8B		1B	2B					Se ²⁻	Br ⁻		
Rb ⁺	Sr ²⁺		Ti ²⁺ Ti ⁴⁺	V ²⁺ V ³⁺	Cr ²⁺ Cr ³⁺	Mn ²⁺ Mn ⁴⁺	Fe ²⁺ Fe ³⁺	Co ²⁺ Co ³⁺	Ni ²⁺	Cu ⁺ Cu ²⁺	Zn ²⁺						I ⁻	
Cs ⁺	Ba ²⁺									Au ⁺ Au ³⁺			Pb ²⁺					

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Metals with Multiple Oxidation States

Element	Symbol	Oxidation #	Old System	New System
Iron	Fe	+2	Ferrous	Iron (II)
		+3	Ferric	Iron (III)
Copper	Cu	+1	Cuprous	Copper (I)
		+2	Cupric	Copper (II)
Mercury	Hg ₂	+2	Mercurous	Mercury (I)
	Hg	+2	Mercuric	Mercury (II)
Lead	Pb	+2	Plumbous	Lead (II)
		+4	Plumbic	Lead (IV)
Tin	Sn	+2	Stannous	Tin (II)
		+4	Stannic	Tin (IV)

Polyatomic Ions

H_2PO_4^-	dihydrogen phosphate	BrO_3^-	bromate
$\text{C}_2\text{H}_3\text{O}_2^-$	acetate	BrO_4^-	perbromate
HSO_3^-	hydrogen sulfite (bisulfite)	IO^-	hypoiodite
HSO_4^-	hydrogen sulfate (bisulfate)	IO_2^-	iodite
HCO_3^-	hydrogen carbonate (bicarbonate)	IO_3^-	iodate
NO_2^-	nitrite	IO_4^-	periodate
NO_3^-	nitrate	HPO_4^{2-}	hydrogen phosphate
CN^-	cyanide	$\text{C}_2\text{O}_4^{2-}$	oxalate
SCN^-	thiocyanate	SO_3^{2-}	sulfite
OH^-	hydroxide	SO_4^{2-}	sulfate
MnO_4^-	permanganate	CO_3^{2-}	carbonate
ClO^-	hypochlorite	CrO_4^{2-}	chromate
ClO_2^-	chlorite	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
ClO_3^-	chlorate	SiO_3^{2-}	silicate
ClO_4^-	perchlorate	O_2^{2-}	peroxide
BrO^-	hypobromite	PO_3^{3-}	phosphite
BrO_2^-	bromite	PO_4^{3-}	phosphate
		BO_3^{3-}	borate
		NH_4^+	ammonium

Extra Credit Opportunity

Read “The Alchemy of Air” by Thomas Hager and write a summary (250 words maximum), answering the following:

How do you think the legacy of Fritz Haber, in particular, holds up to standards of ethics in science? How do his actions in developing a process for fixing nitrogen into fertilizer/gunpowder, militarizing chlorine gas, and supporting a Nazi regime weigh against the people his process is feeding? Is he a sympathetic figure in human history? In what ways is the awarding of the Nobel Prize to Haber and Bosch appropriate and inappropriate?

You will receive 3% extra toward your first day exam if this summary is handed in by the first day of school, or It is emailed to me as an attachment.