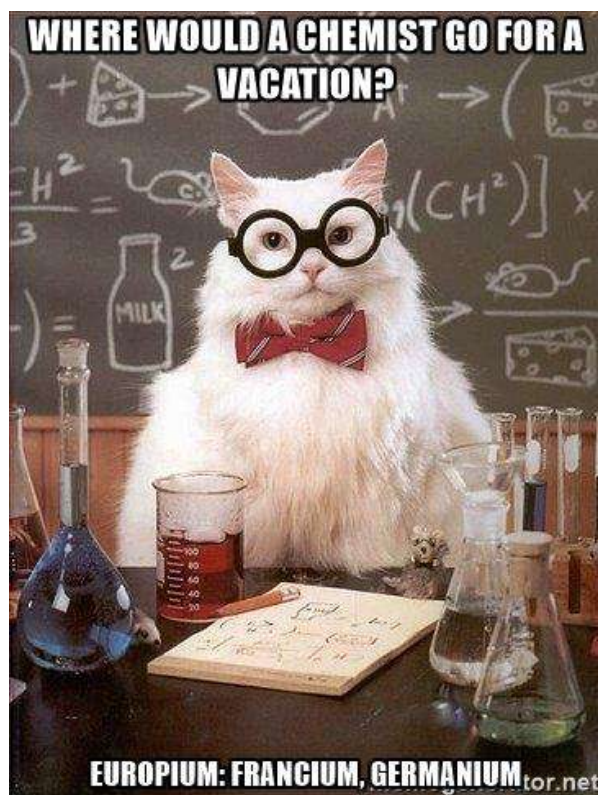


# AP Chemistry

2018-2019

## Summer Assignment



Mr. Armando Ponce  
Armando\_Ponce@cjustd.net  
909-580-5005 ext. 2479

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.

We will have mandatory meetings twice a week in the summer so that you do not have to do this on your own. I will guide you through the process of the summer work.

You can email me at [Armando\\_ponce@cjusd.net](mailto:Armando_ponce@cjusd.net) if you need assistance or have questions. Also, we will use Google classroom, "HAIKU", and Remind 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. Armando Ponce

**Required materials:**

1. A 3 Ring Binder: 1 Inch, with Pockets - Any Color
2. A Package of Lined Notebook Paper with 3-Holes
3. Pencils, Erasers, and **BLACK** Pens
4. A Set of Highlighters - 4 Different Colors
5. **Scientific Calculator or Graphing Calculator**
6. Pocket Folder
7. Set of Dry Erase Markers - 4 Different Colors
8. Post-It Notes - Standard Size of 3x3, Multiple Colors
9. **3X5 index cards with index card holder [this is not negotiable it's a must]**
10. Rings for index cards

**Recommended supplementary materials:**

*AP Chemistry Princeton Review* - This book is 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 **4bundq**
2. Sign up for my AP Chemistry class on quizlet.com using this link:  
<https://quizlet.com/join/PSxzwefzS>
3. Sign up with Remind using the following link:  
***www.rmd.at/ponce1819***
4. Sign up for AP Chemistry Question of the Day at the following site:  
<http://www.learnapchemistry.com/>
5. 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*
  - *Big Ideas*
  - *AP Chemistry Course and Exam Description*
6. Review safety rules and lab equipment including identification and use.
  7. Complete a laboratory safety contract, including student & parent signatures.  
If you have NOT passed a safety exam for me, then you will need to do so within the first week of school during your own time.

**Please have both completed forms (student Id and safety contract) with you on first day of school.**

**8. You must memorize the following (at end of this document).**

- a. names and symbols of common chemical elements
- b. phases of elements at normal temperature and pressure
- c. formulas of elements that require subscripts in reference form
- d. oxidation numbers (charges) of monatomic and polyatomic ions including name, symbol, and charge of common ions
- e. variable valences of common metals including common names

9. To aid in the memorization, use online flashcards at [quizlet.com](http://quizlet.com).

- a. Complete all activities from the quizlet STUDYSETS.
- b. ALL PARTS MUST BE COMPLETED FOR FULL CREDIT!

10. Complete chapter outlines for CH 1,2,3,4. (you may use the eChapter to complete them or your TEXTbook from the library)

11. Complete the online assignments on the companion website for Chapters 1,2,3,4 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](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 or to do your Chapter Outlines.
- Use “Problem Solving Center” to do homework assignments 1-4 and take quiz 1.(make sure to go through these before you do the google classroom homework assignments)
- YOU MUST ALSO COMPLETE the google classroom quizzes!

Once you do each of these assignments, you will be prompted to email them. These must be emailed to me to get full credit if you have failed my google classroom homeworks. My email: [Armando\\_ponce@cjusd.net](mailto:Armando_ponce@cjusd.net)

When you email me, please use complete name (first and last) in email.

**Items 1 – 9:  
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: Br<sub>2</sub>, I<sub>2</sub>, N<sub>2</sub>, Cl<sub>2</sub>, H<sub>2</sub>, O<sub>2</sub>, F<sub>2</sub>, P<sub>4</sub>, S<sub>8</sub>





## Polyatomic Ions

$\text{H}_2\text{PO}_4^-$	dihydrogen phosphate	$\text{BrO}_3^-$	bromate
$\text{C}_2\text{H}_3\text{O}_2^-$	acetate	$\text{BrO}_4^-$	perbromate
$\text{HSO}_3^-$	hydrogen sulfite (bisulfite)	$\text{IO}^-$	hypoiodite
$\text{HSO}_4^-$	hydrogen sulfate (bisulfate)	$\text{IO}_2^-$	iodite
$\text{HCO}_3^-$	hydrogen carbonate (bicarbonate)	$\text{IO}_3^-$	iodate
$\text{NO}_2^-$	nitrite	$\text{IO}_4^-$	periodate
$\text{NO}_3^-$	nitrate	$\text{HPO}_4^{2-}$	hydrogen phosphate
$\text{CN}^-$	cyanide	$\text{C}_2\text{O}_4^{2-}$	oxalate
$\text{SCN}^-$	thiocyanate	$\text{SO}_3^{2-}$	sulfite
$\text{OH}^-$	hydroxide	$\text{SO}_4^{2-}$	sulfate
$\text{MnO}_4^-$	permanganate	$\text{CO}_3^{2-}$	carbonate
$\text{ClO}^-$	hypochlorite	$\text{CrO}_4^{2-}$	chromate
$\text{ClO}_2^-$	chlorite	$\text{Cr}_2\text{O}_7^{2-}$	dichromate
$\text{ClO}_3^-$	chlorate	$\text{SiO}_3^{2-}$	silicate
$\text{ClO}_4^-$	perchlorate	$\text{O}_2^{2-}$	peroxide
$\text{BrO}^-$	hypobromite	$\text{PO}_3^{3-}$	phosphite
$\text{BrO}_2^-$	bromite	$\text{PO}_4^{3-}$	phosphate
		$\text{BO}_3^{3-}$	borate
		$\text{NH}_4^+$	ammonium

## Solubility Rules Chart

Negative Ions (Anions)	+	Positive Ions (Cations)	=	Solubility of Compounds in water	Example
any anion	+	Alkali Ions (Li <sup>+</sup> , Na <sup>+</sup> , K <sup>+</sup> , Rb <sup>+</sup> , Cs <sup>+</sup> , Fr <sup>+</sup> )	=	soluble	Sodium fluoride, NaF, is soluble
any anion	+	hydrogen ion [H <sup>+</sup> (aq)]	=	soluble	hydrogen chloride, HCl, is soluble
any anion	+	ammonium ion (NH <sub>4</sub> )	=	soluble	ammonium chloride, NH <sub>4</sub> Cl, is soluble
nitrate NO <sub>3</sub> <sup>-</sup>	+	any cation	=	soluble	potassium nitrate, KNO <sub>3</sub> , is soluble
acetate (CH <sub>3</sub> COO <sup>-</sup> )	+	any cation (except Ag)	=	soluble	sodium acetate, CH <sub>3</sub> COONa, is soluble
Chloride (Cl <sup>-</sup> ), Bromide (Br <sup>-</sup> ), Iodide (I <sup>-</sup> )	+	Ag <sup>+</sup> , Pb <sup>2+</sup> , Hg <sup>2+</sup> , Cu <sup>+</sup> , Tl <sup>+</sup>	=	low solubility (insoluble)	silver chloride, AgCl, forms a white precipitate
	+	any other cation	=	soluble	potassium bromide, KBr, is soluble
Sulfate (SO <sub>4</sub> <sup>2-</sup> )	+	Ca <sup>2+</sup> , Sr <sup>2+</sup> , Ba <sup>2+</sup> , Ag <sup>2+</sup> , Pb <sup>2+</sup> , Ra <sup>2+</sup> , Hg <sup>2+</sup>	=	low solubility (insoluble)	barium sulfate, BaSO <sub>4</sub> , forms a white precipitate
	+	any other cation	=	soluble	copper sulfate, CuSO <sub>4</sub> , is soluble
sulfide (S <sup>2-</sup> )	+	alkali ions (Li <sup>+</sup> , Na <sup>+</sup> , K <sup>+</sup> , Rb <sup>+</sup> , Cs <sup>+</sup> , Fr <sup>+</sup> ), alkali earth metals (Be <sup>2+</sup> , Mg <sup>2+</sup> , Ca <sup>2+</sup> , Sr <sup>2+</sup> , Ba <sup>2+</sup> , Ra <sup>2+</sup> ), and H <sup>+</sup> (aq), and NH <sub>4</sub> <sup>+</sup>	=	soluble	magnesium sulfide, MgS, is soluble
	+	any other cation	=	low solubility (insoluble)	zinc sulfide, ZnS, is insoluble

hydroxide $\text{OH}^-$	+	alkali ions ( $\text{Li}^+$ , $\text{Na}^+$ , $\text{K}^+$ , $\text{Rb}^+$ , $\text{Cs}^+$ , $\text{Fr}^+$ ), $\text{Sr}^{2+}$ , $\text{Ba}^{2+}$ , $\text{Ra}^{2+}$ , $\text{Tl}^+$ , and $\text{H}^+(\text{aq})$ , and $\text{NH}_4$	=	soluble	strontium hydroxide, $\text{Sr}(\text{OH})_2$ , is soluble
	+	any other cation	=	low solubility (insoluble)	silver hydroxide, $\text{AgOH}$ , is insoluble (forms a precipitate)
Phosphate ( $\text{PO}_4^{3-}$ ), Carbonate ( $\text{CO}_3^{2-}$ ), Sulfite ( $\text{SO}_3^{2-}$ )	+	alkali ions ( $\text{Li}^+$ , $\text{Na}^+$ , $\text{K}^+$ , $\text{Rb}^+$ , $\text{Cs}^+$ , $\text{Fr}^+$ ), and $\text{H}^+(\text{aq})$ , and $\text{NH}_4$	=	soluble	ammonium phosphate, $(\text{NH}_4)_3\text{PO}_4$ , is soluble
	+	any other cation	=	low solubility (insoluble)	magnesium carbonate, $\text{MgCO}_3$ , is insoluble
Chromate $\text{CrO}_4^{2-}$	+	alkali ions ( $\text{Li}^+$ , $\text{Na}^+$ , $\text{K}^+$ , $\text{Rb}^+$ , $\text{Cs}^+$ , $\text{Fr}^+$ ), $\text{Ca}^{2+}$ , $\text{Sr}^{2+}$ , and $\text{NH}_4^+$ ,	=	soluble	sodium chromate, $\text{Na}_2\text{CrO}_4$ , is soluble
	+	any other cation	=	low solubility (insoluble)	

#### General Solubility Trends:

- All compounds of the ammonium ion ( $\text{NH}_4^+$ ), and of the Alkali metal (Group IA) cations, are soluble.
- All nitrates and acetates are soluble.
- All chlorides, bromides, and iodides are soluble EXCEPT those of silver, lead, and mercury(I).
- All sulfates are soluble EXCEPT those of silver, lead, mercury(I), barium, strontium, and calcium.
- All carbonates, sulfites, and phosphates are insoluble EXCEPT those of ammonium and Alkali metal (Group IA) cations.
- All hydroxides are insoluble EXCEPT those of ammonium, barium, and alkali metal (Group IA) cations.
- All sulfides are insoluble EXCEPT those of ammonium, Alkali metal (Group I) cations, and Alkali earth metal (Group II) cations.
- All oxides are insoluble EXCEPT those of calcium, barium, and Alkali metal (Group I) cations; these soluble ones actually react with the water to form hydroxides.