

AP Chemistry Summer Reading Assignment 2024-2025

Welcome to AP Chemistry! Depending on what you may have heard, you may have questions about this class. This is an AP Science that is math driven. There will be math from all of the levels you have had before, including Algebras 1&2 and geometry (we don't solve shapes). In addition, this is a lab science. Our goal is 16 labs, but we will do as many as we can while preparing for the AP exam. Each unit will have 1-2 labs, simulations or modeling projects. There is a LOT of content to cover. Because of that, and because many have not always had the best science backgrounds, this summer homework assignment is designed to review some of the basics so we can start further ahead this year. The majority of this assignment will be on a review PowerPoint on Teams. If you need a hard copy, please email me BEFORE the end of June, not the week before school starts (I'll be busy prepping the class). Notes do not need to be taken over the PowerPoint, but I recommend it. In addition, the PowerPoint will have some links to online practice quizzes and videos to help you understand.

For this summer assignment, you will be practicing a few skills to make sure you are ready for AP Chemistry next year and complete a take home quiz based on these topics. That quiz will be graded during the second week of school after we return. You will also have two things to memorize--ion names and charges and the common lab equipment for chemistry. There will be a few quizzes on the summer materials when we return--this assignment will help you prepare for those quizzes. There is also a take-home quiz, which is the only part that must be turned in when you return to school.

FAQs

Q: What do I actually need to turn in when we get back to school?

A: The only thing you need to turn in is the completed take home quiz.

Q: Do I need to take notes on this PowerPoint?

A: That is up to you. Notes may help you, but they will not be collected. It will most likely be helpful to at least have a pencil, paper, and calculator ready to do practice problems.

Q: Will there be a test or quiz when school starts?

A: Yes! During the first two weeks of school there will be a lab equipment quiz, an ion names & charges quiz, and a quiz on the summer material (from this PowerPoint).

How to use the PPT review in Teams...

Click "present" to view this as a presentation--it will help with some animations and to make links work correctly. A computer is recommended; not all links will work on mobile devices.

Everything in this PowerPoint will be concepts from general chemistry that you need to remember for AP Chemistry except for the first 1-2 parts which is an introduction to some of the math and a review from 9th grade Conceptual Physics. There will be notes, videos, and practice problems. Practice each concept until you have mastered it--if that means watching additional videos or doing extra practice, that is what you should do!

When you are done with the PowerPoint and feel confident you understand every topic, do the take home test.

Good luck and I'll see you in August!

Mrs. Alvarado

Things to Memorize: (I recommend flash cards!)

Polyatomic Ions

Polyatomic ions are a group of atoms that are covalently bonded with a positive or negative charge. They appear quite frequently in both organic and inorganic chemistry, so knowing their names, formulas, and charges is important. This can sometimes be easier said than done; therefore, listed below are a few tricks that will help with these substances and their names.

What does oxygen have to do with the name?

There are two common endings for polyatomic ions: **-ate** and **-ite**. The **-ate** ending often refers to the polyatomic ion with the greater number of oxygens; however, it never indicates the specific amount. The polyatomic ions with the **-ite** endings will always have one less oxygen than the polyatomic ions with the **-ate** endings.



Some polyatomic ions have more than two different combinations with oxygen. To differentiate between these, prefixes are added to the polyatomic ions: **hypo-** and **per-**. The **hypo-** prefix can be added to indicate one less oxygen than the respective ion, whereas, the **per-** prefix is added to indicate one additional oxygen.



Note, the **hypo-** prefix is always written with the **-ite** suffix, and the **per-** prefix is always written with the **-ate** suffix.

List of common polyatomic ions with 1- charge

Name	Formula	Name	Formula
Acetate	$\text{C}_2\text{H}_3\text{O}_2^-$	Bicarbonate (Hydrogen carbonate)	HCO_3^-
Bromate	BrO_3^-	Perchlorate	ClO_4^-
Chlorate	ClO_3^-	Chlorite	ClO_2^-
Hypochlorite	ClO^-	Hydroxide	OH^-
Iodate	IO_3^-	Nitrate	NO_3^-
Nitrite	NO_2^-	Permanganate	MnO_4^-
Cyanide	CN^-	Thiocyanate	SCN^-

List of common polyatomic ions with 2- charge

Name	Formula	Name	Formula
Carbonate	CO_3^{2-}	Chromate	CrO_4^{2-}
Dichromate	$\text{Cr}_2\text{O}_7^{2-}$	Oxalate	$\text{C}_2\text{O}_4^{2-}$
Silicate	SiO_3^{2-}	Sulfate	SO_4^{2-}
Sulfite	SO_3^{2-}	Tartrate	$\text{C}_4\text{H}_4\text{O}_6^{2-}$
Thiosulfate	$\text{S}_2\text{O}_3^{2-}$	Hydrogen Phosphate	HPO_4^{2-}

List of common polyatomic ions with 3- charge

Name	Formula	Name	Formula
Phosphate	PO_4^{3-}	Phosphite	PO_3^{3-}
Arsenate	AsO_4^{3-}		

Other Miscellaneous Ions

Name	Formula	Name	Formula
Cadmium Ion	Cd^{2+}	Silver Ion	Ag^+
Zinc Ion	Zn^{2+}	Ammonium	NH_4^+
Mercury (I)	Hg_2^{2+}	Mercury (II)	Hg^{2+}
Peroxide	O_2^{2-}	Superoxide	O_2^-
Hydronium	H_3O^+		