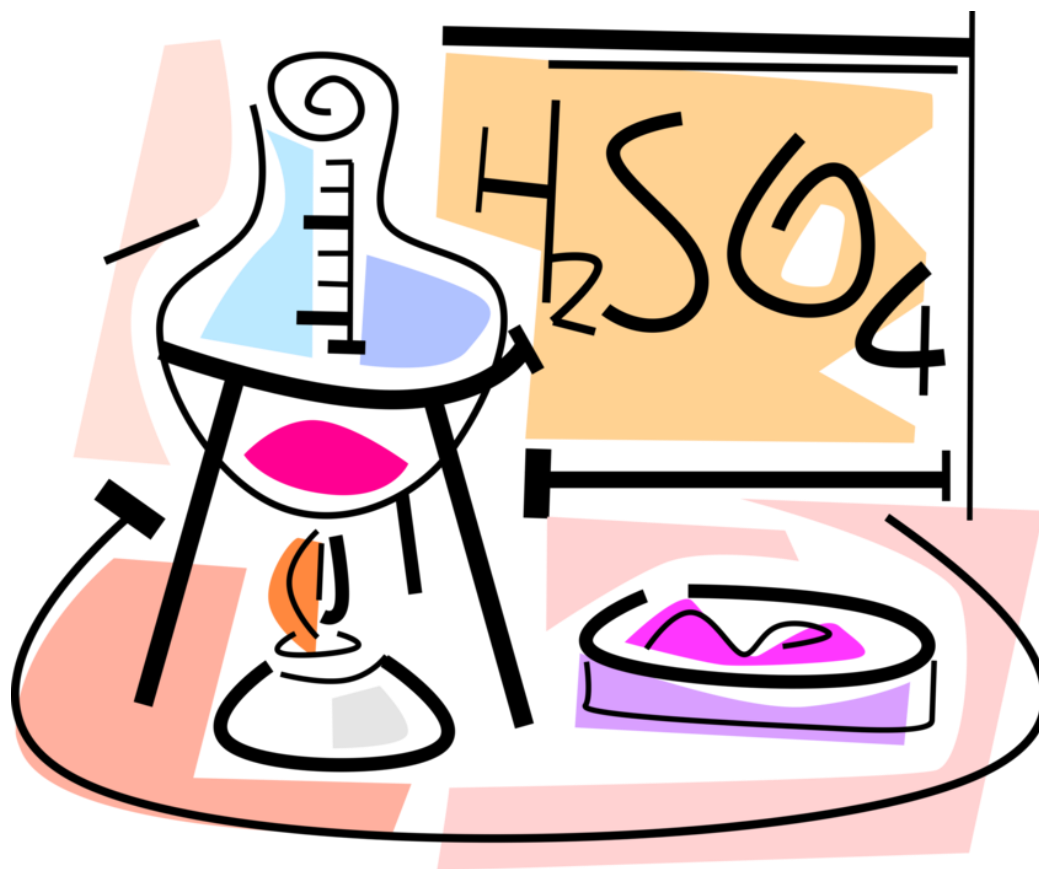




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# Lawrence High School's AP Chemistry 2021 Jumpstart Assignment



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To incoming AP Chemistry Students:

Welcome to AP Chemistry! You will quickly notice that things will be different than they were in your first year Chemistry class. Advance Placement classes are very fast paced and surmise that you are familiar with information from foundational courses that you have already taken. This assignment will help refamiliarize you to basic topics so that we can hit the ground running in September! The AP Chemistry textbook is not need for this assignment. Please be sure all of your work is your original work. **Be prepared to take an assessment on the Jumpstart Assignment content within the first few weeks of school.** The exact date will be announced. The more time you dedicate to this assignment, the better prepared you will be in September and success in AP Chemistry.

## Google Classroom:

A Google group has been established in order to provide you, the students, with support as a group. If you are struggling with concepts/material, there is a blog option to post questions to one another just as you would if you were working in groups in class. In addition, you have the educational resources listed for additional assistance. If you still have your notebook from your College Prep or Honors Chemistry course, that can also serve as a resource.

- Go to [www.classroom.google.com](http://www.classroom.google.com)
- **If needed, use your .info school email**
- Enroll into the AP Chemistry google classroom, by using class code: “**nzofxc5**”
- This Classroom will be monitored during the summer, so please check back frequently for information regarding our course.

**Resources:** To help you prepare, here is a list of reference resources. Don't forget about your notes from your Chemistry course. The AP Chemistry textbook is not need for this assignment.

- chemmybear.com
- khanacademy.org
- chemtutor.com
- Crash Course channel on youtube.com
- Tyler Dewitt channel on youtube.com

## Task 1: Important Elements

Listed below are the names of the elements and their corresponding symbols. It is important to know these elements because the periodic table you are provided has only the symbols and not the names of the elements.

- Elements 1-56, plus Pt, Au, Hg, Pb, Rn, Fr, Ra, U, Pu
- Many of these elements you will already know
- **Making flashcards is helpful!**

## Task 2: Ionic Charges and Ions

You will need to memorize the ionic charges of the basic ions.

- Think about valence electrons
- Think about the common elements/ions in that group
  - Group 1 ions = +1
  - Group 2 ions = +2
  - Group 15 (5A) ions (N and P) = -3
  - Group 16 (6A) ions (O and S) = -2
  - Group 17 (7A)/Halogens = -1
  - Zn = +2
  - Ag = +1
  - Cu = +1 or +2
  - Fe = +2 or +3
  - Pb = +2 or +4
  - Sn = +2 or +4



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## Task 3: Polyatomic Ions

You need to master the names, symbols, and charges of the Polyatomic ions below:

- Oxyanions – polyatomic containing oxygen, names end in –ate or –ite
  - -ate is used for the most common form
  - -ite is used for the form with the same charge, but one less oxygen
  - Example:
    - $\text{NO}_3^-$  = nitrate
    - $\text{NO}_2^-$  = nitrite

Prefixes are also used

- Per – indicates one more oxygen than the –ate form
  - Hypo – indicates one fewer oxygen than the –ite form
  - Example:
    - $\text{ClO}_4^-$  perchlorate (b/c it has one more O than the –ate form)
    - $\text{ClO}_3^-$  chlorate (b/c it is the most common)
    - $\text{ClO}_2^-$  chlorite (b/c it has one less oxygen than –ate form)
    - $\text{ClO}^-$  hypochlorite (b/c it has one less oxygen than the –ite form)
  - F, Cl, Br, I all behave the same
    - Therefore, if chlorate is  $\text{ClO}_3^-$ , the bromate ion is  $\text{BrO}_3^-$
    - Simply substitute one halogen for the other
    - If you learn the chlorate series, you also know the bromate, iodate, and fluorate series
- Hydrogen can be added to -2 or -3 ions to make a “new ion” (ie.  $\text{H}_2\text{PO}_4^-$  is dihydrogen phosphate)

## POLYATOMIC IONS

<p><b>+1</b> ammonium, <math>\text{NH}_4^+</math></p>		
<p><b>-1</b> acetate, <math>\text{C}_2\text{H}_3\text{O}_2^-</math> or <math>\text{CH}_3\text{COO}^-</math> bromate, <math>\text{BrO}_3^-</math> chlorate, <math>\text{ClO}_3^-</math> chlorite, <math>\text{ClO}_2^-</math> cyanide, <math>\text{CN}^-</math> hydrogen carbonate, <math>\text{HCO}_3^-</math> (also called bicarbonate) hydroxide, <math>\text{OH}^-</math> hypochlorite, <math>\text{ClO}^-</math> iodate, <math>\text{IO}_3^-</math> nitrate, <math>\text{NO}_3^-</math> nitrite, <math>\text{NO}_2^-</math> permanganate, <math>\text{MnO}_4^-</math> perchlorate, <math>\text{ClO}_4^-</math> thiocyanate, <math>\text{SCN}^-</math></p>	<p><b>-2</b> carbonate, <math>\text{CO}_3^{2-}</math> chromate, <math>\text{CrO}_4^{2-}</math> dichromate, <math>\text{Cr}_2\text{O}_7^{2-}</math> oxalate, <math>\text{C}_2\text{O}_4^{2-}</math> peroxide, <math>\text{O}_2^{2-}</math> sulfate, <math>\text{SO}_4^{2-}</math> sulfite, <math>\text{SO}_3^{2-}</math></p>	<p><b>-3</b> phosphate, <math>\text{PO}_4^{3-}</math> phosphite, <math>\text{PO}_3^{3-}</math> arsenate, <math>\text{AsO}_4^{3-}</math></p>

Please reach out if you have any questions about this assignment or anything course-related - [jmarbach@ltps.info](mailto:jmarbach@ltps.info) and I look forward to seeing you all in September!! ☺

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