

# AP Chemistry Summer Assignment 2019-2020

## Welcome to AP Chemistry!

We are really excited to teach the course next year and want to officially welcome you to our class. Over the summer, please spend some time preparing for AP Chemistry by completing the summer assignment. Also, please make sure to rest and enjoy your summer break.

This assignment is required and will be collected on Friday, August 23. In addition, you will take a test over this material in class on Friday, August 23. .

**Contact Information:** The AP Chemistry teachers for 2019-2020 are Ms. Woods (makala\_woods@dpsk12.org) and Ms. Hanson (amy\_hanson@dpsk12.org)

We will occasionally check email over the summer, but it may take a few days for you to get a reply from us.

**Schoology:** Please join our AP Chemistry group on Schoology. The access code is: R8XG-CVXH-ZT5P6. We will post information on Schoology to help you with the summer assignment.

**Textbook:** Please purchase **Chemistry – 9<sup>th</sup> Edition** by Steven S. Zumdahl and Susan A. Zumdahl. ISBN-13: 978-1133611097 or ISBN-10: 1133611095. Please don't wait until August to get a copy of the book as prices will likely increase as we get closer to a new semester of school. Copies of the book are available through the Angel Foundation in Room 130 if needed. If you have trouble getting a copy of the textbook, please let us know right away.

**Other Supplies Needed:** scientific calculator, bound laboratory notebook (Composition book with graph paper – this will be your lab notebook for the year. Wait to write anything in the notebook!), 3 ring binder, loose leaf notebook paper

## Assignment:

Please complete your summer assignment and be prepared to turn it in on Friday, August 23 . You should NOT use your lab notebook to complete the summer assignment.

1) Read Chapter 1 – page 1-30

Problem set: pg. 34 - 40 # 23, 26, 28, 36, 34, 42, 44, 60, 68, 70, 72

2) Read Chapter 2 – pages 42-70

Problem set: pg. 71 - 78 # 50, 52, 53, 56, 58, 62, 68, 70, 72, 74, 78, 80, 84, 86, 88

Write on paragraph on each of the following scientists: Lavoisier, Dalton, JJ Thomson, Robert Millikan, and Ernest Rutherford

3) Read Chapter 3 – pages 81 - 123

Problem set: pg. 126 - 139 # 24, 31, 38, 46, 50, 52, 54, 56, 58, 96, 100, 102, 122, 124, 126

4) Complete the Naming Acids POGIL activity (posted on Schoology).

5) Complete the Molarity POGIL activity (posted on Schoology).

6) Memorize the table of polyatomic ions and the solubility rules.

7) Memorize the name and symbol of every element on the periodic table.

8) Memorize the metric system prefixes and meanings.

9) Complete assignment to label and color a periodic table.



<b>Solubility Rules</b>			
Soluble = dissolves in water = (aq)		Insoluble = solid = (s)	
Anion (Negative)	Plus	Cation (Positive)	Soluble or Insoluble
Any negative ion	+	Li <sup>1+</sup> , Na <sup>1+</sup> , K <sup>1+</sup> , Rb <sup>1+</sup> , Cs <sup>1+</sup> , or NH <sub>4</sub> <sup>1+</sup>	Soluble (aq)
NO <sub>3</sub> <sup>1-</sup>	+	Any positive ion	Soluble (aq)
C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>1-</sup>	+	Any positive ion	Soluble (aq)
HCO <sub>3</sub> <sup>1-</sup>	+	Any positive ion	Soluble (aq)
ClO <sub>3</sub> <sup>1-</sup>	+	Any positive ion	Soluble (aq)
ClO <sub>4</sub> <sup>1-</sup>	+	Any positive ion	Soluble (aq)
Cl <sup>1-</sup> Br <sup>1-</sup> I <sup>1-</sup>	+	Ag <sup>1+</sup> , Pb <sup>2+</sup> , Hg <sub>2</sub> <sup>2+</sup>	Insoluble (s)
	+	Any other positive ion	Soluble (aq)
F <sup>-</sup>	+	Mg <sup>2+</sup> , Ca <sup>2+</sup> , Sr <sup>2+</sup> , Ba <sup>2+</sup> , Pb <sup>2+</sup>	Insoluble (s)
	+	Any other positive ion	Soluble (aq)
SO <sub>4</sub> <sup>2-</sup>	+	Ca <sup>2+</sup> , Sr <sup>2+</sup> , Ba <sup>2+</sup> , Pb <sup>2+</sup> , Hg <sub>2</sub> <sup>2+</sup> , Ag <sup>+</sup>	Insoluble (s)
	+	Any other positive ion	Soluble (aq)
CO <sub>3</sub> <sup>2-</sup> S <sup>2-</sup> CrO <sub>4</sub> <sup>2-</sup> PO <sub>4</sub> <sup>3-</sup>	+	Li <sup>1+</sup> , Na <sup>1+</sup> , K <sup>1+</sup> , Rb <sup>1+</sup> , Cs <sup>1+</sup> , or NH <sub>4</sub> <sup>1+</sup>	Soluble (aq)
	+	Any other positive ion	Insoluble (s)
OH <sup>1-</sup>	+	Li <sup>1+</sup> , Na <sup>1+</sup> , K <sup>1+</sup> , Rb <sup>1+</sup> , Cs <sup>1+</sup> , or NH <sub>4</sub> <sup>1+</sup>	Soluble (aq)
	+	Ba <sup>2+</sup> , Sr <sup>2+</sup> , Ca <sup>2+</sup>	Marginally soluble
	+	Any other positive ion	Insoluble (s)
CrO <sub>4</sub> <sup>2-</sup>	+	Li <sup>1+</sup> , Na <sup>1+</sup> , K <sup>1+</sup> , Rb <sup>1+</sup> , Cs <sup>1+</sup> , NH <sub>4</sub> <sup>1+</sup> , Ca <sup>2+</sup> , Mg <sup>2+</sup>	Soluble (aq)
	+	Any other positive ion	Insoluble (s)

### Simple Rules for the Solubility of Salts in Water

- Most nitrate (NO<sub>3</sub><sup>1-</sup>) salts are soluble.
- Most salts containing the alkali metal ions (Group 1 ions) (Li<sup>+</sup>, Na<sup>+</sup>, K<sup>+</sup>, Cs<sup>+</sup>, Rb<sup>+</sup>) and the ammonium ion (NH<sub>4</sub><sup>+</sup>) are soluble.
- Most chloride, bromide, and iodide salts are soluble. Notable exceptions are salts containing the ions Ag<sup>+</sup>, Pb<sup>2+</sup>, and Hg<sub>2</sub><sup>2+</sup>.
- Most sulfate salts are soluble. Notable exceptions are BaSO<sub>4</sub>, PbSO<sub>4</sub>, Hg<sub>2</sub>SO<sub>4</sub>, and CaSO<sub>4</sub>.
- Most hydroxides are only slightly soluble. The important soluble hydroxides are NaOH and KOH. The compounds Ba(OH)<sub>2</sub>, Sr(OH)<sub>2</sub>, and Ca(OH)<sub>2</sub> are marginally soluble.
- Most sulfide (S<sup>2-</sup>), carbonate (CO<sub>3</sub><sup>2-</sup>), chromate (CrO<sub>4</sub><sup>2-</sup>), and phosphate (PO<sub>4</sub><sup>3-</sup>) salts are only slightly soluble, except for those containing the cations in Rule 2.

## Metric System Prefixes

Prefix	Symbol	Meaning	Example
Mega-	M	1,000,000	1,000,000 m = 1 Mm
Kilo-	K	1,000	1000 m = 1 km
Deci-	d	0.1	10 dm = 1 m
Centi-	c	0.01	100 cm = 1 m
Milli-	m	0.001	1000 mm = 1 m
Micro	$\mu$	0.000001	1,000,000 $\mu$ m = 1 m
Nano -	n	0.000000001	1,000,000,000 = 1 m

1. Number the groups on the periodic table from 1 to 18..
2. Color the alkali metals green.
3. Color the alkaline earth metals yellow.
4. Color the transition metals light blue.
5. Color the halogens pink.
6. Color the noble gases purple.
7. Color the metalloids red.
9. Color the lanthanides gray.
10. Color the actinides orange.
11. Draw the black "stair-step" line on the periodic table.
12. Outline the metals in black.
13. Outline the nonmetals in pink.
14. Make a legend for your periodic table.
15. Keep your periodic table in your notebook to use as a reference for the rest of the year.
16. What is a group on the periodic table?
17. What is a period on the periodic table?