May 15, 2025

Dear AP Chemistry Students,

Welcome to AP Chemistry! I am Kristine Whitacre and I will be your teacher for the 2023-2024 school year. Throughout the summer you will need to complete your summer assignment, it is due the first day of school. Your summer assignment consists of:

1. Read Chapter 1 of our AP chemistry book (pdf scanned file is on my webpage) and complete the following problems: End of Ch. 1 (Starts on page 33) #29, 31, 33, 35 a-c, 37 a-c + f, 39 c-f, 41 a-b, 51, 59 a-b, 66, 68, 69, 71, 77, 79, 81, 83, 85 - 87

2. Memorize the elements (correctly spelled names and symbols) # 1-56, 78-92 (You DO NOT need to memorize the atomic number).

3. Memorize ions (name, charge, formula). Ions list is attached to this welcome letter.

4. Memorize solubility rules on sheet by the time Chapter 2 starts (around the end of the second week of school). Solubility rules are attached to this welcome letter.

On my website, **open the pdf file of Chapter 1 of our textbook**. Use this to complete the 1st part of your summer assignment. The list of ions and solubility rules is attached to this letter. It is a double sided page and should be very helpful in learning your ions and solubility rules. As for the elements memorization (part 2 of our summer assignment), any periodic table will do, and I am sure you still have your periodic table from general chemistry. You can expect a **quiz or other assessment** over this assignment during the first week of class. If you have any questions about the summer assignment please contact me:

Email: klw2jc@bearworks.jackson.sparcc.org

Again, welcome and I look forward to meeting you in August! Have a wonderful summer!

Sincerely,

Kristine Whitacre

Ions List

Acetate	$C_2H_3O_2^-$	Iodide	I^-
Aluminum	Al^{+3}	Lead	Pb^{+2}
Ammonium	NH_4^+	Lithium	Li^+
Barium	Ba^{+2}	Magnesium	Mg^{+2}
Bicarbonate	HCO_3^-	Mangagese	Mn^{+2}
Bisulfate	HSO_4^-	Mercuric = Mercury (II)	Hg^{+2}
Bisulfide	HS^-	Polyatomic: Mercury (I)	Hg_2^{+2}
Bisulfite	HSO_3^-	Nickel	Ni^{+2}
Bromate	BrO_3^-	Nitrate	NO_3^-
Bromide	Br^-	Nitride	N^{-3}
Bromite	BrO_2^-	Nitrite	NO_2^-
Calcium	Ca^{+2}	Oxalate	$C_2O_4^{-2}$
Carbonate	CO_3^{-2}	Oxide	O^{-2}
Chlorate	ClO_3^-	Perbromate	BrO_4^-
Chloride	Cl^-	Perchlorate	ClO_4^-
Chlorite	ClO_2^-	Periodate	IO_4^-
Chromate	CrO_4^{-2}	Permanganate	MnO_4^-
Chromium	Cr^{+3}	Peroxide	O_2^{-2}
Cupric = Copper (II)	Cu^{+2}	Phosphate	PO_4^{-3}
Cuprous = Copper (I)	Cu^+	Phosphide	P^{-3}
Cyanide	CN^-	Phosphite	PO_3^{-3}
Dichromate	$Cr_2O_7^{-2}$	Potassium	K^+
Ferric = Iron (III)	Fe^{+3}	Silver	Ag^+
Ferrous = Iron (II)	Fe^{+2}	Sodium	Na^+
Fluoride	F^-	Stannic = Tin (IV)	Sn^{+4}
Hydrogen	H^+	Stannous = Tin (II)	Sn^{+2}
Hydronium	H_3O^+	Strontium	Sr^{+2}
Hydroxide	OH^-	Sulfate	SO_4^{-2}
Hypobromite	BrO^-	Sulfite	SO_3^{-2}
Hypochlorite	ClO^-	Sulfide	S^{-2}
Hypoiodite	IO^-	Thiocyanate	SCN^-
Iodate	IO_3^-	Thiosulfate	$S_2O_3^{-2}$
Iodite	IO_2^-	Zinc	Zn^{+2}

Turn over for Hints to help remember ions and for Solubility rules →

Rules to help remember ions:

Per- prefix has 1 more O than -ate	Ex: Perchlorate = ClO_4^-
-ate ending has 1 more O than -ite	Ex: Chlorate = ClO_3^-
-ite ending has 1 less O than -ate	Ex: Chlorite = ClO_2^-
Hypo- prefix has 1 less O than -ite	Ex: Hypochlorite = ClO^-
Bi- prefix has an H^+ on ion	Ex: Bicarbonate = HCO_3^-

Solubility Rules

Always soluble:

Alkali metal ions (Li^+ , Na^+ , K^+ , Rb^+ , Cs^+)

Ammonium (NH_4^+)

NO_3^- , ClO_3^- , ClO_4^- , $C_2H_3O_2^-$

Generally Soluble:

Cl^- , Br^- , I^-	soluble UNLESS with Ag^+ , Pb^{+2} , Hg_2^{+2}
F^-	soluble UNLESS with Ca^{+2} , Sr^{+2} , Ba^{+2} , Pb^{+2} , Mg^{+2}
SO_4^{-2}	soluble UNLESS with Ca^{+2} , Sr^{+2} , Ba^{+2} , Pb^{+2}

Generally Insoluble:

O^{-2} , OH^-	Insoluble UNLESS with Alkali metals, NH_4^+
	Somewhat soluble with Ca^{+2} , Sr^{+2} , Ba^{+2}
CO_3^{-2} , PO_4^{-3} , S^{-2} , SO_3^{-2} , $C_2O_4^{-2}$, CrO_4^{-2}	Insoluble UNLESS with Alkali metals, NH_4^+