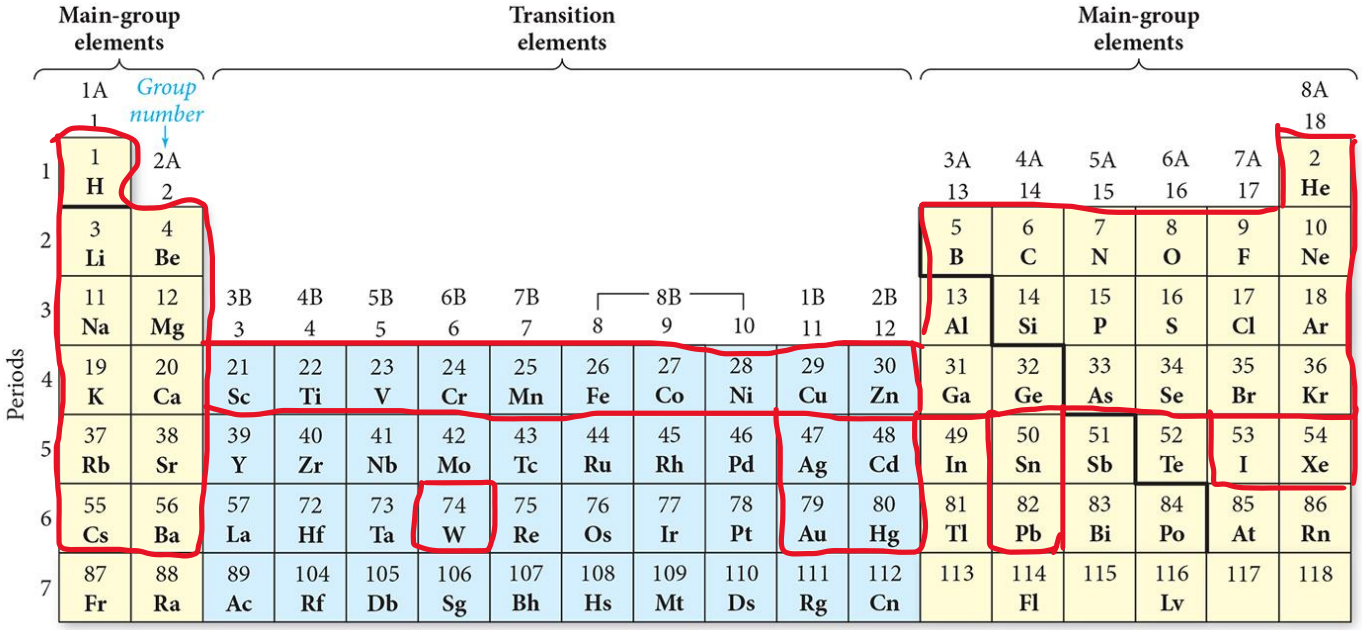
Basic Chemical Nomenclature Lab (CHE110)

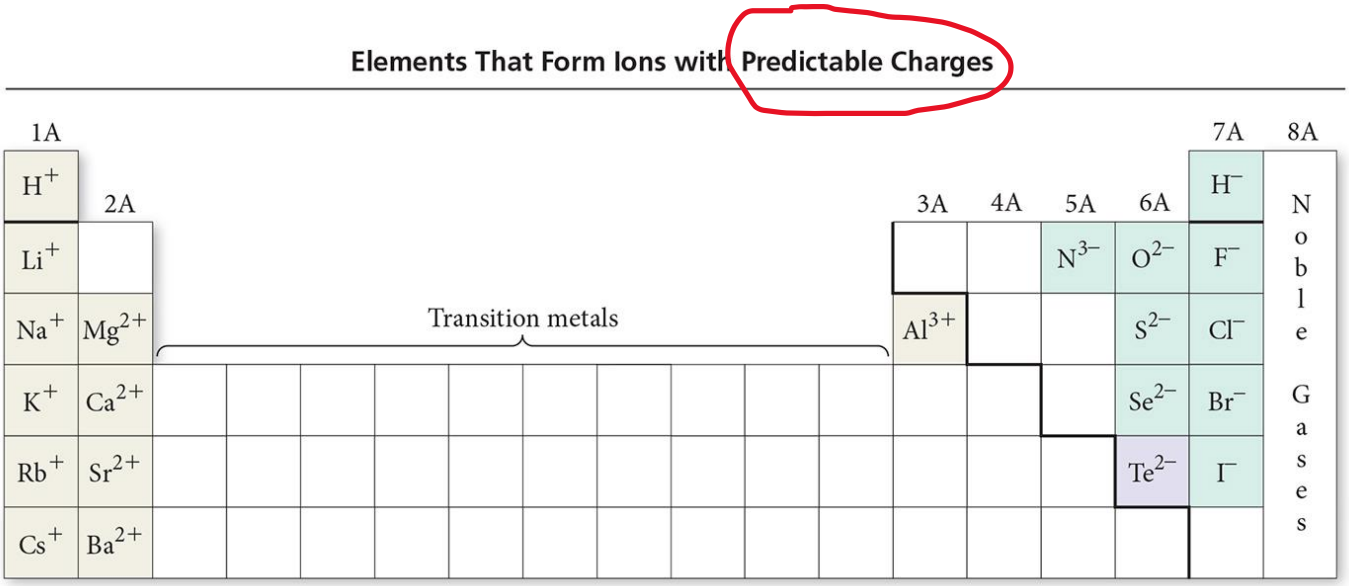
I) The alphabet of the chemical language is the periodic table.



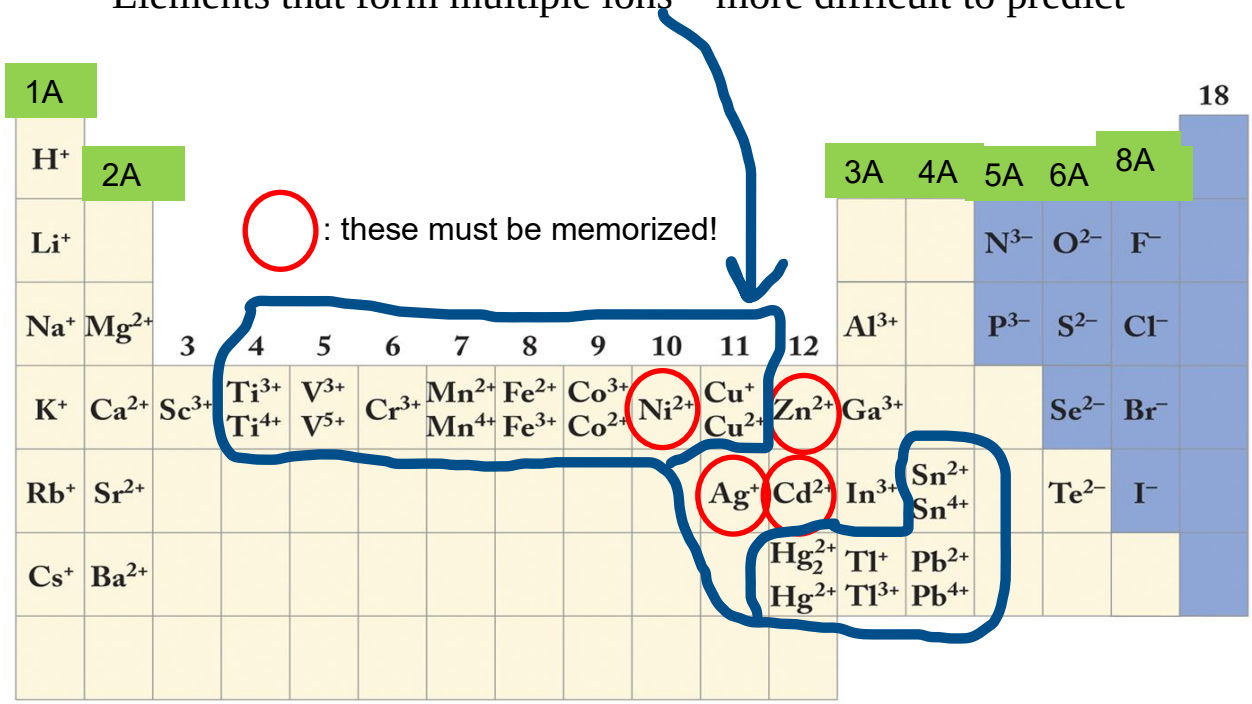
Let's become familiar with the ones in the red boxes, especially the first 36 elements. Know their names and symbols. Give the correct symbol for each of the below elements.

calcium		carbon		sodium	
potassium		neon		oxygen	
nitrogen		nickel		nitrogen	
silicon		silver		germanium	
tin		manganese		bromine	
lead		magnesium		barium	
iron		titanium		gold	
cobalt		strontium		sulfur	
copper		fluorine		phosphorus	
bromine		gallium		lithium	
iodine		mercury		beryllium	

II) There are a lot more compounds in the world than elements. Elements combine to form compounds. An important compound group is call IONIC compounds because they are formed from ions.



Elements that form multiple ions – more difficult to predict



Let's practice how to put an ***ionic compound*** involving two ***monatomic ions*** together:

Ions	Chloride Cl^-	Nitride N^{3-}	Oxide O^{2-}	Bromide Br^-	Iodide I^-	Sulfide S^{2-}
Sodium Na^+						
Magnesium Mg^{2+}						
Aluminum Al^{3+}						
Potassium K^+						
Lithium Li^+						
Calcium Ca^{2+}						
Zinc Zn^{2+}						
Copper (I) Cu^+						
Iron (III) Fe^{3+}						

And how to break an ionic compound apart into its constituent IONS

1) Fe_2O_3 _____

2) $CuBr_2$ _____

3) Cr_2S_3 _____

4) Hg_2Cl_2 _____

5) $HgCl_2$ _____

6) Zn_3N_2 _____

And go back and forth with them – given name, write formula; given formula, write name

Lithium oxide	beryllium fluoride
Magnesium nitride	potassium sulfide
Calcium phosphide	aluminum bromide
Barium chloride	nickel iodide
Silver oxide	lead (II) fluoride
Zinc oxide	mercury (II) chloride
Chloric acid	Tin (II) nitride
Copper (I) oxide	manganese (III) sulfide
Iron (II) phosphide	manganese (II) nitride
V_2O_3	$CoCl_2$
PbS_2	$MgBr_2$

Now let's see if you've grasped the essence of identifying the charges on an ion from its compound. Given the below formulas, write the ion symbol for *X in each case.*

Ag*X*	Ag_2X
Zn*X*	MgX_2
Ca_3X_2	A*lX*
XBr_2	XO_2
*X*I	X_3N_2

III. Acids and Their Anion Formulas – one step closer towards "polyatomic ions 😳"

"hydro … ic" Acids and their "…ide" ions				"…ic" acids and their "...ate" ions (aka, OXY-acids)			
Name	**Formula**	**Anion Name**	**Anion Formula**	**Name**	**Formula**	**Anion Name (s)**	**Anion Formula (s)**
Hydrofluoric acid				**Nitric acid**			
Hydrochloric acid				**Sulfuric acid**			
Hydrobromic acid				**Carbonic acid**			
Hydroiodic acid				**Chloric acid**			
Hydrosulfuric acid				**Phosphoric acid**			
Hydrocyanic acid				**Acetic acid**			
				Bromic acid			
				Iodic acid			

VI. More Oxy-acids and their Anions Derived From the "…ic" Acids

-----ic acid	---ic acid + 1*O give* *Per…ic acid*		-----ic acid - 1*O gives* *…ous acid*		---------- ic acid - 2*O gives* *Hypo…ous acid*	
Chloric acid _____	**Name**	**Formula**	**Name**	**Formula**	**Name**	**Formula**
	Anion name	**Anion formula**	**Anion name**	**Anion formula**	**Anion name**	**Anion formula**
Bromic acid _____	**Name**	**Formula**	**Name**	**Formula**	**Name**	**Formula**
	Anion name	**Anion formula**	**Anion name**	**Anion formula**	**Anion name**	**Anion formula**
Iodic acid _____	**Name**	**Formula**	**Name**	**Formula**	**Name**	**Formula**
	Anion name	**Anion formula**	**Anion name**	**Anion formula**	**Anion name**	**Anion formula**
Nitric acid _____	**Not applicable**		**Name**	**Formula**		
			Anion name	**Anion formula**		
Sulfuric acid _____			**Name**	**Formula**		
			Anion name	**Anion formula**		

Become familiar with these acids and their resultant anions. We are now ready to tackle most polyatomic ions and how to use them to put together more complex ionic compounds.

Without looking at the cheat sheets too much, write the polyatomic ions for each of the following

nitrate		nitrite					
sulfate		sulfite		hydrogen sulfate		hydrogen sulfite	
carbonate		bicarbonate					
chlorate		chlorite		hypochlorite		perchlorate	
bromate		bromite		hypobromite		perbromate	
phosphate		phosphite		dihydrogen phosphate		hydrogen phosphate	
acetate							

Without looking at the cheat sheets too much, write the formulas for the following compounds:

barium nitrate	potassium chlorate
sodium phosphate	ammonium dihydrogen phosphate
calcium perchlorate	zinc hydrogen phosphate
perbromic acid	potassium hydrogen carbonate
Lead (II) bisulfate	silver nitrate
copper (II) bromate	hypoiodous acid
nickel phosphate	aluminum chlorite
carbonic acid	hydrochloric acid
chromium (III) sulfate	nitrous acid
lead (II) chromate	manganese (IV) sulfite