Summer Memory Work for Chemistry

Look at a Periodic Table while reading.

The columns of elements on the Periodic Table are **groups or families**; each has a family name ie Alkali Metals, Halogens, Nobles Gases. These groups are the vertical columns on the Periodic Table. The charges beside the symbols are an indication of whether atoms are giving or taking electrons; this is referred to as the **charge, valence number, or oxidation number**. It is important to **know symbols and spelling** ahead of time because we will use these to write formulas and then balance equations in our first meeting. ***You do not need to know which elements are in which group from memory, but locating the symbol quickly on the Periodic Table will be extremely helpful. (Na is on the left, Br is on the right.)*** I have broken these into weeks for you to study.

Week 1 Polyatomic Ions ***Know the names, charges and exact formula for each.(The number of atoms is in the lower right corner of an atom; the overall charge on the group is in the top right.*** **Read the next page****

Ammonium	NH_4^+	Acetate	$C_2H_3O_2^-$	Carbonate	CO_3^{-2}
Chlorate	ClO_3^-	Chromate	CrO_4^{-2}	Dichromate	$Cr_2O_7^{-2}$
Hydroxide	OH^-	Nitrate	NO_3^-	Permanganate	MnO_4^-
Phosphate	PO_4^{-3}	Sulfate	SO_4^{-2}		

Week 2

Group IA		**Group IIA**		**Group IIIA**	
Alkali Family	+1	Alkali Earth	+2	Boron Family	+3
Lithium	Li	Beryllium	Be	Boron	B
Sodium	Na	Magnesium	Mg	Aluminum	Al
Potassium	K	Calcium	Ca	Gallium	Ga
Rubidium	Rb	Strontium	Sr	Indium	In
Cesium	Cs	Barium	Ba	Thallium	Tl
Francium	Fr	Radium	Ra		

Week 3

Group IVA		**Group VA**		**Group VIA**	
Carbon Family	+/- 4	Pnictide Family	-3/+5	Chalcogen Family	-2
Carbon	C	Nitrogen	N	Oxygen	O
Silicon	Si	Phosphorus	P	Sulfur	S
Germanium	Ge	Arsenic	As	Selenium	Se
Tin	Sn	Antimony	Sb	Tellurium	Te
Lead	Pb	Bismuth	Bi	Polonium	Po

Week 4

Group VIIA		**Group VIIIA**	
Halogen Family	-1	Noble Gases	0
Fluorine	F	Helium	He
Chlorine	Cl	Neon	Ne
Bromine	Br	Argon	Ar
Iodine	I	Krypton	Kr
Astatine	At	Xenon	Xe

Other Common Elements

Gold	Au	Copper	Cu
Silver	Ag	Nickel	Ni
Zinc	Zn	Uranium	U
Mercury	Hg	Cobalt	Co
Platinum	Pt	Tungsten	W
Radon	Rn	Iron	Fe
Chromium	Cr	Scandium	Sc

Polyatomic Ions are groups of atoms that have a charge. In the structures below the dots or **x**s represent electrons. Just **look at these** with interest; we will study these after Christmas.

Ammonium NH_4^+

This formula for the polyatomic ion **ammonium** represents one nitrogen atom bonded to 4 hydrogen atoms and the group has a +1 charge. This is the only positively charged group.

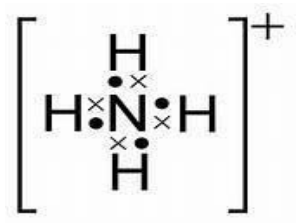
Carbonate CO_3^{-2}

This formula for the polyatomic ion **carbonate** represents one carbon atom bonded to 3 oxygen atoms . The entire group has a -2 charge.

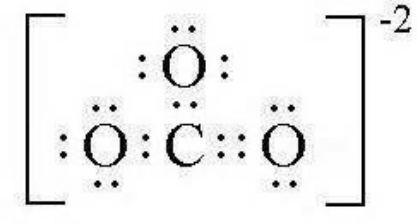
Acetate $C_2H_3O_2^-$

This formula for the polyatomic ion **acetate** represents 2 carbon atoms bonded to 3 Hydrogen atoms and 2 oxygen atoms. The entire group has a charge of -1.

Ammonium NH_4^+



Carbonate CO_3^{-2}



Acetate CH_3COO^- or $CH_3CO_2^-$