**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 meetings. 1) **Make flash cards to help learn the symbols and names. One element per card. For example: *You need to know Li is lithium, N is nitrogen, Carbonate is CO3-2.... 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.***

Ammonium NH4+  Acetate C2H3O2- Carbonate CO3-2

Chlorate ClO3- Chromate CrO4-2 Dichromate Cr2O7-2

Hydroxide OH- Nitrate NO3- Permanganate MnO4-

Phosphate PO4-3 Sulfate SO4-2

**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 Others

## Fluorine F Helium He Gold Au Copper Cu

## Chlorine Cl Neon Ne Silver Ag Nickel Ni

## Bromine Br Argon Ar Zinc Zn Uranium U

# Iodine I Krypton Kr Mercury Hg Cobalt Co

# Astatine At Xenon Xe Platinum Pt Tungsten W

#  Radon Rn Iron Fe Chromium Cr

 Manganese Mn Scandium Sc

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

Ammonium NH4+

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.

Acetate C2H3O2-

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.

Carbonate CO3-2

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

Acetate C2H3O2**-**  or CH3COO **-**



Carbonate CO3-2



Ammonium NH4+

