

**Transition elements** and a few others tend to have multiple charges and must be memorized. (Look on list given and use memory aid to help memorize it) (P. 144)

**Polyatomic ions** – group of atoms that act as a unit and carry a charge (radicals or packages). Notice that –ite ending has one less oxygen than –ate ending. (P. 147) Found in **ternary ionic compounds**.

**Writing ionic compound formulas** (use criss cross method for balancing ions) First write the cation symbol then the anion symbol. If the charges do not cancel out, do second step. Second, take the numbers only from the charges and bring them down diagonally as a new subscript. If there is already a subscript there put the ion in parenthesis before bringing the subscript down. This causes the compound to be balanced or electrically neutral. Reduce if needed.

EX. Calcium phosphide,  $\text{Ca}^{2+} \text{P}^{3-}$  :  $\text{Ca}_3\text{P}_2$

Ammonium phosphate,  $\text{NH}_4^+ \text{PO}_4^{3-}$  :  $(\text{NH}_4)_3\text{PO}_4$

Calcium carbonate,  $\text{Ca}^{2+} \text{CO}_3^{2-}$  :  $\text{CaCO}_3$

Lead(IV) sulfate,  $\text{Pb}^{4+} \text{SO}_4^{2-}$  :  $\text{Pb}(\text{SO}_4)_2$

**Naming Common Acids**- most common definition of acids are compounds that produce hydrogen ions when dissolved in water. Formulas tend to start with the  $\text{H}^+$  ion. (For rules refer to Ch.20.1 for notes)

*Know these common acids:*

Hydrochloric Acid:  $\text{HCl}$

Sulfuric Acid:  $\text{H}_2\text{SO}_4$

Nitric Acid:  $\text{HNO}_3$

Acetic Acid:  $\text{HC}_2\text{H}_3\text{O}_2$

Phosphoric Acid:  $\text{H}_3\text{PO}_4$

Carbonic Acid:  $\text{H}_2\text{CO}_3$

Anion ending	Example	Acid Name	Example
-ide	$\text{Cl}^-$ ( <u>chloride</u> )	Hydro-(stem)-ic Acid	Hydrochloric Acid
-ite	$\text{SO}_3^{2-}$ ( <u>sulfite</u> )	(stem)-ous Acid	Sulfurous Acid
-ate	$\text{NO}_3^-$ ( <u>nitrate</u> )	(stem)-ic Acid	Nitric Acid

**Law of Definite Proportions** – in samples of any chemical compound, the masses of the elements are always in the same proportions.

**Law of Multiple Proportions** – whenever two elements form more than one compound, the different masses of one element that combine with the same mass of the other element are in the ratio of small whole numbers.