Chemistry (Math Notes)

Module #2

Memorize this material:

1. Abbreviations & names for Elements 1-20 on the periodic table (spelling counts!)
2. Prefixes for naming covalent compounds (p.91)
3. Ion name (-ide) ending for common elements (handout)

Definitions:

_____Atom_____is the smallest chemical unit of matter

___Element_____ is a substance that can't be broken down into less massive substances. The same atom is repeated throughout. All atoms in the substance are identical to each other.

_____Molecule_____ is more than one atom bound together to form a compound and is one part of a compound

_____Compound_____ is a substance that can be decomposed into its elements by chemical means.

atom:element :: molecule:compound

Periodic Table:Elements symbols are located on the periodic table. The jagged stair step line separated metals from nonmetals. Metals are to the left; nonmetals are to the right.
EXCEPTION: hydrogen

Metal	Nonmetal
Malleable	Brittle
Shiny	Dull
Conduct electricity	Don't conduct electricity

ONE OF THE MOST FUNDAMENTAL DISTINCTIONS IN CHEMISTY!! MUST KNOW AND UNDERSTAND THE DIFFERENCES AND THEIR LOCATION ON THE PERIODIC TABLE!

Law of the Conservation of Mass states that matter cannot be ____created_____ or _____destroyed_____;it can only change forms. Basically the sum of the reactants must equal the sum of the products.

Example: 10.0 grams Nitrogen + 2.1 grams Hydrogen = 12.1 grams ammonia.

10.0 grams Nitrogen + 3.1 grams Hydrogen = 12.1 grams ammonia and 1.0 grams Hydrogen.

Law of Definite Proportions states the proportion of elements in any compound is always the same. It is the recipe for that compound.

Example: H2O. This means that for every two molecules of Hydrogen there is one molecule of oxygen. Each compound of water is made up of two hydrogen molecules and one oxygen molecule, nothing more and nothing less.

Law of Multiple Proportions states that some elements can combine to form 2 or more totally different compounds, but the ratio of masses in the 2nd element react with a fixed mass of the 1st element in a simple whole # ratio.

Example: The ratio for Hydrogen to oxygen in water, is 1:2. Now we can compare this to Hydrogen Peroxide, (H2O2) 2:2, which is the same as saying 1:1. Although both compounds have Hydrogen and Oxygen, they occur in different ratios.

Naming Compounds:

1. Decide if the compound is ionic (metal + nonmetal) or covalent (nonmetal + nonmetal). Ionic compounds conduct electricity because they have a metal.

2. If it is ionic, write the metal first then the nometal with the -ide ending added.

Metal + Nonmetal (ide) *This is also called: Cation + Anion*

3. If it is covalent, name the elements in the order they appear in the chemical formula but you must add the covalent prefixes based on the # of atoms for each element. Add –ide ending to the last element listed in the formula. *Note: The mono- prefix is never added to the 1st element.*

Element	Symbol	-ide Ending
Hydrogen	H	hydride
Carbon	C	carbide
Nitrogen	N	nitride
Oxygen	O	oxide
Bromine	Br	bromide

Phosphorus	P	phosphide
Sulfur	S	sulfide
Chlorine	Cl	chloride
Iodine	I	iodide