Chapter 2 Notes: Atoms, Molecules, and Ions

Sections 1, 3 and 4 we'll do later!

2.2 Fundamental Chemical Laws

A. Law of Conservation of Mass:

B. Law of Definite Proportions:

C. Law of Multiple Proportions: If 2 elements (A and B) form more than one compound, the masses of B that can combine with a given mass of A are in the ratio of small whole numbers. Ex:

2.5 Modern View of Atomic Structure

A.

	symbol	**relative charge**	**relative mass (amu)**	**location**
proton				
neutron				
electron				

*1 amu = 1.66054×10^{-24}g

B. Size of an atom: 10^{-8} cm
Diameter of nucleus: 10^{-13} cm Density of nucleus ~10^{14}g/cm^3

C. Definitions

1. **atom:**

2. **atomic number (Z):**

3. **mass number (A):**

4. **isotope:**

2.6 Molecules and Ions

A. Definitions:

1. chemical bond:

2. covalent bond:

3. molecule:

4. chemical formulas, structural formulas, space-filling models, ball-and-stick models

5. ionic bond:

   ionic compounds are also called _____

6. cation:

7. anion:

2.7 Intro to the Periodic Table

A. Periods:

B. Groups/Families:
   1. IUPAC (International Union of Pure and Applied Chemistry) Way

   2. North American Way

   3. Know your family names and common ionic charges!
      Group 1 (1A)
      Group 2 (2A)
      Group 17 (7A)
      Group 18 (8A)

C. Regions and characteristics of metals, non-metals, and metalloids(semi-metals)

2.8 Naming Simple Compounds

Naming Covalents

A. Diatomic Elements

B. Naming
   N_2O_3

   $SiBr_4$

   CO_2

   P_4O_{10}

Prefixes: 1 2 3 4 5 6 7 8 9 10

Naming Ions and Ionic Compounds:

A. Cations:
   Ex.
B. Anions:
   Ex:

C. Naming
   1. constant charge cations:

   2. variable charge cations

   3. polyatomic cations (NH_4^+ _____ and H_3O^+ _____)

Ex:

$CaCO_3$	$Fe(ClO_3)_3$
NH_4NO_3	$PbSO_4$
$Al(OH)_3$	CuF_2
$Ag_2C_2O_4$	$NaHCO_3$

Naming Acids

A. Binary

B. Oxy

Naming Simple Organic Compounds

A. **hydrocarbon:**

B. **alkanes:**

C. #of carbons: 1 (_____), 2(_____), 3(_____), 4 (_____)