

September 14, 2018  
Continuation of Chapter 2

### **Atomic mass**

Atomic mass is the isotope mass (protons+neutrons+the tiny mass contribution of the electrons) for individual isotopes.

1 g =  $6.022 \times 10^{23}$  atomic mass units (a.m.u.)

$^{12}\text{C}$  is defined as having a mass of 12 a.m.u.

Atomic weight of an element is an weighted average of the atomic masses of all of the naturally occurring isotopes of that element

Atomic Weight =  $f_1 m_1 + f_2 m_2 + f_3 m_3 + \dots$

Keep in mind that the sum of all the fractional abundances,  $f$ , add up to 1!

### **Periodic Table**

A tool used by chemists to organize and help us remember chemical facts

Elements in the same group have similar properties.

Example: Cs and K are similar. Cl and I are similar.

### **Molecules**

How does the arrangement of the atoms in molecules affect their properties?

Diatomics: Any molecule made of exactly 2 atoms

Homonuclear diatomic: Molecule with 2 atoms of the same element.

Molecular Formula: Which elements and how many atoms exactly are in a molecule

Empirical Formula: Relative number of atoms in a molecule

Examples: Glucose, Ethane-1,2-diol

**Ionic Compounds:** Made of cations (positive) and anions (negative)

Cations have lost electrons

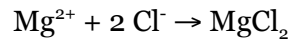
Anions have gained electrons

Example: NaCl

MgCl<sub>2</sub>

Two separate ways to determine chemical formulas for ionic compounds. (pick one!)

1. Charge balancing: determine charges on cations and anions. Adjust stoichiometry until charge is balanced.



2. Crisscross Rule:

