Assigning Oxidation Numbers

Octet Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rules:

1. The oxidation number for any lone element is Zero.
   1. Some examples are K, Al, H, Ne, etc…
   2. Oxidation number is also zero for molecules composed of the same element. Some examples are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Oxidation numbers are usually assigned to the most electronegative elements first.
   1. Fluorine, the most electronegative atom is ALWAYS \_\_\_\_\_\_
   2. Oxygen, the 2nd most electronegative atom is \_\_\_\_\_, unless it is bonded with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Oxidation numbers are usually assigned based on their group
      1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in group 1 have an oxidation number of \_\_\_\_\_\_\_
      2. Alkali Earth Metals in group 2 have an oxidation number of \_\_\_\_\_\_
      3. Halogens have an oxidation number of \_\_\_\_\_\_
3. Hydrogen has an oxidation number of +1 when combined with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and -1 if combined with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Sum of the oxidation numbers equals the overall charge of the atom.

Examples:

OF2

CH4

MgH2

Fe2O3

NaHCO3

PCl3

NF3

Na2SO3

CO3-2

Synthesis

Ra + Cl2 🡪

Mg + O2 🡪

Fe + O2 🡪

Decomposition

Ag2O 🡪

RaCl2 🡪

H2O2 🡪

Single Replacement

Al + CuCl2 🡪

Cl2 + NaI 🡪

Mg + HCl 🡪

Double Replacement

K2CO3 + BaCl2 🡪

Ca(OH)2 + H3PO4 🡪

Na2CO3 + H2SO4 🡪