ASSIGNING OXIDATION NUMBERS

OXIDATION NUMBER: The charge which an atom has, or appears to have, when electrons are counted according to certain arbitrary rules.

In assigning oxidation numbers, electrons shared between two unlike atoms are counted as belonging to the more electronegative atom. The electrons shared between two like atoms are divided equally between the sharing atoms.

RULES FOR DETERMINING OXIDATION NUMBER

1. In the free or elemental state, each atom has an oxidation number of zero.

2. For monoatomic ions, the oxidation number is the same as the charge.

3. All metals in Group 1 form +1 ions and Group 2 form +2 ions when found in a compound.

4. When found in a compound Fluorine has a - 1 oxidation state.

5. Hydrogen has a +1 oxidation state when bonded to a nonmetal and a -1 oxidation state when bonded to a metal.

6. Oxygen normally has a -2 oxidation state.

7. For neutral molecules, the algebraic sum of the oxidation number of all the atoms must add up to zero.

8. For polyatomic ions, the oxidation numbers of all the atoms must add up to the charge on the ion.

Practice

1) K

2) CaS

3) NO

4) N_2O_3

5) Cl_2

6) CO_2

7) NH_4^+

8) $KClO_4$

9) $LiMnO_4$

10) $Ca_3(PO_4)_2$

11) MgS_2O_3

12) $KHSO_4$