General Chemistry I
Rules of Oxidation Numbers

1. The oxidation number of an atom in a free state, that is uncombined state, is equal to 0.

2. The oxidation number of atoms in group IA is equal to +1.

3. The oxidation number of elements in group IIA is +2.

4. The oxidation number of oxygen is -2 except in peroxides, then the oxidation number of oxygen is -1.

5. Peroxides are defined as binary compounds between group IA and IIA including hydrogen and oxygen. (Example: H_2O_2, Na_2O_2, CaO_2.)

6. The oxidation number of hydrogen is +1 except in hydrides. In hydrides the oxidation number of hydrogen is -1. (Example: NaH, CaH_2.) Hydrides are binary compounds between hydrogen and group IA and IIA elements.

7. The oxidation number of fluorine is always -1.

8. The oxidation number of the halogens, fluorine, chlorine, bromine, and iodine in a binary compound with a more metallic element is always -1. The exception to this is when the halogen reacts with a more nonmetallic element such as another halogen or oxygen. (Example: BrCl, Cl_2O in these examples the oxidation number of the chlorine is a +1.)

9. The sum of the oxidation numbers of atoms in a compound is 0.

10. The sum of the oxidation numbers of atoms in an ion is equal to the charge of the ion.