Rules for Assigning Oxidation Numbers

Note that this is a prioritized list. Thus, if two rules contradict each other, follow the rule that appears higher on the list.

1. All elements have an oxidation number = 0.
2. Monatomic ions have an oxidation number = their charge.
3. The sum of all the oxidation numbers of the atoms in a molecule = 0.
4. The sum of all the oxidation numbers of the atoms in a polyatomic ion = the charge on the ion.
5. Assign oxidation numbers to the following elements as indicated.
    a. Group 1A metals have an oxidation number of +1 in their compounds.
    b. Group 2A metals have an oxidation number of +2 in their compounds.
    c. Hydrogen has an oxidation number of +1 when it is in a compound with nonmetals, and an oxidation number of –1 when combined with metals.
    d. Fluorine has an oxidation number of –1 in its compounds.
    e. Oxygen has an oxidation number of –2 in all its compounds except when it occurs as a peroxide ion (O_2^{2-}), where it is –1.
    f. Group 7A elements (halogens) have an oxidation number of –1 in their compounds.

Examples:

Assign oxidation numbers to each atom in the following species:

$CaCl_2$	K_3PO_4	C_3H_8	$K_2Cr_2O_7$
+2 -1	+1+5 -2	-8/3 +1	+1 +6 -2