

Success 24/7 Chemistry: Oxidation Numbers

What are oxidation numbers?

They give the charge of each element in a chemical reaction & are used to determine which element is oxidized and which is reduced.

What you need to know:

- Elements in their standard state will always have an oxidation number of 0.
- **If the element is in a compound, use these rules:**

Rule	Example
All of the elements' oxidation numbers must add up to equal the overall charge of the compound.	
Group 1A (alkali metals) and Group 2A (alkaline earth metals) will have the same oxidation number as their charge. ○ 1A: +1 2A: +2	
Fluorine has an oxidation number of -1.	
Hydrogen will have an oxidation # of +1 most of the time. (Exception: When hydrogen is with a metal, it forms a metal hydride and takes on a -1 charge.)	
Oxygen will have an oxidation # of -2 most of the time. (Exception: When oxygen is a peroxide, O_2^{2-} , it takes on a charge of -1. Peroxides bond with a group 1 metal or hydrogen.)	
If the element is not listed above, you must solve for it algebraically.	

Practice:

S

SO_2

SO_3

SO_3^{2-}

SO_4^{2-}

I_2O_5

SbF_6^-

P_4

PO_4^{3-}

NO_3^-

