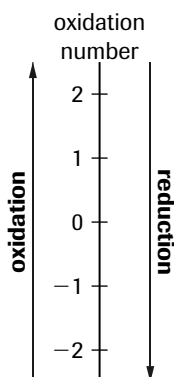


Oxidation Number

Common Oxidation Numbers

Atom or ion	Oxidation number	Examples
all atoms in elements	0	Na is 0, Cl in Cl_2 is 0
hydrogen in all compounds except hydrogen in hydrides	+1 -1	H in HCl is +1 H in LiH is -1
oxygen in all compounds except oxygen in peroxides	-2 -1	O in H_2O is -2 O in H_2O_2 is -1
all monatomic ions	charge on ion	Na^+ is +1, S^{2-} is -2



In a redox reaction, both oxidation and reduction occur.

SUMMARY**Determining Oxidation Numbers**

- Step 1** Assign common oxidation numbers.
- Step 2** The total of the oxidation numbers of atoms in a molecule or ion equals the value of the net electric charge on the molecule or ion.
- The sum of the oxidation numbers for a compound is zero.
 - The sum of the oxidation numbers for a polyatomic ion equals the charge on the ion.
- Step 3** Any unknown oxidation number is determined algebraically from the sum of the known oxidation numbers and the net charge on the entity.

SUMMARY**Oxidation States**

- Oxidation is an increase in oxidation number.
- Reduction is a decrease in oxidation number.
- A redox reaction involves both an oxidation and a reduction.