

Determining Oxidation Numbers

- 1) Each atom in a pure element has an oxidation number = 0.
- 2) For ions consisting of a single atom, the oxidation number is equal to the charge on the ion.
- 3) **Fluorine** is *always* -1.
- 4) **Chlorine, bromine and iodine** are *always* -1 except when combined with oxygen or fluorine.
- 5) The oxidation number of **hydrogen** is +1 and of **oxygen** is -2.
Exceptions: hydrides (H^{-1}), peroxides (O^{-1}), OF compounds.
- 6) In neutral compounds, the sum of the oxidation numbers must be zero. In polyatomic ions, the sum of the oxidation numbers must be equal to the ion charge.

Examples:

Cu(s)	Cu: 0	NaCl	Cl: -1 Na: +1
NaF	F: -1 Na: +1	ClO⁻	Cl: +1 O: -2
Al³⁺	Al: +3	Fe₂O₃	Fe: +3 O: -2
H₂O₂	H: +1 O: -1	AlH₄⁻	Al: +3 H: -1
	KMnO₄ K: +1 Mn: +7 O: -2		