Redox Reactions: Assigning Oxidation Numbers

Rule	Examples
All atoms in elements have an oxidation number of zero	Na O_2
Monoatomic ions have an oxidation number equal to its charge	Na^+ is +1 F^- is -1
Oxidation numbers in compounds always add up to zero (We learned this idea in grade 11)	NaF +1 + (-1) = 0 $MgCl_2$ +2 + 2(-1) = 0 H_2O 2(+1) + (-2) = 0
Oxidation numbers in polyatomic ions add up to the charge on the polyatomic ion	OH^- : -2 + (+1) = -1
Oxygen always has an oxidation number of -2 when it is in compound form (we are ignoring any exceptions to this rule)	H_2O Na_2O
Hydrogen always has an oxidation number of +1 in compound form (we are ignoring any exceptions to this rule)	H_2O

We can use these rules to help us determine the oxidation number of elements with multiple oxidation states. i.e sulfur SO_2: x + 2(-2) = 0 therefore x must be +4 SO_4^{2-} : x + 4(-2) = -2 therefore x must be +6