

REDOX

Big numbers and small numbers

Any small numbers that are in a compound tells us how many of that particular ion/ is involved in the compound.

Any big numbers that are found in a chemical equation tells us the between the and the in the reaction.

Working out the chemical formula of an ionic compound:

To calculate the empirical formula of an ionic compound we need to know the charge on the individual that make the ionic compound.

e.g.

Q) How do we know the charge on the individual ions?

The empirical formula of an ionic compound only tells us the of how many ions are involved in the lattice structure.

Q) Write out the chemical equation and therefore discern the chemical formula of the compound made, when the following atoms/molecules react together.

a) Sodium and chlorine

b) Magnesium and fluorine

c) Oxygen and Aluminium

d) Aluminium and bromine

Oxidation states:

An atom or ion in a compound is assigned an oxidation (or state).

For ionic compounds the oxidation number corresponds to the ionic on the ion in the compound.

For covalent compounds the oxidation number is calculated in the same way as ionic compounds however we are dealing with atoms rather than ions.

Rules for calculating oxidation numbers:

1.

2.

3.

4.

Helpful oxidation numbers, in order of importance:

Atom	Oxidation Number
Group 1	
Group 2	
Group 3	
F	
H	
O	
Cl	

e.g.

Q) Work out the oxidation numbers for each atom in the following substances.

a) H_2

b) H_2O

c) NaCl

d) S^{2-}

e) Cl_2

f) KMnO_4

g) MnO_4^-

h) $\text{Cr}_2\text{O}_7^{2-}$

i) Na^+

j) SO_4^{2-}

Redox reactions:

Oxidation:

Reduction:

O I L R I G

Redox:

Oxidising agent:

Reducing agent:

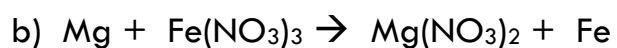
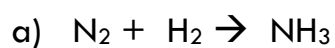
Q) In the question above what is the reducing agent and what is the oxidising agent?

Q) In the redox reactions below.

Balance the equation

Show and state what has been oxidised and reduced.

State what is the oxidising agent and the reducing agent.



Ionic equations

Full equations can be turned into ionic equations by removing . Spectator ions do not change their states.

How to complete an ionic equation

1. Write out the full equation

2. Split any substances into its corresponding positive and negative ions

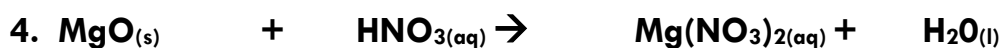
Do not remove any compounds.

Do not remove any ionic compounds that are .

3. If the oxidation state on the ion does not change it can be .

If it is a polyatomic ion you must check the oxidation state of each atom of the element in the compound.

Balance the following equations and then turn them into ionic equations:



Precipitation reactions:

When an _____ and a _____ in solution combine together to form an _____ substance. This is known as a _____ (_____).

e.g.