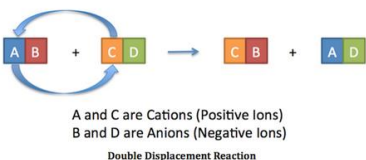


Displacement reactions and metal extraction

potassium **most reactive** K
 sodium Na
 calcium Ca
 magnesium Mg
 aluminium Al
carbon C
 zinc Zn
 iron Fe
 tin Sn
 lead Pb
hydrogen H
 copper Cu
 silver Ag
 gold Au
 platinum **least reactive** Pt

Reactivity depends on tendency to form metal ion



HT: OILRIG
Oxidation Is Loss of electrons
Reduction Is Gain of electrons

- Metal + Oxygen \rightarrow Metal Oxide
- Metal + Water \rightarrow Metal Hydroxide + hydrogen
- Metal + acid \rightarrow Metal salt + Hydrogen

Reactions of acids

- Acid + metal \rightarrow salt + hydrogen
- Acid + alkali \rightarrow salt + water
- Acid + insoluble base \rightarrow salt + water
- Acid + carbonate \rightarrow salt + water + carbon dioxide

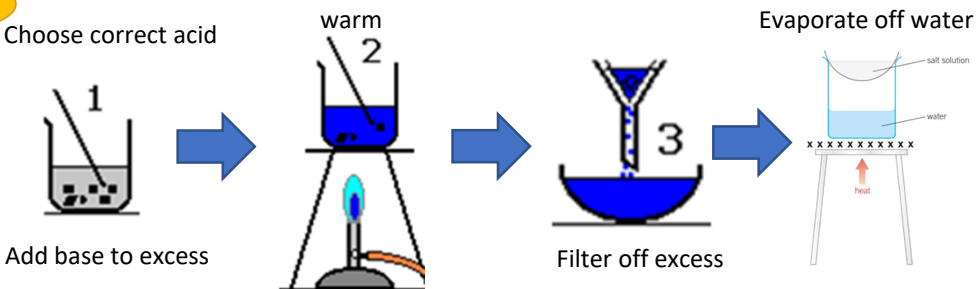
HT: OILRIG
 e.g. $2HCl + Mg \rightarrow MgCl_2 + H_2$
 Magnesium is oxidised
 $Mg \rightarrow Mg^{2+} + 2e^-$

Hydrochloric Acid \rightarrow Chlorides
 HCl

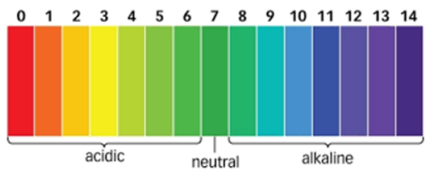
Nitric Acid \rightarrow Nitrates
 HNO_3

Sulphuric Acid \rightarrow Sulphates
 H_2SO_4

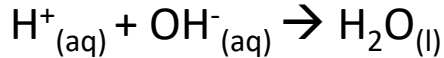
RP: Preparation of a dry sample of a soluble salt



C5 Chemical Changes

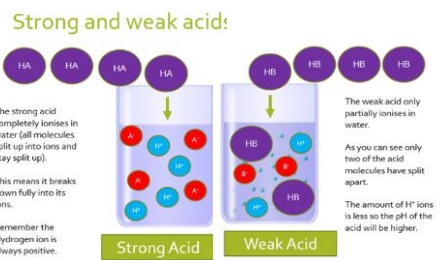


Acids produce H^+ ions
 Alkalis produce OH^- ions



HT: Strong and Weak acids

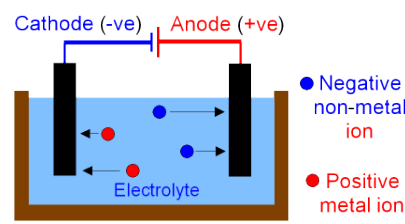
Concentration of hydrogen ions in mol/dm ³	pH
0.10	1.0
0.010	2.0
0.0010	3.0
0.00010	4.0



Neutralisation

Electrolysis

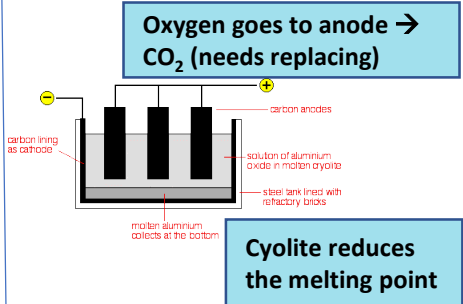
..of molten:



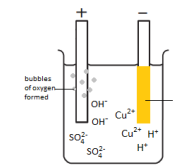
Higher: At the cathode
 $Pb^{2+} + 2e^- \rightarrow Pb$

Higher: At the anode
 $2Br^- \rightarrow Br_2 + 2e^-$
 or
 $2Br^- - 2e^- \rightarrow Br_2$

..to extract aluminium:



..of solutions:



At the anode:
 Halide (Gp7)
 Oxygen

At the cathode:
 Least reactive