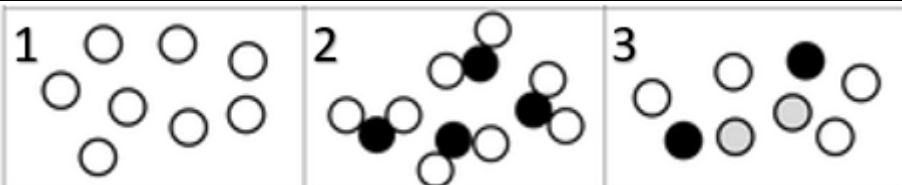


## 1. Key words

1	Element	A substance made up of one type of atom.
2	Compound	A substance made up of atoms of two or more elements, chemically combined.
3	Mixture	A substance made up of atoms of two or more elements, not chemically combined.

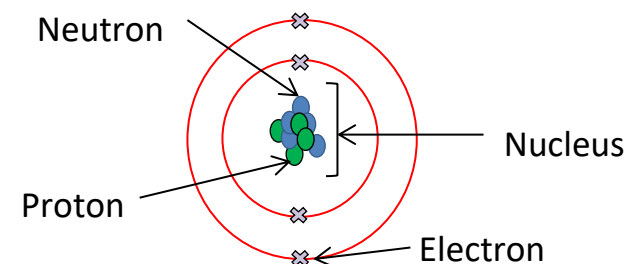


## 2. Elements and compounds

Name	Hydrogen	Oxygen	Water
Element or compound	Element	Element	Compound
Properties	Gas at room temperature.	Gas at room temperature.	Liquid at room temperature.
Formula	H <sub>2</sub>	O <sub>2</sub>	H <sub>2</sub> O
Description	2 Hydrogen atoms joined together	2 Oxygen atoms joined together	2 Hydrogen atoms joined to 1 Oxygen atom

## 3. Structure of the atom

	Key word	Definition
1	Atom	A single unit of matter.
2	Nucleus	The centre of an atom. Contains protons and neutrons.
3	Proton	A positively charged particle found in the nucleus.
4	Neutron	A neutral particle found in the nucleus. Has no charge.
5	Electron	A negatively charged particle found in energy levels (shells) around the nucleus.



## 4. Element Symbols

Element symbols are used so that people in any country can understand which chemicals are used in a reaction.

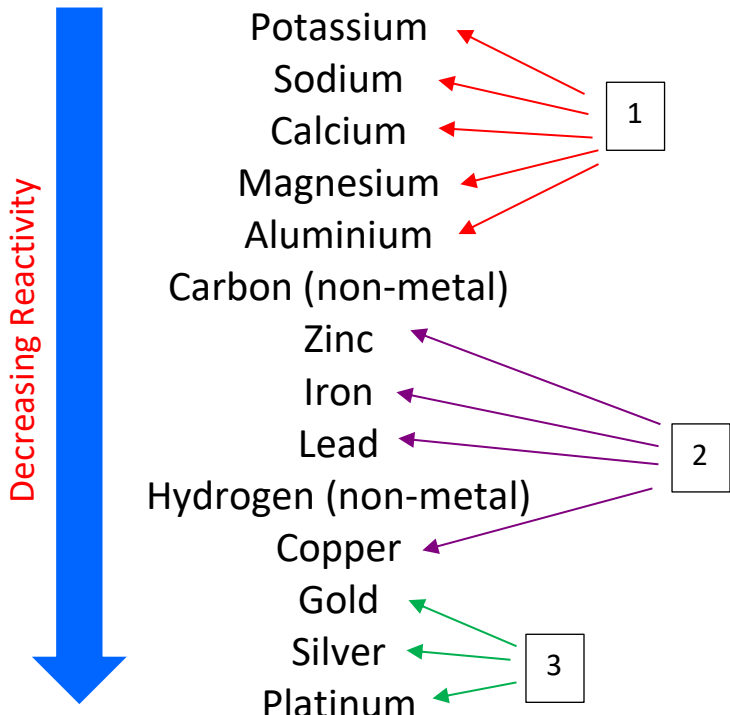
Element	Symbol	Element	Symbol
Magnesium	Mg	Copper	Cu
Zinc	Zn	Sodium	Na
Atomic number	Number of protons in the nucleus of an atom.		
Atomic mass	Total number of protons <b>and</b> neutrons in the nucleus of an atom.		

## 5. Naming Salts

Name of acid	Second part of salt name
Hydrochloric acid	Chloride
Sulphuric acid	Sulphate
Nitric Acid	Nitrate

## 6. Reactivity Series

1	Very reactive metals, need extracting from ores using electrolysis
2	Base metals, can be extracted from ores by smelting with carbon
3	Very low reactivity metals, found native as nuggets of metal

The diagram shows a vertical blue arrow pointing downwards, labeled 'Decreasing Reactivity'. To the right of the arrow, elements are listed in descending order of reactivity. Red arrows point from a box labeled '1' to Potassium, Sodium, Calcium, Magnesium, and Aluminium. Purple arrows point from a box labeled '2' to Zinc, Iron, Lead, and Hydrogen (non-metal). Green arrows point from a box labeled '3' to Copper, Gold, Silver, and Platinum.

## 7. Displacement Reactions

Displacement reactions occur when a more reactive metal is reacted with compound containing a less reactive metal

For example:

Magnesium + copper sulphate → magnesium sulphate + copper

The magnesium is more reactive so it pushes the copper out of the compound and bonds to the sulphate molecule.

A reaction will not occur when the metal element is less reactive than the metal contained in the compound.

For example:

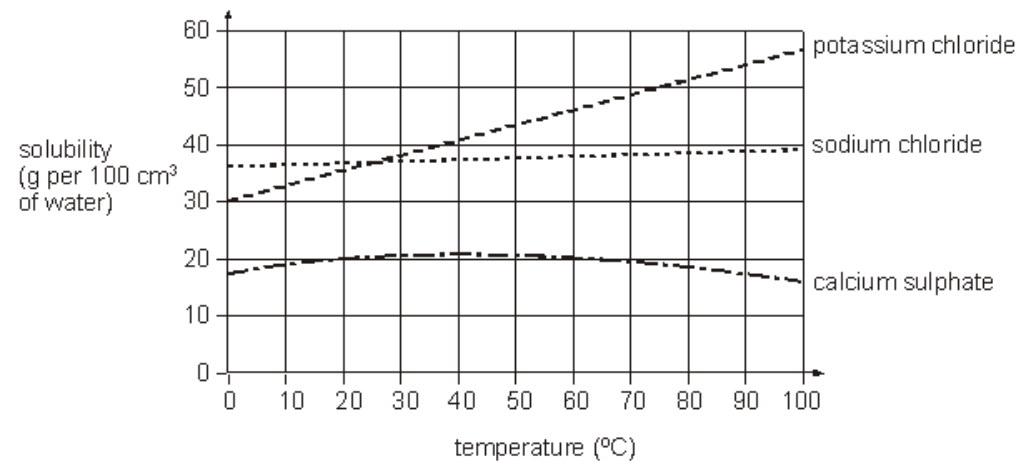
Iron + aluminium chloride → no reaction

## 8. Solubility Key Words

<b>Solute</b>	A substance that dissolves to make a solution e.g. salt or sugar
<b>Solvent</b>	A substance that dissolves a solute e.g. water
<b>Solution</b>	A substance that is a mixture of a solvent and a solute e.g. salt water
<b>Solubility</b>	A measure of how well a substance will dissolve
<b>Soluble</b>	A substance that dissolves in a solvent e.g. water
<b>Insoluble</b>	A substance that will not dissolve e.g. sand
<b>Saturated</b>	A solution that cannot dissolve any more solute into the solvent.

## 9. Affect of temperature on solubility

The solubility of a solution is different at different temperatures.



Sodium chloride is the most soluble at room temperature (20°C).

The solubility of sodium chloride increases slightly as the temperature is increased.

The solubility of potassium chloride increases from 30 g/100cm<sup>3</sup> at 0°C, to approximately 57 g/100cm<sup>3</sup> at 100°C.

Above approximately 35°C, potassium chloride becomes the most soluble.

The solubility of calcium carbonate increases between 0°C and 40°C, after which the solubility decreases.