

# Summary Sheet Year 7 Elements



## Atoms, molecules, elements and compounds

**Atom** – the smallest part of an element that can exist

**Molecule** – a small group of atoms joined together

**Element** – a pure substance made up from one kind of atom only

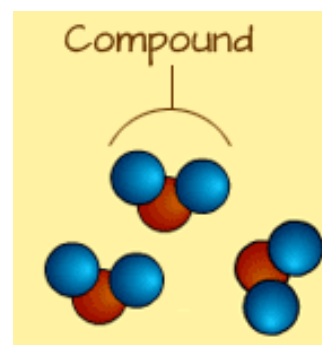
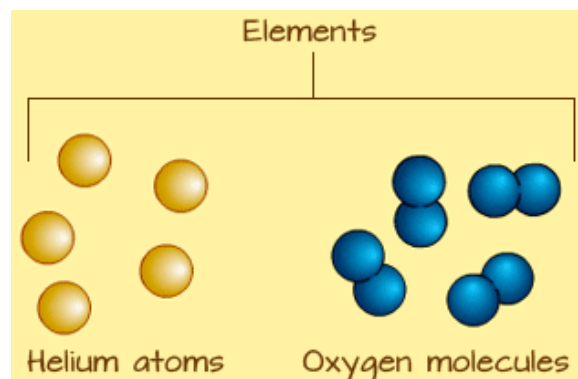
Elements are written with **symbols** of one or two letters  
First letter is a capital letter, the second is lower case

Examples: hydrogen ( $\text{H}_2$ ), oxygen ( $\text{O}_2$ ), nitrogen ( $\text{N}_2$ ), carbon ( $\text{C}$ ), iron ( $\text{Fe}$ ), zinc ( $\text{Zn}$ ), copper ( $\text{Cu}$ ), sulfur ( $\text{S}$ ), aluminium ( $\text{Al}$ ), iodine ( $\text{I}_2$ ), bromine ( $\text{Br}_2$ ), chlorine ( $\text{Cl}_2$ ), sodium ( $\text{Na}$ ), potassium ( $\text{K}$ ) and magnesium ( $\text{Mg}$ )

**Compound** – a pure substance made from two or more different elements chemically joined together

Examples: hydrogen chloride ( $\text{HCl}$ ), carbon dioxide ( $\text{CO}_2$ ), copper bromide ( $\text{CuBr}_2$ ), zinc iodide ( $\text{ZnI}_2$ ), potassium nitrate ( $\text{KNO}_3$ ), magnesium sulfate ( $\text{MgSO}_4$ ), sodium carbonate ( $\text{Na}_2\text{CO}_3$ )

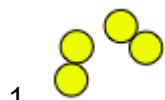
**Mixture** – a substance made from two or more different substances NOT chemically joined together



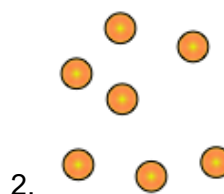
The blue and red represent different atoms.

This diagram could show sulfur dioxide molecules ( $\text{SO}_2$ ) or water molecules ( $\text{H}_2\text{O}$ )

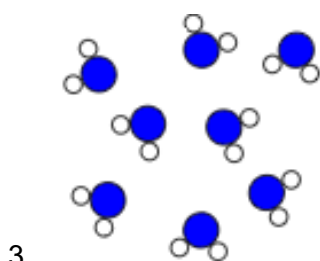
## Recognising particle diagrams



This is an **element** (one kind of atom only) and a **molecule**



This is an **element** (one kind of atom only) and an **atom**



This is a **compound** (2 different kinds of atom) and a **molecule**

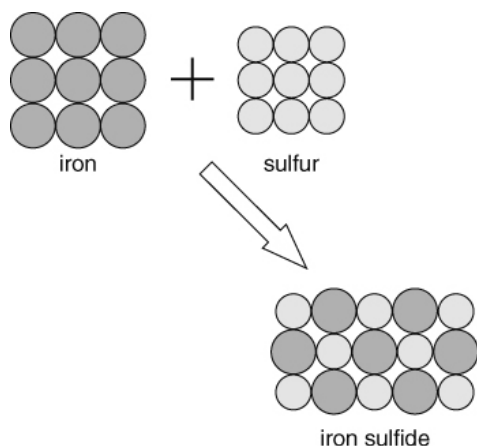


This is a **mixture** of **two different elements**. Both of them are **molecules**

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**Compounds** are formed when elements react so that the atoms join together.



## Naming compounds

If there is a metal in the compound, the name of the metal goes first.

If the compound contains **only two elements** then one of the element's name has its ending changed to 'ide'.

e.g. zinc + oxygen = zinc **oxide**

iron + bromine = iron **bromide**

If a compound contains **two elements plus oxygen**, then the name ending of one of the elements is changed to 'ate'.

e.g. sodium + carbon + oxygen = sodium carbon**ate**

potassium + nitrogen + oxygen = potassium nit**rate**

## Formulae

The formula of a substance shows us how many of each kind of atom it is made up from

- Examples:
- $\text{H}_2\text{O}$  is made up from 2 hydrogen atoms ( $\text{H}_2$ ) and 1 oxygen atom ( $\text{O}$ )
  - $\text{H}_2\text{SO}_4$  is made up from 2 hydrogen atoms ( $\text{H}_2$ ), 1 sulfur ( $\text{S}$ ) and 4 oxygen atoms ( $\text{O}_4$ )
  - $\text{K}_2\text{NO}_3$  is made up from 2 potassium atoms ( $\text{K}_2$ ), 1 nitrogen ( $\text{N}$ ) and 3 oxygen atoms ( $\text{O}_3$ )

## Testing for Common Gases

**Carbon Dioxide,  $\text{CO}_2$**

Carbon dioxide gas

Limewater (clear/colourless)

Limewater (cloudy/milky)

**Chlorine,  $\text{Cl}_2$**

Chlorine bleaches damp blue litmus paper

Blue  
Red  
White

Chlorine gas

**Hydrogen,  $\text{H}_2$**

Hydrogen makes a squeaky pop with a lighted splint

POP!

$\text{H}_2$  gas

**Oxygen,  $\text{O}_2$**

Oxygen relights a glowing splint

Glowing splint