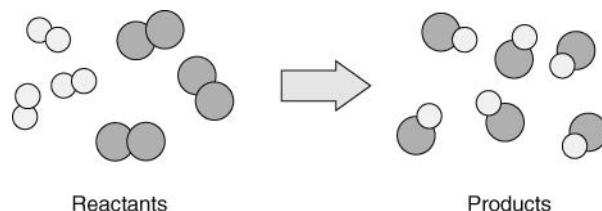


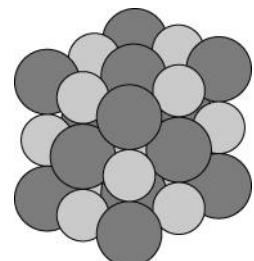
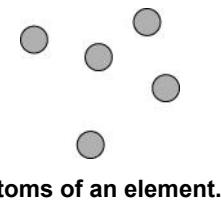
Dalton's atomic theory

Dalton's theory stated that:

- All matter is made up of tiny particles called atoms.
 - Atoms are indestructible, and cannot be created, or destroyed.
 - The atoms in an element are all identical.
 - In compounds, each atom of an element is always joined to a fixed number of atoms of the other elements.
 - During chemical reactions, atoms rearrange, to make new substances.
- For example:

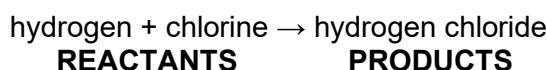


No atoms are lost or gained so the mass of the reactants is equal to the mass of the products.



Word equations

The word equation for the above change is:



Some signs of a chemical reaction include:

- colour change
- gas produced
- solid formed from solution
- energy change.

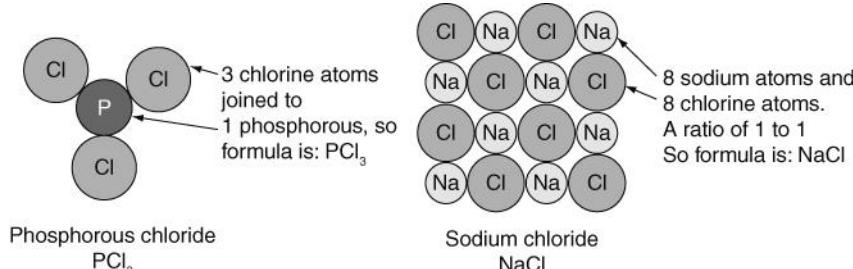
Elements and their symbols

The **symbols** for the elements used today have been agreed by scientists in all countries. They are either a single or double letter. The first letter is always a capital letter.

Examples:

nitrogen = N	lithium = Li
sulfur = S	copper = Cu
chlorine = Cl	iron = Fe

Formulae



The **chemical formula** of a substance tells you the number of atoms of each element that are joined in its molecules, or the ratio of atoms of each element in the compound.

Metals and non-metals

The common properties of most **metals** are:

- high melting points
- solids at room temperature
- strong and **flexible**
- malleable
- shiny (when polished)
- good **conductors of heat and electricity**.

The common properties of most **non-metals** are:

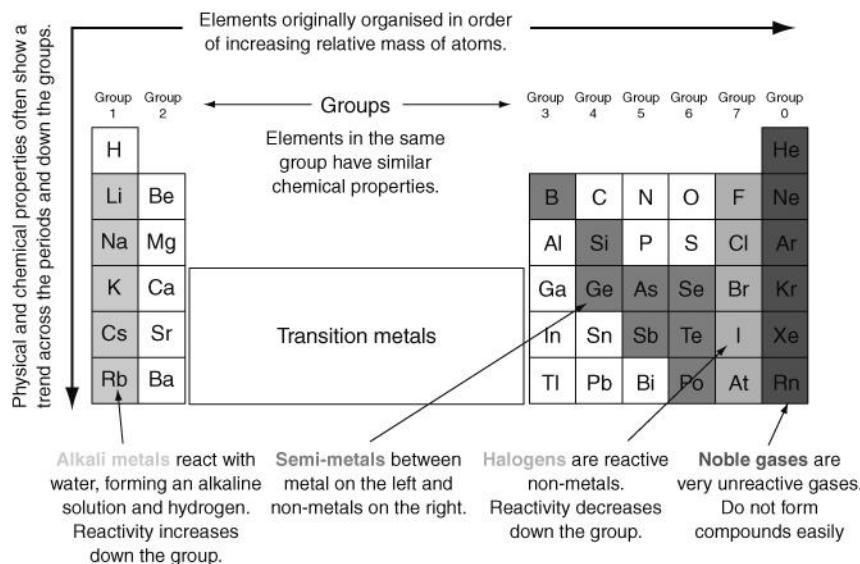
- low melting point
- **brittle**(when solid)
- not shiny
- poor conductors of heat and electricity.

The properties of a substance are what it looks like or what it does. There are two types of properties:

- **chemical properties** (e.g. flammability, pH, reaction with acid)
- **physical properties** (e.g. melting point, boiling point, density).

The periodic table

The **periodic table** arranges the elements so that elements with similar properties are in the same vertical group. The periodic table also allows us to spot trends and patterns.



Metal and non-metal oxides

Many elements burn in air/oxygen to form oxides; e.g.:

- calcium + oxygen → calcium oxide
 - metal oxides tend to form alkaline solutions.
 - carbon + oxygen → carbon dioxide
 - non-metal oxides tend to form acidic solutions.
-

Changes of state

