Chapter 1: The Periodic Table

Knowledge organiser

The **Periodic Table** displays the names and symbols of all the **elements** we have discovered which are organised by their **chemical properties** and their **physical properties**. There are about 100 naturally occurring elements.

Physical properties

The physical properties of an element describe how a substance behaves generally.

(E.g., **conductor** of electricity, dense, conductor of heat, shiny, **malleable**, sonorous, high melting and boiling points)

Chemical properties

The chemical properties of an element describe how a substance behaves in chemical reactions.

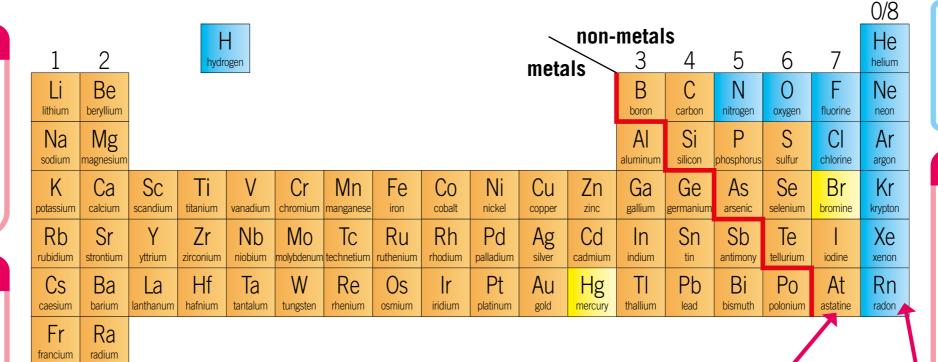
For example, how reactive it is, what other substances it reacts with, and the products it forms in reactions.

Metals

- good conductors of heat and electricity
- shiny
- malleable and ductile
- sonorous when solid
- most have high melting and boiling points
- some metals react with oxygen to form metal oxides

Group 1

- called the alkali metals
- like all other metals but are very **reactive**
- react vigorously (strongly) with water
- get more reactive as you go down the group
- lower melting points than most other metals
- melting points decrease down the group
- always produce a metal hydroxide and hydrogen gas when reacted with water



This version of the Periodic Table does not include every discovered element.

liquids

Group 7

called the halogens

radium

- generally very reactive
- generally the opposite of Group 1
- melting point increases down the group while reactivity decreases.

solids

• take part in **displacement reactions**, where an element from higher up the group takes the place of one from lower down the group in a compound.

For example: potassium iodide + chlorine → potassium chloride + iodine

- columns are called groups
- rows are called **periods**

Elements in a group normally have similar properties, meaning chemists can predict properties of elements based on their group.

Non-metals

- often have properties the opposite of metals
- low boiling points, so are often gases at room temperature
- poor conductors of electricity and heat
- dull in appearance
- low density
- brittle and not sonorous
- some metals react with oxygen to form metal oxides

Group 0

- called the **noble gases**
- very unreactive
- low boiling points, so are gases at room temperature
- like the halogens, their boiling points increase down the group

Key words

Make sure you can write definitions for these key terms.

brittle conductor chemical property Periodic Table physical property sonorous

dense reactive

displacement reaction

element

halogen

gases at room temprature

malleable

noble gas