



Box 1: Keywords

Alkali metal	Metals found in Group 1 of the Periodic Table
Chemical property	How a substance behaves in its chemical reactions
Displacement reaction	A reaction where a more reactive metal displaces a less reactive metal from its compound
Group	A vertical column of the Periodic Table. The elements in the group have similar properties
Halogen	Elements found in Group 7 of the Periodic Table.
Noble gas	Elements found in Group 0 of the Periodic Table.
Period	A horizontal row of the Periodic Table. There are trends in the physical properties of the elements across a period.
Physical property	A property of a materials that you can observe or measure

Box 2: The Periodic Table

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 118 elements.

- 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.

here are 118 elements.

H

hydrogen

1

2

Li

lithium

Be

beryllium

Na

sodium

Mg

magnesium

K

potassium

Ca

calcium

Sc

scandium

Ti

titanium

V

vanadium

Cr

chromium

Mn

manganese

Fe

iron

Co

cobalt

Ni

nickel

Cu

copper

Zn

zinc

Ga

gallium

Ge

germanium

As

arsenic

Se

selenium

Br

bromine

Kr

krypton

Rb

rubidium

Sr

strontium

Y

yttrium

Zr

zirconium

Nb

niobium

Mo

molybdenum

Tc

technetium

Ru

ruthenium

Rh

rhodium

Pd

palladium

Ag

silver

Cd

cadmium

In

indium

Sn

tin

Sb

antimony

Te

tellurium

I

iodine

Xe

xenon

Cs

caesium

Ba

barium

La

lanthanum

Hf

hafnium

Ta

tantalum

W

tungsten

Re

rhenium

Os

osmium

Ir

iridium

Pt

platinum

Au

gold

Hg

mercury

Tl

thallium

Pb

lead

Bi

bismuth

Po

polonium

At

astatine

Rn

radon

Fr

francium

Ra

radium

solids

liquids

gases at room temprature

metals

non-metals

3

4

5

6

7

B

boron

C

carbon

N

nitrogen

O

oxygen

F

fluorine

Ne

neon

Al

aluminum

Si

silicon

P

phosphorus

S

sulfur

Cl

chlorine

Ar

argon

0/8

He

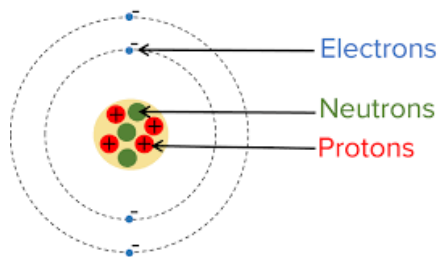
helium



Box 3: Atomic structure

Atoms are made of protons, neutrons and electrons.

The nucleus of an atom contains protons and neutrons. The electrons are found in electron shells.



Box 4: Chemical and Physical 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.

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)

Box 5: 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

Box 6: 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

Box 7: 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

Box 8: Group 7

Called the halogens

- generally very reactive
- melting point increases down the group while reactivity decreases.
- 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.

e.g. potassium iodide + chlorine $\rightarrow$ potassium chloride + iodine

Box 9: Key Skills

Describe patterns in chemical and physical properties of the periodic table.

Interpret data from graphs

Box 10: Pathway

Previous knowledge: Particle model, atoms and elements

Future links: Bonding, structure and properties, Group 0, 1 and 7

Careers: metallurgists, metal workers, research scientists, electricians, engineers, jewellery makers, stock exchange traders

Box 11: Cross curricular links

Physics – atomic structure

Maths – interpreting graphical data