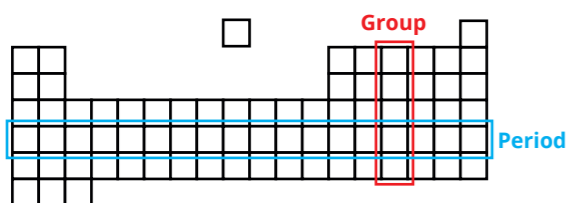


1.2 Periodic Table

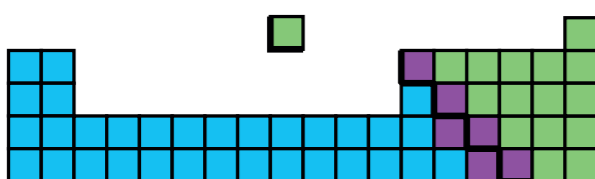
Layout:

- The table contains all of the known elements
- The elements are arranged in order of **increasing atomic number**



- Groups** - The vertical columns
- Periods** - The horizontal rows
- Arrangement** - The elements and similar elements are grouped together.

Metals and Non-Metals



■ Metal
 ■ non-Metal
 ■ Metalloid

- Metals** - shiny, good conductors, high melting/boiling points, malleable, dense
- Non-Metals** - dull, poor conductors, low melting/boiling points, brittle, low density
- Metalloid** - has properties of both metals and non-metals.

Group 1 - The Alkali Metals:

Li	Lithium	2.①
Na	Sodium	2.8.①
K	Potassium	2.8.8.①

Group 1 - all have 1 electron in their outer shell.

- Metallic properties** - conduct electricity and heat, shiny (when cut)
- Non-Metallic properties** - soft, low density, low melting/boiling points

Reactivity:

- The elements get **more reactive as you go down** the group

Outer shell gets further from nucleus so easier to lose 1 electron.

Li	2.1
Na	2.8.1
K	2.8.8.1

Reaction with oxygen:

- The metals **tarnish** when they react with oxygen, forming the **metal oxide**
sodium + oxygen → sodium oxide

Reaction with water:

- The metals react with water, forming the **metal hydroxide** and **hydrogen gas**
potassium + water → potassium + hydrogen hydroxide

	Float	Fizz	Move	Melt	Burn
Li	✓	✓	✓		
Na	✓	✓	✓	✓	
K	✓	✓	✓	✓	✓

Storage:

- They are stored in **oil** to prevent contact with air (oxygen) and water.

Group 7 - The Halogens:

F	Fluorine	2.⑦
Cl	Chlorine	2.8.⑦

Group 7 - all have 7 electrons in their outer shell.

- Non-Metallic properties** - poor conductors, low melting/boiling points, low density
- Diatomic molecules** - F₂, Cl₂, Br₂

Reactivity:

- The elements get **more reactive as you go up** the group

Outer shell gets nearer to the nucleus so easier to gain one electron.

F	2.7
Cl	2.8.7

Displacement Reactions:

- A **more reactive** halogen **displaces** a **less reactive halide** ion from its solution

Halogen	Halide ion solution		
	potassium chloride	potassium bromide	potassium iodide
chlorine	✗	✓	✓
bromine	✗	✗	✓
iodine	✗	✗	✗

chlorine + potassium bromide → potassium chloride + bromine

Safety:

- Fume cupboard** used for reactions - halogens produce **toxic vapours**.

Uses:

- Chlorine** - water supplies, swimming pools, bleaches
- Iodine** - plasters, sterilising sprays