Periodic Table

Group 1 Elements

- Elements of Group 1 of the Periodic Table are also known as **alkali metals.**

Properties

1. Group 1 metals have **lower** density than other metals
2. Densities of Group 1 metals **increase** down the group
3. Group 1 metals have **lower** melting points compared to other metals.
4. Melting points of Group 1 metals **decrease** down the group
5. Group 1 metals can be cut by a knife and are **softer** compared to other metals.

Chemical Properties

1. Group 1 metals react in presence of **water (moisture from air)**
2. Group 1 metals react with water to form metal hydroxides and hydrogen gas.
3. The reactivity of Group 1 metals increase down the group.
    - Down the group, the number of electron shells increase, resulting in an **increase in the size of atoms.** The valence

electron will be **located further from the positively charged nucleus.** Less energy is absorbed to overcome the **weaker electrostatic forces of attraction.**

Group 17 Elements

Elements in Group 17 of the Periodic Table are also known as **halogens**

Properties

1. Group 17 elements exist as **diatomic** molecules.
2. The colour of Group 17 elements gets **more intense** down the group.
3. Boiling points of Group 17 elements **increase** down the group.
    - Down the group, there is an **increase in the atomic radius of the elements** due to the increase in number of electron shells.
    - With a larger atomic radius, the **intermolecular forces of attraction between molecules increases.**
    - Hence **more energy** is **absorbed** to overcome the stronger intermolecular forces between halogen molecules.

Chemical Properties

1. Halogens react **violently** with **reactive** metals to form a **salt**
    - $2\ Na\ (s) + Cl_2\ (g) \rightarrow 2\ NaCl(s)$
2. **Halogen displacement according to reactivity**

3. Halogens react to gain electrons and form **anions**
4. The reactivity of halogens decreases down Group 17

Halogen Displacement According to Reactivity

	Potassium Chloride	**Potassium Bromide**	**Potassium Iodide**
Chlorine		Colourless solution turns reddish-brown	Colourless solution turns brown
Bromine	Reddish-brown bromine solution remains reddish-brown. No solution.		Colourless solution turns brown
Iodine	Brown iodine solution remains brown. No solution.	Brown iodine solution remains brown. No reaction.	