

PERIODIC_TABLE_2

There are TWO TYPES of elements :

- ① METALS (are placed on the LEFT side of the staircase)
- ② NON-METALS (are placed on the RIGHT side of the staircase)

P1 →	H (1)																	He (2)
P2 →	Li (3)	Be (4)																Ne (10)
P3 →	Na (11)	Mg (12)																Ar (18)
P4 →	K (19)	Ca (20)																
P5 →																		
P6 →																		

EXCEPTIONS

① HYDROGEN, H : 1

→ P1, G1

→ is a NON-METAL (NOT a metal).

② HELIUM, He : 2

→ P1, ~~G2~~

→ group # 8.

THE PERIODIC TABLE

A tabular arrangement of elements in a rows and columns, highlighting the regular repetition of properties of the elements is called a Periodic Table.

The basic structure of the periodic table is its division into rows and columns, or Periods and Groups.

The number of protons in the elements' atom increases across the periodic table (the atomic number == the number of protons in an atom).

Vertical columns in the periodic table are called Groups. Each elements in the group contains the same number of the valance electrons.

Number of the groups is determined by the number of free electrons in the outermost shell.

For instance, Lithium (Li); sodium(Na); potassium(k), are in the group 1 as they have only free electrons in their outermost shell. Flourine, Chlorine , Bromine are in group 7as their outermost shell contains 7 electrons.

The chemical properties of elements are determined by the ease which they lose or gain electrons. since elements belonging to a particular group have the same number of valence electrons they show similarities in their chemical properties.

In other words, since elements in the same group have similar chemical properties, horizontal rows in the periodic table are called periods. The Periodic number represents the number of shells is an atom.

#The Periodic table divides the elements into periods and groups.

Groups:

-----> A group is vertical column of elements(Top to bottom).

-----> Consists of eight groups of elements(1-8)

-----> Group 8 is also sometimes referred as group0.

Periods:

-----> A period is horizontal row of elements; runs from left to right.

-----> The periodic Table consists of seven periods of elements, number 1-7.

***In a periodic Table, the elements are arranged in order of increasing proton(atomic number). The elements in the periodic table can be classified based on their metallic and non-metallic properties. There is a imaginary diagonal line, called staircase, in the Periodic Table which divides the metals from the non-metals.

----->The elements placed on the left side of the staircase are Metals.

----->The elements places on the right side of the staircase are Non-Metals.

Note:

Difference between metals and non-metals (according to chemical properties),

Metals:

=====

====>>usually have one to three electrons in their outer shell.

====>> They lose their valence electrons easily from oxides that are basic/alkali.

====>> are good reducing agents

Non-metal:

=====

====>> usually have four to eight electrons in their outer shell.

====>>They gain or share valence electrons

====>>from oxides that are acidic,

====>> are good oxidizing agents.

Difference between metals and non-metals(accordance to physical properties),

Metals :

=====

====>>good electrical and heat conductors.

====>>They are malleable - can be hit and shaped

====>> Ductile - can be stretched into wire

====>> poses as metallic lustur.

====>> Opaque thin sheet,
====>> solid

The Periodic Table divides the elements into **Periods** and **Groups**.

GROUPS -

- A group is a **vertical column** of elements; runs from **top** to **bottom**
- The Periodic Table consists of eight groups of elements, numbered from 1 to 8
- Group 8 is also sometimes referred to as Group 0.

PERIODS -

- A period is a **horizontal row** of elements; runs from **left** to **right**
- The Periodic Table consists of seven periods of elements, numbered from 1 to 7

*** In a Periodic Table, the elements are arranged in order of increasing proton (atomic) number.

The elements in the Periodic Table can be classified based on their metallic and non-metallic properties. There is a imaginary diagonal line, called staircase in the Periodic Table which divides the metals from the non-metals.

- The elements placed on the **left** side of the staircase are **Metals**
- The elements placed on the **right** side of the staircase are **Non-metals**

Question: 1

How do the metallic properties of element change across a period?

Answer: Metals are grouped on the left-side of each period and non-metals are Group on the right side.

From left to right across a period, there is a decreases in metallic properties and an increase In non-metallic properties.

Question: 2

How do the metallic properties change down a group?

Answer: Going down a group, there is an increase in metallic properties and a decrease In non-metallic properties.

This is because, going down a group :-

1. The size of the atom increases.
2. So, the valence/outermost electrons of an element will be furthur away from Attractive force of the nucleus.

Question: 3

Why do the element of the same group have similar chemical properties? (1)

Answer: In a group, all elements have similar properties because all the elements In the group have the same number of electrons in their last shell.

Example:

Group1:

Elements: Lithium, sodium, potassium, rubidium and cesium.

1. All of them have the similar chemical properties.
2. Have same group number, that is, group number is 1, so they all have the SAME NUMBER Of electrons on their outermost shell, that is, they have 1 electron in their outermost shell.

Note:-

Difference between Metals and Non – Metals (in accordance to chemical properties) –

METALS	NON – METALS
Usually have 1-3 electrons in their outer shell.	Usually have 4 to 8 electrons in their outer shell.
Lose their valence electrons easily.	Gain or share valence electrons.
Form oxides that are basic.	Form oxides that are acidic.
Are good reducing agents.	Are good oxidizing agents.

Difference between Metals and Non – Metals (in accordance to physical properties) –

METALS	NON – METALS
Good electrical and heat conductors.	Poor conductors of heat and electricity.
Malleable — can be hit and shaped.	Brittle – if a solid.
Ductile — can be stretched into wire.	Non-ductile.
Possess metallic luster (shiny).	Do not possess metallic luster.
Opaque as thin sheet.	Transparent as a thin sheet.
Solid at room temperature (except Mercury [Hg] – liquid).	Solids, liquids or gases at room temperature.