

## UNIT: Periodic Table

1. Periodic Table was originally developed by Dmitri Mendeleev.
2. It is arranged according to increased **atomic number**.
3. The Periodic Law states that the chemical properties of elements are periodic functions of their atomic number.
4. Elements are classified as metals, non-metals and metalloids.

**a. Metals -**

- make up more than 2/3 of the periodic table
- found on the left side of the staircase on the periodic table
- lose electrons to form positive ions which are smaller than the metal atom
- solids at room temperature except **Mercury (Hg) which is a liquid**
- most active metals found on lower left of table (**Francium**)
- good conductors of heat and electricity
- malleable, ductile and have luster

• **Non-Metals -**

- found on the right of the staircase on the periodic table
- gain electrons to form negative ions which are larger than the atom
- **Bromine is the only liquid non-metal**
- most active non-metal found upper right of table (**Fluorine**)
- brittle and dull
- poor conductors of electricity

• **Metalloids -**

- found on the staircase on the periodic table
- have properties of both metals and non-metals

5. Vertical columns on the Periodic Table are called groups or families. Atoms in the same group have the same number of valence electrons, therefore reacting very similarly.

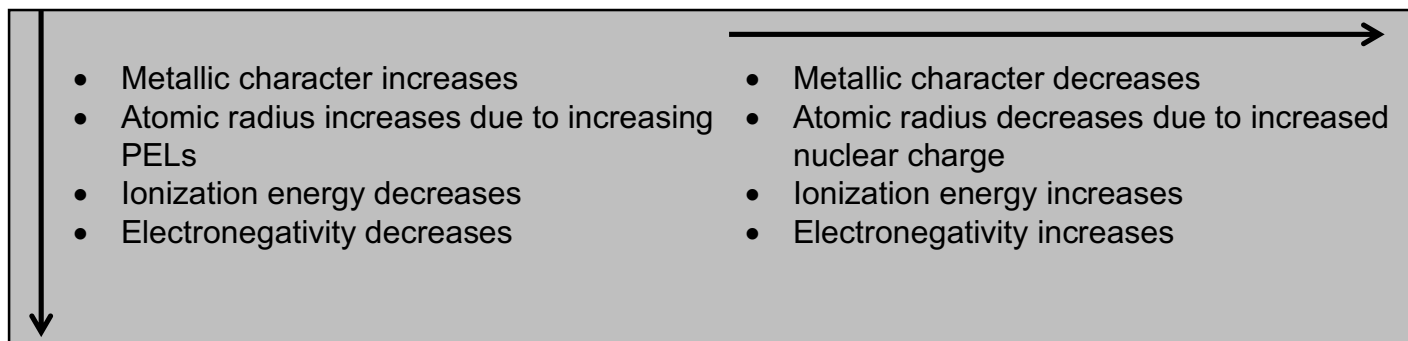
### **Elements of the same group have the most in common.**

- Group 1 = **Alkali Metals**. Very reactive metals-found in nature in compound form only
- Group 2 = **Alkaline Earth Metals**. Reactive metals mostly found in nature in compound form
- Group 17 = **Halogens** (all diatomics) - **this group contains all three phases of matter at room temperature. F<sub>2</sub>, Cl<sub>2</sub> - gases, Br<sub>2</sub> - liquid, I<sub>2</sub> - solid**. These are very reactive elements that are found in nature in compound form only.
- Group 18 = **Noble Gases** (monatomics) have 8 valence electrons in the outer PEL, except He which only has 2.
- Group 3-11 – **Transition Metals** - found in the middle of the periodic table.

- can have electrons from two outermost shell involved in bonding
- they have multiple oxidation states
- **form colored ions** in compounds or in solution

6. Horizontal rows on the Periodic Table are called periods or rows. Atoms in the same row have the same number of occupied principal energy levels.

7. General trends of the periodic table:



**DO NOT MEMORIZE!!!**  
**REFER TABLE S and periodic table**  
**for trend information**