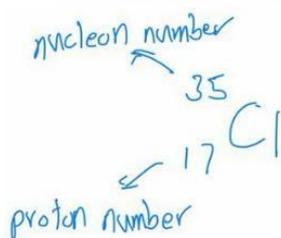


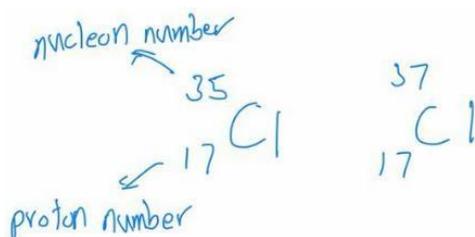
	Proton	Neutron	Electron
Relative Mass	1	1	1/1840
Relative Charge	+1	0	-1



- No. of neutrons = Nucleon Number – Proton Number
- No. of protons = Proton Number
- No. of electrons (atom) = Proton Number
- No. of electrons (ion) = Proton Number +/- depending on charge

Definition***

Isotope: Atom of the same element with the same number of protons but different number of neutrons.



Isotopes have:

- **Similar Chemical Properties as atom**
 - o Reason: They have the same number of electrons in the outermost electron shell
- **Different Physical Properties as atom**
 - o Reason: They have different relative mass due to different number of neutrons
 - o E.g. Diffusion Rate

Positive Ions – Atoms that lose electrons

E.g. Na atom vs Na⁺ ion

Negative Ions – Atoms that gain electrons

E.g. O atom vs O²⁻ ion

Qn: Why do atoms become ions?

Ans: Atoms gain/lose electrons to become ions, to mainly achieve a stable octet electronic configuration

- Generally when atoms or ions have 8 electrons in the outermost shell, they have very high stability. Hence it is almost always preferred to achieve this configuration.
- Concept is linked to Chemical Bonding Chapter, where atoms do bonding to achieve the stable octet electronic configuration.

Electronic Configuration

- Step 1: Count the total No. of electrons
- Step 2: Fill Each Electron Shell to the Maximum No. of Electrons

- 1st Electron shell: Maximum 2 electrons
- 2nd Electron shell: Maximum 8 electrons
- 3rd Electron shell: Maximum 8 electrons
- 4th Electron shell: Maximum 18 electrons

E.g. Na – 11 electrons

Electronic Configuration of Na: 2 . 8 . 1