ATOMIC STRUCTURE #1

An atom is the SMALLEST PARTICLE of a matter that takes part in a chemical reaction

can be studied

- IN TERMS OF PARTICLES
  - PROTON (p)
  - NEUTRON (n)
  - ELECTRON (e)

  SUB-ATOMIC particles — 2 properties
  1. CHARGE
  2. MASS.
- IN TERMS OF STRUCTURE

* An atom MUST have proton(s), neutron(s) and also electron(s).
- An atom must have 1/MORE protons
- An atom must have 1/MORE electrons.
- An atom may have 0/MORE neutrons

ELECTRICAL CHARGE (2)
- POSITIVE CHARGE → (+)
- NEGATIVE CHARGE → (-)

	CHARGE	MASS
PROTON (p)	+1	1
NEUTRON (n)	0	1
ELECTRON (e)	-1	$\frac{1}{2000}$ OR $\frac{1}{1840}$

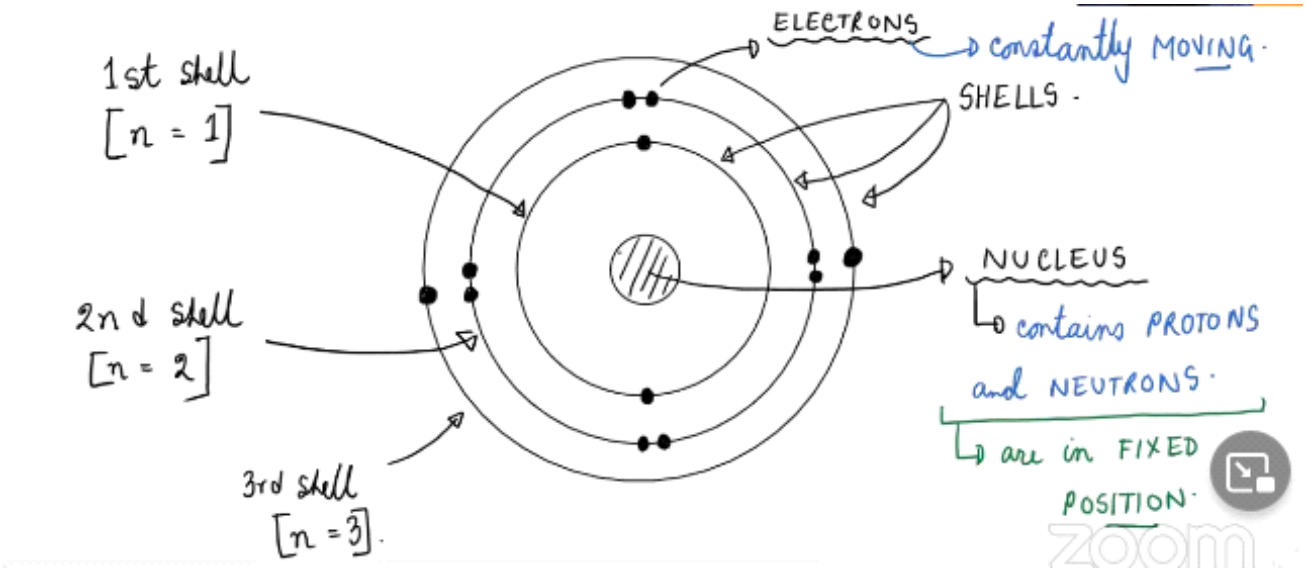
IN TERMS OF STRUCTURE

① NUCLEUS → is ALWAYS at the CENTER of the atom.
- CONTAINER which holds ALL the PROTONS and NEUTRONS present in an atom.
  - by STRONG NUCLEAR FORCE OF ATTRACTION.

* An atom can have ONLY 1 NUCLEUS.

② SHELLS
- energy levels.
  - which SURROUNDS the nucleus.
  - electrons are constantly revolving/moving around the nucleus.

DIAGRAM OF AN ATOM



* The protons inside the nucleus PULL/ATTRACT all the electrons from the center of the atom by STRONG ELECTROSTATIC FORCE OF ATTRACTION.

Atomic Structure

The subatomic particles are:

1. Proton;
2. Neutron and
3. Electron.

The **nucleus** of an atom also has a structure; the nucleus is composed of two different kinds of particles, protons and neutrons. The protons in a nucleus give the nucleus its positive charge.

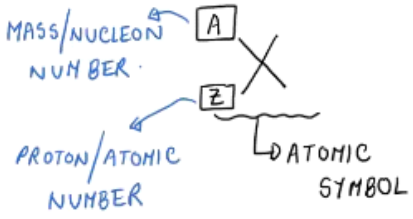
A **proton** is a nuclear particle having a positive charge equal to that of the electron and a mass more than 1800 times that of the electron.

The **neutron** is a nuclear particle having a mass almost identical to that of the proton but no electric charge.

An **electron** is a very light, negatively charged particle that exists in the region around the atom's positively charged nucleus.

ATOM ⟶ ATOMIC SYMBOL

Sodium ⟶ Na



- PROTON/ATOMIC NUMBER
  - it is the TOTAL NUMBER of PROTONS present in the nucleus of an atom.
- MASS/NUCLEON NUMBER
  - it is the TOTAL NUMBER of PROTONS and NEUTRONS present in the nucleus of an atom.

MASS = TOTAL + TOTAL

* An atom is NEUTRAL
  - the OVERALL/NET/RESULTANT charge is ZERO.
    - no. of POSITIVE charges is EQUAL to
    - OR
    - no. of protons is EQUAL to

MASS NUMBER = TOTAL PROTONS + TOTAL NEUTRONS

$m = p + n$

... is EQUAL to no. of NEGATIVE charges. } is EQUAL to no. of electrons.