

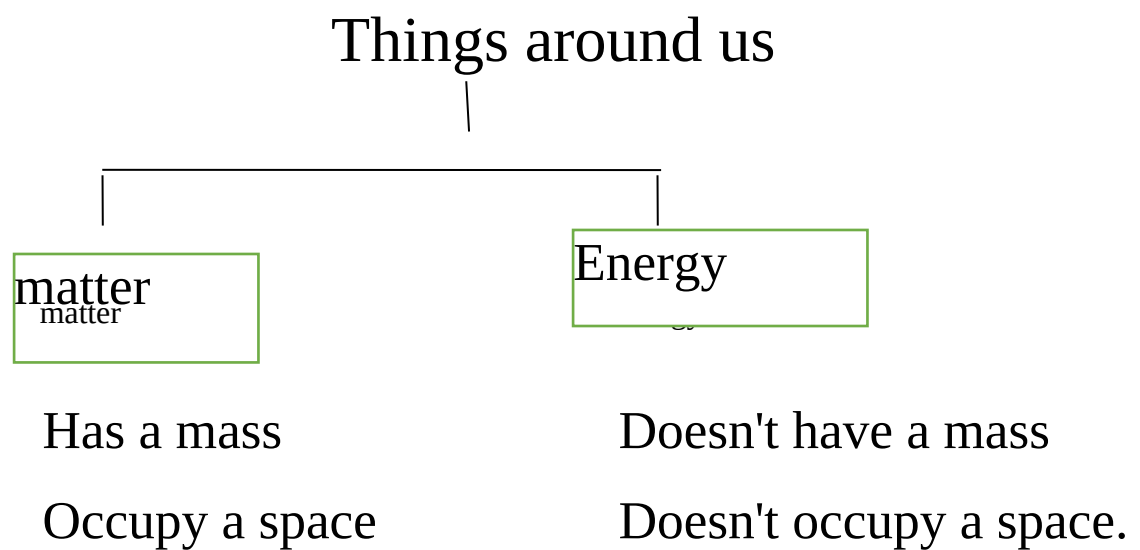
Grade 10 Science

Reading Material

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3 Structure of matter



There are 3 states of matter according to the physical nature.

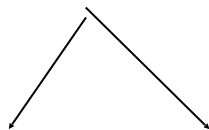
1)Solid

2)Liquid

3)Gasses

There are 2 main kinds of matter according to chemical composition.

(1) Pure Substances



Elements Compounds

(2) Non pure substances



Homogenous Heterogenous
mixture mixture

Atoms

Building unit of matter

Planetary model of the atom.

Introduced by Ernest Rutherford.

- Electrons move around the nucleus in definite paths.
- Positive charges of the atom concentrated in the nucleus.
- This is similar to the solar system where planets revolve around the Sun.

Sub atomic particles

Particles in the nucleus	-	Protons
	-	Neutrons
Particles rotate around the nucleus	-	Electrons

Electrons

- Rotating around the nucleus.

- Attracted by the positive charges of nucleus.
- But electrons do not fall on nucleus since they revolve very fast around the nucleus.

Atoms

- Made of sub atomic particles

Subatomic particles

- Protons
- Electrons
- Neutrons

Findings of Niels Bour.

- Electrons revolve around the nucleus in shells / energy

levels.

- Each energy level has specific amount of energy.
- When moving away from nucleus the difference between energy levels decreases.
- There is a maximum number of electrons in any energy level.

Maximum number of electrons in each in each energy level

1	K	2
2	L	8
3	M	18
4	N	32

Atomic number (Z)

Number of protons in an atom.

Atomic number = number of protons in an atom.

In neutral atoms

Protons = Electrons

Atomic number of an element is a unique characteristic of that element.

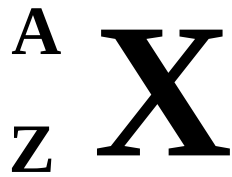
Mass number (A)

The sum of the number of protons and neutrons in the nucleus of an atom.

Mass number = protons + Neutrons

Standard way of writing atomic number

and mass number



A - Mass number

Z - Atomic number

**Example – Mass number of sodium (Na) is 23
Its atomic number is 11**

