Matter

- Anything which occupies space and has mass is called matter.
- Food, water, air, clothes, table, chair, plants and trees.
- Indian philosophers said that all the matter living or non-living, was made up of five basic elements air, earth, fire, sky and water
- On the basis of its physical properties and on the basis of its chemical properties.
- On the basis of chemical properties the matter is classified as **elements, compounds** and **mixtures**.
- Everything around us is made of tiny pieces or particles. The particles make up matter are atoms or molecules.

Characteristics of particles of matter:

- The particles of matter are very, very small
- The particles of matter have spaces between them
- The particles of matter are constantly moving
- The particles of matter attract each other

Classification of matter

On the basis of physical states, all the matter can be classified into three groups.

1. Solids 2. liquids 3. Gases

Properties of solids

- Solids have a fixed shape and a fixed volume
- Solids cannot be compressed much.
- Solids have high densities. They are heavy
- Solids do not fill their container completely.
- Solids do not flow.

Ex. Ice, wood, coal, stone, iron, brick

Properties of liquid

- Liquids have a fixed volume but they have no fixed shape. Liquids take the shape of the vessel in which they are placed.
- Like solids, liquids cannot be compressed much.
- Liquids have moderate to high densities. They are usually less dense than solids.
- Liquids do not fill their container completely.
- Liquids generally flow easily.

Ex. Water, milk, fruit juice, ink, groundnut oil, kerosene etc.

Properties of gases

(1) Gases have neither a fixed shape nor a fixed volume. Gases acquire the shape and volume of the vessel in which they are kept.

(2) Gases can be compressed easily.

(3) Gases have very low densities. They are very. very light.

(4) Gases fill their container completely.

(5) Gases flow easily.

Ex. Air, oxygen, hydrogen, nitrogen

Comparison of characteristic properties of solids, liquids and gases

	Property	Solids	Liquids	Gases
1	**Shape**	Definite	Take the shape of the container, but do not necessarily occupy all of it.	Take the shape of the container by occupying whole of the space available to them.
2	**Volume**	Definite	Definite	Take the volume of the container.
3	**Compressibility**	Almost nil	Almost nil	Very large
4	**Fluidity or Rigidity**	Rigid	Fluid	Fluid
5	**Density**	Large	Large	Very small
6	**Diffusion**	Generally do not diffuse	Diffuse slowly	Diffuse rapidly
7	**Free surfaces**	Any number of free surfaces	Only one free surface	No free surface.