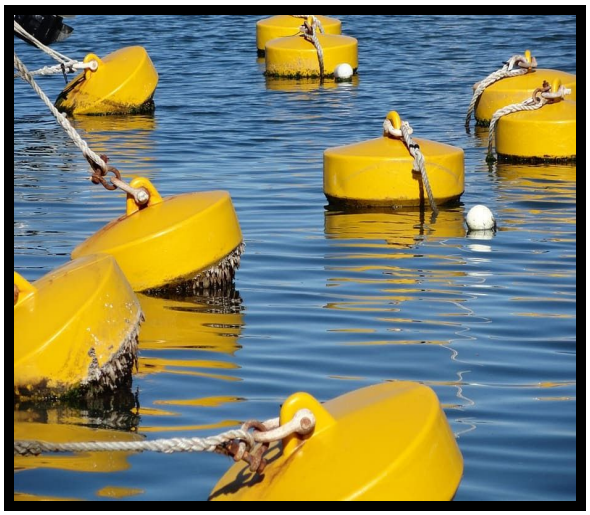
L-7 : EXPERIMENTS WITH WATER
MLP NOTES

Definition of Key Terms taken:

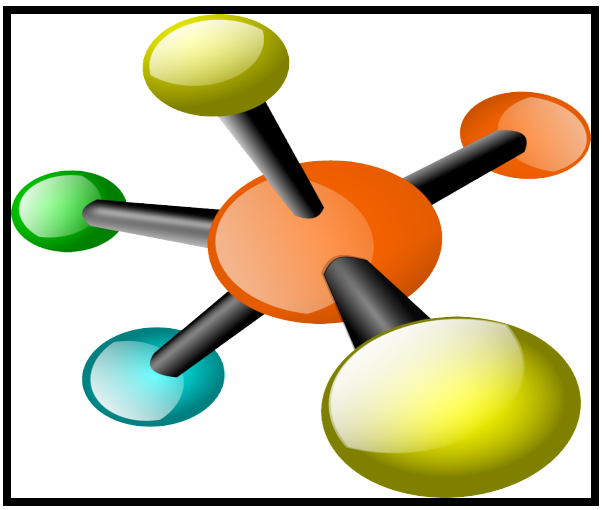


Float and Sink: Float means to remain above the surface of water whereas sink means to go below the surface of water.Whether an object will float or sink in water, depends on various factors like Density, Buoyancy, Displacement of water by the floating objects etc.

What causes some things to sink and float?

- Well, it's all about something called density. Do you know what density means?Well everything around us is made up of tiny molecules.

- In some objects these molecules are jam packed together, and in others they are loosely packed together.
- The objects that are jam packed together have a higher density, and more loosely packed objects aren't as dense.
- This explains that whatever objects sink, are more dense and objects that float are less dense.



DENSITY: The density of a substance is the measure of how much stuff an object has.It is used to describe how much space an object or substance takes up. If an object is heavy and compact,it has a high density.

BUOYANCY: It is the tendency of an object to float or to rise when immersed in a fluid.The **buoyant** force is **caused** by the pressure exerted by the fluid in which an object is immersed. The **buoyancy** force always points upwards because the pressure of a fluid increases with

depth.It causes the object to remain afloat.It is very helpful for swimmers, scuba divers etc.

UPTHRUST:

Upthrust is an upward force exerted by a fluid that opposes the weight of a partially or fully immersed object. It always acts opposite to the Gravitational force applied by the earth on an object , therefore causes an object to remain on the surface of water and prevent it from sinking.It keeps the ships, boats, etc afloat on the surface of water.

SALINITY: Amount of salt dissolved in a body of water is called Salinity.Sea and Ocean water has salt dissolved in it . Dead sea has the maximum Salinity.Dead sea water is 10 times more saline than normal sea water.The presence of more salt makes it denser so nothing drowns in it .

SOLUBLE AND INSOLUBLE SUBSTANCES:

We call substances that dissolve in water soluble. Sugar and salt are examples of soluble substances. Substances that do not dissolve in water are called insoluble. Sand and flour are examples of insoluble substances.

MISCIBLE AND IMMISCIBLE LIQUIDS:

A miscible liquid can be dissolved readily in some other liquid. The immiscible liquid does not dissolve in other liquids.Some **examples** of **miscible** solutions include water and organic compounds such as alcohols, aldehydes and ketones. **Immiscible** solutions include water and many types of oils.Oil being immiscible in

Water comes to the surface and we can see two distinct layers.

IMPORTANT POINTS TO UNDERSTAND WHAT MAKES AN OBJECT SINK OR FLOAT IN WATER:

- An object with higher Density, will sink whereas with lesser Density will float on water.Materials with a density less than that of the liquid it is put in, float and materials with a greater density than the liquid it is put in,will sink.
- The buoyancy or upthrust, keeps the object afloat on the surface of water.
- The upthrust pushes the object immersed in water,upwards so it does not drown.
- The shape of an object is also an important factor which helps an object float or sink.Objects with larger surface area receive greater upthrust so it does not sink and remain on the surface. This also proves why a nail sinks whereas a huge ship does not sink in water.
- If an object immersed in water is able to displace more water than its weight, it floats otherwise ,sinks.
- If an object is soluble or a liquid is miscible in water, it will not remain on its surface and will not float.

- Immiscible liquids and lighter insoluble substances like sawdust etc float on water.
- The density of water increases by dissolving more and more salt in it.Objects can not sink in denser water. This is the reason why a lemon or an egg dipped in water comes to the surface and starts floating if we dissolve large amounts of salt in it. Nothing drowns in Dead sea also because of this reason

FORMATION OF SALT FROM SEA WATER:

Salt is produced by the evaporation of seawater.The sea water is collected in shallow beds dug in the sand. Water is allowed to dry in the sun . After the water dries, the salt remains on the ground.

EVAPORATION:The process of liquid (water) changing into water vapour upon heating is called Evaporation.

Examples of Evaporation:

- Drying Clothes under The Sun. One of the most common real-life examples of evaporation is drying of clothes under the sun.
- Ironing of Clothes.
- Cooling Down of Hot Tea and Other Hot Liquids.
- Wet Floors.
- Melting of Ice Cubes.
- Preparation of Common Salt from sea water due to evaporation by sun rays.
- Drying of Wet Hair.

DANDI MARCH TO BREAK THE SALT LAW: The Salt March, also known as the Salt Satyagraha or Dandi March took place from March to April 1930 in India.It was undertaken by Mahatma Gandhi to break the Salt Law Imposed by the British.During the march, thousands of Indians followed Gandhiji from Ahmedabad, to Dandi in Gujarat, near the Arabian Sea coast.The Dandi March, led by Mahatma

Gandhi started because the British government was controlling the making and selling of **salt** and everyone had to pay a **salt** tax. Gandhiji and many other people thought that the **salt tax** was unfair to the people.The Dandi march was one of the very significant events during the Indian freedom struggle.

LOCATING THE PLACE OF DANDI MARCH ON THE POLITICAL MAP OF INDIA: