
Class 9th Science
Gravitation
Chapter 9
Lecture - 04

TABLE OF CONTENTS

THRUST

Definition : It is the force acting perpendicular on a surface

SI Unit : Newton (N)

PRESSURE

Definition : It is defined as THRUST acting on per unit AREA (in contact).

SI Unit : Pascal (Pa) or Nm^{-2}

Q.no

A block of wood is kept on a tabletop. The mass of wooden block is 5kg and its dimensions are 40 cm $\times$ 20 cm $\times$ 10 cm.
Find the pressure exerted by the wooden block on the tabletop if it is made to lie on the tabletop with its sides of dimensions

(a) 20 cm $\times$ 10 cm.
(b) 40 cm $\times$ 20 cm

Q.no

Why is it difficult to hold a school bag having a strap made of a thin and strong string ?

Q.no

Why apple can be cut with sharp edge of the knife easily than blunt ?

PRESSURE IN FLUIDS

Fluid : Any substance which can flow due to its internal forces is called fluid. Gases and Liquids are considered as Fluids whereas solids are rigid.

BUOYANT FORCE : FLOATING PRINCIPLE

Buoyancy : It is the principle by which the fluid exerts a force in upward direction on the solid object immersed into the fluid. The upward force is called **BUOYANT FORCE** which is also known as **UPTHRUST**

ARCHIMEDES' PRINCIPLE

Statement : Archimedes' principle states that, " When an object is wholly or partially immersed in a fluid, an upward force called buoyant force acts on it, which is numerically equal to the weight of the liquid displaced by the object "

We can conclude :

1. $V_{object} = V_{displaced\ liquid}$
2. $F_{buoyant} = W_{displaced\ liquid}$

ARCHIMEDES' PRINCIPLE

Application :

- Hydrometer
- Lactometer
- Manufacturing of Ships
- Boats and Submarines

RELATIVE DENSITY

Concept : Relative density of a substance is defined as the ratio of density of the water (at $4^{\circ}C$), it is also called Specific Gravity.

Through this R.D index we get the idea, whether the object will float on water or not.