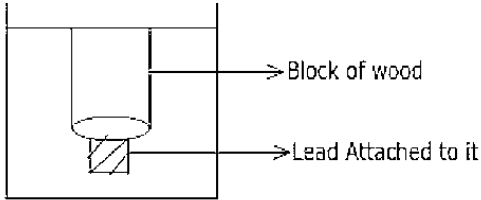


Board – CBSE

Class – 9<sup>th</sup>

Topic – Gravitation

- State the factors on which acceleration due to gravity ( $g$ ) depends?
- The Olympic high jump record is 2.45m held by Cuba let acceleration due to gravity on earth was  $-1 \text{ m/s}^2$  and not  $-10 \text{ m/s}^2$  . Calculate the height to which the jumper would have jumped?
- A ball thrown up vertically returns to the thrower after 6 s. Find
  - the velocity with which it was thrown up,
  - the maximum height it reaches, and
  - its position after 4 s.
- A stone is allowed to fall from the top of a tower 100 m high and at the same time another stone is projected vertically upwards from the ground with a velocity of 25 m/s. Calculate when and where the two stones will meet.
- A cylindrical block of wood of height 4.2m and mass 100Kg floats vertically in water. The relative density of wood is 0.8
  - 1) What height of the block will be seen above the water ?
  - 2) If block of lead of mass 10kg is placed, what height of the block will be seen above water?
- The weight of balloon and gas inside it is 12 KN. The volume of the balloon is  $1200 \text{ m}^3$ . The density of air is  $1.26 \text{ kg/m}^3$  . Calculate
  - a) the weight it can lift
  - b) the acceleration as it rises.
- A block of wood tied to the bottom of water tank as shown. The wooden block exerts tension, on the wire tied to it. The dimension of the block are  $20 \text{ cm} \times 20\text{cm} \times 40 \text{ cm}$ . The density of the wood is  $600 \text{ kg/m}^3$  . What is the tension in the wire?
 


- What is the magnitude of the gravitational force exerted by a 15 Kg mass on a 25 Kg mass separated by a distance of 25 cm. What is the acceleration produced on each mass?
- What is acceleration due to gravity and calculate its value on earth?

10. Why is the weight of an object on the moon  $1/6$ th its weight on the earth?
11. What are the differences between the mass of an object and its weight?
12. What are fluids? What are the factors on which the upward pressure at a point on a fluid depends?
13. The radius of the earth is about 6370 Km. An object of mass 30 Kg is taken to a height of 230 Km above the surface of earth.
  - (a) What is the mass of the body
  - (b) What is the acceleration to gravity at this height
  - (c) What is the weight of the body at this height.
14. State Archimedes Principle?
15. What do you mean by acceleration due to gravity?