

Niscort Fr. Agnel School  
Self-Learning Worksheet  
Subject- Physics  
Class – IX

Chapter- Pressure And Density

1. Distinguish between density and relative density of a substance. The relative density of silver is 10.8. If the density of water is  $103 \text{ kg/m}^3$ , find the density of silver.
2. Write two factors on which the buoyant force exerted by a liquid depends?
3. State Archimedes principle. How Archimedes principle is used to design ships and submarines? Write the use of lactometers and hydrometers.
4. A ship made of iron does not sink in water while an iron needle sinks in it .Why ?
5. A solid X insoluble in water, weighs 180gm in air and 150gm in water. What is the relative density of the solid X?
6. State Pascal's law of liquid pressure.
7. Is the Buoyant force same in all fluids for a given body? Determine the Buoyant force acting on a body of volume  $1.8\text{m}^3$ ,when immersed in sea water of density  $1020\text{kg/m}^3$ .
8. An iron ball of density  $7.8\text{gm/cm}^3$  and volume  $200\text{cm}^3$  is totally immersed in water. Calculate the weight of iron ball in air.
9. A balloon filled with hydrogen gas floats in the air. Explain this fact with reason?
10. Give reason
  - i) Cutting and piercing tools are made sharp.
  - ii) An egg sink in fresh water ,but floats in highly salty water.
11. The mass of a boy is 20kg and the area of the sole of his foot is  $0.01\text{m}^2$  . If  $g=10\text{m/s}^2$  , calculate the pressure exerted on the floor when he is standing on his
  - i)both feet
  - ii)one foot.
12. A sealed can of mass 600gm has a volume of  $500\text{cm}^3$  .Will this can sink in water? Density of water is  $1\text{gm/cm}^3$  .
13. Why is it easier to float in sea water than in river water?
14. Why are the walls of the dam made thicker at the bottom and thin upwards?
15. A force of 50N is applied on an area of  $0.2 \text{ m}^2$  , what is the pressure exerted?
16. The depth of a dam is 200m . Calculate the pressure of water at its bottom.(  $g=9.8\text{m/s}^2$  and density of water= $103 \text{ kg/m}^3$  )
17. The dimensions of a wooden block are 2m x0.25m x0.10m. If the relative density of wood is 0.6 calculate the mass of the block in kg.
18. When a boat is partially immersed in water it displaces 600kg of water. How much is the buoyant force acting on the boat?(  $g=9.8\text{m/s}^2$  )
19. A mug full of water appears light as long as it is under water in the bucket than when it is outside water. Why?
20. A ball weighing 4kg of density  $4000\text{kg/m}^3$  is completely immersed in water of density  $1000\text{kg/m}^3$  . Find the buoyant force acting on it ( $g=10\text{m/s}^2$ ).
21. **Explain:**
  - (a) A bucket filled with water appears to be lighter inside the water.

- (b) A balloon filled with hydrogen rises up.
- (c) A small iron needle sinks in water but a ship made of iron floats in water.
- (d) A heavy stone can be lifted easily when immersed in water.
- (e) How does a submarine dives and then resurfaces above the water?
- (f) Explain the floating of ice-bbergs in the sea water.
- (g) Why does the iron ball sink in the water but rubber ball floats in water?

22. Explain:

- (a) Railway tracks are laid on large sized wooden or iron sleepers.
- (b) A sharp knife is more effective in cutting the object than a blunt knife.
- (c) A camel walks easily on a sandy surface than a man inspite of the fact that a camel is much heavier than a man.
- (d) A sharp needle pierces the wood easily but not a blunt knife although the force applied on both the needles is same.

23. A cubical block of mass 2 kg with each side of 2 cm is lying on ground. Calculate pressure exerted by block on ground.

24. The pressure exerted by weight of a cubical block of side 3 cm on surface is 5 Pa. calculate weight of the block. Force = weight.