

FORCE AND PRESSURE

1. Define force.
A. Force is defined as an external agent which tries to bring change in state, shape, size and direction of motion of an object.
2. What are the factors affecting magnitude of force?
A. Factors affecting magnitude of force are:
 - (a) Mass of an object.
 - (b) Speed with which an object is suppose to move.
3. What are the effects of force in our daily life?
A. Effects of force are:
 - (a) Force can change the state of an object. Ex: pushing the box, rolling the ball.
 - (b) Force can change the shape and size of an object. Ex: making chapati from dough, making toys from molded clay.
 - (c) Force can change the direction of a moving object. Ex: hitting the ball for six, kicking the football.
4. What are the two components of force?
A. The two components of force are magnitude and direction.
5. What is spring balance? How does it work?
A. Spring balance is a device is used to measure force. It consists of a coiled spring attached to a rigid support. The lower end of spring is fixed with a hook. When an object is suspended with the hook, the spring extends. The extension of spring measures the amount of force experienced by the object.
6. Define balanced force.
A. When the number of forces are acting on an object such that there is no change in the position of an object but there is change in shape and size then the forces acting on the object are said to be balanced.
7. Define unbalanced force.
A. When the number of forces are acting on an object such that there is change in position of an object along with change in shape and size then the forces acting on the object are said to be unbalanced.
8. Differentiate between balanced and unbalanced forces.
A. Difference between balanced and unbalanced forces:

Balanced force	Unbalanced force
Net force acting on the object is zero.	Net force acting on the object is non-zero.
There is no change in the position of an object.	There is change in position of the object along the direction of greater force.

9. Differentiate between contact and non-contact forces.

A. Difference between contact and noncontact forces

Contact force	Non-contact force
Contact force is defined as the force produced due to interaction between two objects when they are in direct physical contact.	Non-contact force is defined as the force produced due to the interaction between the two objects when they are not in direct physical contact.
Ex: Muscular force, frictional force	Ex: Gravitational force, electric force, magnetic force

10. Define muscular force.

A. Muscular force is defined as the contact force which is produced due to the action of muscles.

Ex: Lifting the box.

11. Define frictional force.

A. Frictional force is defined as the contact force which is produced when there is relative motion between the two surfaces in contact. Ex: Decrease in the speed of a rolling ball on the ground.

12. Define gravitational force.

A. Gravitational force is defined as the noncontact force which is produced due to the interaction between the earth and an object. Ex: Falling of an apple.

13. Define electric force.

A. Electric force is defined as the non-contact force which is produced due to interaction between two charged or charged and uncharged objects. Ex: Attraction of paper bits by a charged comb.

14. Define magnetic force.

A. Magnetic force is defined as the non-contact force which is produced due to the interaction between a magnet and magnetic material. Ex: Attraction of Iron nails towards the magnet.

15. Define thrust.

A. Thrust is defined as the force acting perpendicular to the surface.

16. pressure.

A. Pressure is defined as thrust acting per unit area of contact.

$$\text{Pressure} = \text{Thrust}/\text{Area}$$

17. How does pressure acting on an object vary with the area of contact?

A. As the area of contact increases the effect of pressure decreases and vice versa.

18. Why the base of building is made wide?

A. The base of building is made wide to decrease the effect of pressure on increasing the area of contact.

19. Why the school bags are provided with wide straps?

A. School bags are provided with wide straps to decrease the effect of pressure by increasing the area of contact.

20. Why the Bulldozers are fitted with caterpillar track?

- A. Bulldozers are fitted with Caterpillar track to decrease the effect of pressure by increasing the area contact.
21. Why iron rails are laid on wooden or cement sleepers?
A. Iron rails are laid on wooden or cemented sleepers to decrease the effect of pressure by increasing the area of contact.
22. Why the rear Wheels of buses and trucks are doubled?
A. Rear Wheels of buses and trucks are doubled to decrease the effect of pressure by increasing the area of contact.
23. Why nails have pointed ends?
A. Nails have pointed ends to increase the effect of pressure by decreasing the area of contact.
24. Why is it easier to cut with a sharp knife than a blunt one?
A. It is easier to cut with a sharp knife because with decrease in area of contact, effect of pressure increases.
25. Define liquid pressure.
A. Liquid pressure is defined as the pressure exerted by the stationary liquid on the walls of container in which it is kept.
26. What are the properties of liquid pressure?
A. Properties of liquid pressure are as follows:
(a) Liquid pressure does not depend on the area of the bottom of the container in which the liquid is kept.
(b) Liquid pressure depends upon the density of the liquid.
(c) Liquid pressure increases with the height of liquid column.
(d) Pressure applied at any point inside the liquid is transmitted equally in all the directions.
(e) At the same horizontal level liquid pressure remains constant.
27. Define atmospheric pressure.
A. Atmospheric pressure is defined as the pressure exerted by huge column of air placed above us.
28. What are the importance of air pressure in our daily life?
A. Importance of atmospheric pressure are as follows:
(a) Working of dropper is based on the effect of atmospheric pressure.
(b) Working of rubber sucker is based on the effect of atmospheric pressure.
29. Why do we not crushed by the huge air pressure experienced by our body?
A. Our body do not get crushed because there is equal amount of pressure produced inside our body due to the flow of blood.
30. Why aircrafts have pressurized cabins?
A. Aircrafts have pressurized cabins because at higher altitudes the height of air column decreases which reduces the air pressure and makes the breathing difficult.
31. Why submarines are made up of thick metals?
A. Submarines are made up of thick metals to bear large amount of liquid pressure as liquid pressure increases with depth.
32. Why mountaineers carry artificial oxygen cylinders?

A. Mountaineers carry artificial oxygen cylinders because with increase in height, atmospheric pressure decreases and breathing becomes difficult.

33.