

## Class 8 Chapter \_ 11 Force and Pressure Book Science Mission

### A. Multiple choice questions.

1. The force acting upon a falling apple to bring it down is  
(a) Magnetic (b) Muscular (c) Gravity (d) Electrical charge
2. The force measured with the help of spring balance is  
(a) Gravitation (b) Magnetic (c) Weight of an object (d) Muscular
3. Which of the following is a non-contact force (a) Pull (b) Push (c) Friction (d) Magnetic
4. Which of the following is not a unit of force (a) 1 kg (b) 1 kgf (c) 1 kgw (d) Newton
5. Which of the following is a contact force (a) Friction (b) Magnetic (c) Electrostatic (d) Gravity
6. The pull of the earth is called (a) Frictional force (b) Magnetic force (c) Electrostatic force (d) Gravity
7. At high altitude the atmospheric pressure (a) Increases (b) Decreases (c) No change (d) None of these
8. As the depth of the liquid increases, the pressure (a) Increases (b) Decreases (c) No change (d) None
9. A fluid exerts pressure (a) Downward only (b) Towards lateral sides (c) Upward thrust (d) In all directions

Ans: 1. c 2. c 3. d 4. a 5. A 6. d 7. b 8. a 9. d

### B. Match the following:

Column A	Answer	Column B
1. Gravitational force	1. c	a. Horse pulling a cart
2. Frictional force	2. d	b. Iron filings pulled
3. Electrostatic force	3. e	c. Apple falling from a tree
4. Magnetic force	4. b	d. Movement is resisted
5. Muscular force	5. a	e. Bits of paper raised

### C. Fill in the blanks.

1. Solids exert \_\_\_\_\_ pressure only.
2. Fluids exert pressure in \_\_\_\_\_ directions.
3. Upward pressure from water on an object being immersed in it is called \_\_\_\_\_.
4. A unit of force is \_\_\_\_\_.
5. A unit of pressure is \_\_\_\_\_.
6. Force has magnitude as well as \_\_\_\_\_.
7. Force acting on a unit area is \_\_\_\_\_.
8. The forces being applied on an object from opposite directions are of the same magnitude, the forces are called ..... forces.
9. The forces being applied on an object from opposite directions are of different magnitude, the forces are called .... forces.
10. The forces being applied on an object from opposite directions are of the same magnitude, the object will remain in the state of \_\_\_\_\_.
11. When two forces being applied on an object from opposite directions are of the same magnitude, the net force acting on the object is -----.
12. The pressure of air on the surface of the earth is pressure.
13. Pressure increases as we go into the water.
14. A soft rubber sucker when hard pressed to a smooth surface does not come out due to vacuum between the sucker and the smooth surface and pressure.
15. The pull from the earth is called \_\_\_\_\_.

**Ans:** 1. downwards 2. all 3. buoyant force 4. newton 5. Pascal 6. direction 7. pressure 8. balanced  
9. unbalanced 10. equilibrium 11. zero 12. atmospheric 13. deep 14. atmospheric 15. gravity

## D. Give one word answers.

1. Push or pull resulting in the motion of a body.
2. Force of attraction from the earth.
3. Force which comes into play when an object moves over another object.
4. Force per unit area.
5. Pressure from atmosphere on a unit area on earth's surface.
6. Force acting on a body by touch.
7. Force to collect iron scrap.
8. Source of force while exercising.
9. Force which keeps the objects floating on water.
10. Upward pressure from a liquid (water).

Ans: 1. force      2. gravity      3. friction      4. Pressure      5. atmospheric pressure  
6. contact force      7. magnetic      8. Muscular      9. thrust      10. buoyant

## Theoretical Questions

### A. Short answer type questions.

1. Explain why does a sharp knife cuts a fruit easily than a blunt knife?

Ans: Sharp edge of knife exert force over small area creates large pressure on fruit. hence applied force exerts a greater pressure to cut through fruit easily.

2. Why does head of a thumbtack broad and the head of a pin is short?

Ans: Pressure exerted on the broad head (bigger area) of a thumbtack increase as it reaches the pin end (short area) and thus it gets into the board or any other object easily.

3. Why are sleepers provided under a rail track?

Ans: Sleepers help spread the weight of the train on tracks over a large area.

4. Why are sewing needles sharp and pointed?

Ans: Pressure exerted on a long needle (larger area) gets increase on reaching the sharp point (lesser area) on the needle and so is easily pierced. If the needle is blunt the pressure gets reduced and hence it is not easily pierced.

5. Which forces act only when they are in contact with the object?

Ans: Muscular and frictional forces act when they are in contact only.

6. Why a rubber ball floats on water?

Ans: Rubber ball has a larger area and upward pressure (thrust) from water on a rubber ball being more keeps it floating

7. Which device is to be used to pull out nails from sand?

Ans: Magnet can be used to pull out the nails from the sand.

8. Why does a tractor has broad wheels?

Ans: Broad tyres on broad wheels on a tractor has large area in contact with the surface. So the weight of tractor spreads over a large area and applies less pressure on soil below and so they don't sink in the mud.

9. Why does camel has broad hoofs?

Ans: Spreads pressure from weight over large area on broad hoofs and hence help camel to walk easily on sand.

10. Why does the atmospheric pressure greater on the surface of the earth than in the airplane flying high?

Ans: Air is thicker near the surface of the earth. It becomes thinner as we go higher. That is why it exerts more pressure on the objects near the earth than on plane flying higher in the air.

11. What happens when force is applied in the direction of the motion?

Ans: The forces applied on an object in the same direction add to the motion of the moving object and increases speed.

12. What happens when force is applied in the direction opposite to the motion?

Ans: When the force is applied to the direction opposite to the motion, the speed of the object decreases.

13. In how many directions the solid exerts pressure?

Ans: Solids exert force in one direction only.

14. Which forces are contact forces? Give one example from each.

Ans: Frictional and muscular forces are contact forces. Ball stops after rolling on ground for some time since every moment frictional force on the ball reduces its speed. Muscles move things. A cart being pulled moves till muscular force is being applied on it.

15. How a magnetic force is similar to gravity?

Ans: Both magnetic and gravitational forces are non-contact forces.

16. Why do we call magnetic force and gravity as non-contact forces?

Ans: Magnetic and gravitational forces act on a body without coming in contact with the object.

17. Why do deep sea divers wear special suits?

Ans: Pressure from water (liquid) increases with the increase in depth. Deep sea divers wear special suits to protect themselves from extreme pressure being exerted by water in deep sea.

18. How weight is related to gravity?

Ans: Weight of an object is directly related to gravitational pull on it. So, More is the weight more is the gravitational pull on it . Weight of an object is 6 times lesser on moon as compared to earth, as there is less gravity

19. What do you understand by the magnitude of force?

Ans: The strength of the force applied by an object is called magnitude of force. The strength (magnitude) of force also depends on the direction in which force acts on object.

## **B. Long answer type questions.**

1. Give the difference between a contact force and a non-contact force, giving suitable examples.

Ans: Force applied by object by touching object or coming in contact with each other is called contact force. For example: Muscular force, Friction force etc.

Force exerted by an object on another object from a distance (without any direct contact with one another) is a non-contact force. Examples Gravitational force, Force of gravity, Electrostatic force or Magnetic force

2. Why do we call a spring balance as 'force meter'?

Ans: Gravitational pull acts on an object gives weight to an object. A spring balance has a spring inside attached to its top. A hook is attached to the free end of the spring which hangs down. The object to be weighed is suspended from the hook and the weight is indicated by an indicator on the scale given on the body of the balance.

More is the weight of the body more is the pull force on the weight and more is the stretching of the spring. The weight is indicated by an indicator on the scale given on the body of the spring balance. Thus it measures force and so it is called a 'force meter'.

3. Demonstrate to show that:

a. The pressure in liquids increases with the depth.

Ans: Take an empty container and make three holes in it at different levels, one over the other. Cover all three holes with cello-tape. Fill the container with water upto brim.

Now, pull the tape away. Water spurts out from all the three holes. Water coming out of the lowest hole goes to maximum distance. Water from the middle hole goes to some distance but lesser than the lower hole one. The water from top hole goes to a least distance. This shows that pressure in a liquid increases with increase in depth of the liquid in container.

b. Pressure under a liquid at a particular depth is equal in all directions.

Ans: Take an empty plastic bottle and punch four minute holes with the help of a sharp pin on its four sides, taking care that all the four holes are at the same height from the bottom of the bottle. Fill the bottle with water. Observe the jets of water coming out of the bottle. You will find that all the four jets fall at the same distance from the bottle showing that 'liquids exert equal pressure in all directions at the same depth

c. The plastic comb rubbed in dry hair picks up the bits of paper.

Ans: Run a comb, made of plastic, through your dry hair. Bring the comb over the bits of paper. You will find the bits of paper being pulled towards the comb. On running the comb through dry hair an 'electric charge' is generated on the comb. This charge is called 'electrostatic charge' and force from it comes into play even when the two bodies are not in contact with each other. This charge exerts a pull force (electrostatic force) on the bits of paper from a distance.

d. A rubber based sticker is attached to the steel almirah without glue on it.

Ans: A rubber based sticker is also called a sticker. Sticker is a rubber or soft plastic cup when pressed on a plane surface the air between concavity of the cup and the plane surface escapes and vacuum is created with the result that inside the cup there is no air pressure whereas on the outside surface of the cup there is atmospheric pressure pushing the cup to the surface and thus the sticker remains attached to the plain steel almirah.

e. Force applied may bring about change in shape of dough with the help of force.

Ans: In the kitchen dough is kneaded with the hands and with every press, it changes its shape. Dough is rolled into balls. Balls are rolled into chapaatis. Every time force is applied and the dough changes its shape. An ironsmith beats (applies force) on hot iron to change its shape and size.