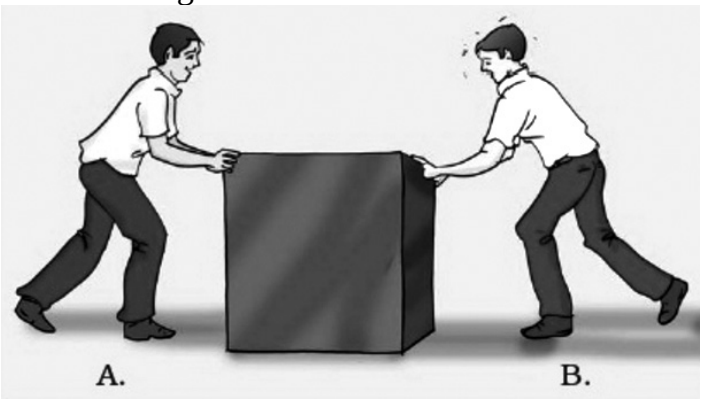
SCIENCE (PHYSICS)
WORKSHEET_140925
CHAPTER 08 FORCE AND PRESSURE (ANSWERS)

SUBJECT: SCIENCE **MAX. MARKS : 40**
CLASS : VIII **DURATION : 1½ hr**

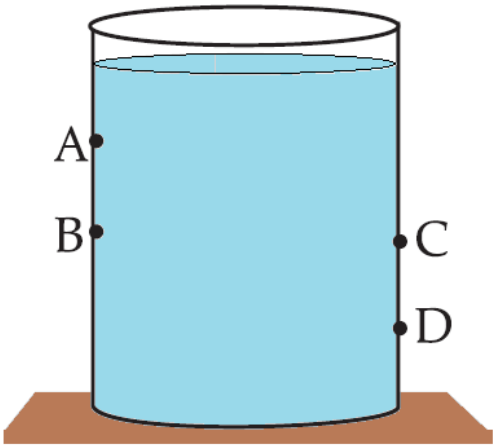
SECTION – A
Questions 1 to 6 carry 1 mark each.

1. In the Fig. two boys A and B are shown applying force on a block. If the block moves towards the right, which one of the following statements is correct?



(a) Magnitude of force applied by A is greater than that of B.
(b) Magnitude of force applied by A is smaller than that of B.
(c) Net force on the block is towards A.
(d) Magnitude of force applied by A is equal to that of B.
Ans. (a) Magnitude of force applied by A is greater than that of B.
Magnitude of force applied by A is greater than B and therefore the block moves towards right.

2. A water tank has four taps fixed at points A, B, C, D as shown in Fig. The water will flow out at the same pressure from taps at :



(a) B and C (b) A and B (c) C and D (d) A and C
Ans. (a) B and C
Since B and C are at the same level, the pressure will be the same at B and C.

3. When we press the bulb of a dropper with its nozzle kept in water, air in the dropper is seen to escape in the form of bubbles. Once we release the pressure on the bulb, water gets filled in the dropper. The rise of water in the dropper is due to :
(a) pressure of water (b) gravity of earth

(c) shape of rubber bulb (d) atmospheric pressure

Ans. (d) atmospheric pressure

The pressure exerted by air around us is known as atmospheric pressure.

4. In the circuit shown in figure, when the circuit is completed, the hammer strikes the gong. Which of the following forces is responsible for the movement of hammer?

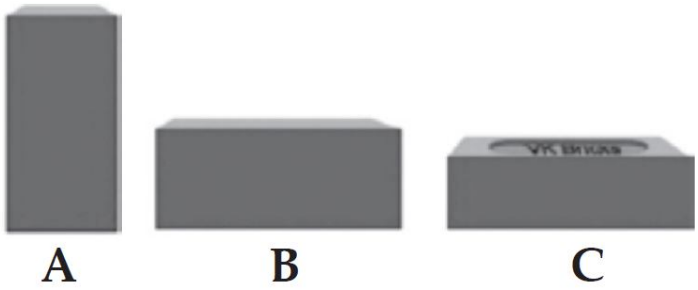
(a) gravitational force alone (b) electrostatic force alone

(c) magnetic force alone (d) frictional force alone

Ans. (c) magnetic force alone

It will be a magnetic force because as electric current flows through the coil, it behaves like an electromagnet and magnetic force is created.

5. A brick is kept in three different ways on a table as shown in Fig. The pressure exerted by the brick on the table will be :



(a) maximum in position A (b) maximum in position B

(c) maximum in position C (d) equal in all cases.

Ans. (a) maximum in position A

As the area is inversely proportional to pressure, if the area of contact is increased the pressure will be reduced. So, the pressure exerted by the brick on the table will be maximum in position A.

6. In the below question, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as

Assertion (A): In the game of tug of war; sometimes the rope doesn't seem to move to any side even if strong forces are applied from both sides.

Reason (R): Equal force applied from opposite sides on any object makes the net applied force zero.

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).

(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

Ans. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
Forces applied on an object in the same direction add to one another. If the two forces act in the opposite directions on an object, the net force acting on it is the difference between the two forces. Thus, the net force on an object is zero if the two forces acting on it in opposite directions are equal.

SECTION – B

Questions 7 to 9 carry 2 marks each.

7. What do you mean by gravitational force?
Ans. Gravity is not a property of the earth alone. In fact every object in the universe, whether small or large, exerts a force on every other object. This force is called the gravitational force.

8. Name the forces acting on a plastic bucket containing water held above ground level in your hand. Discuss why the forces acting on the bucket do not bring a change in its state of motion.
Ans. Muscular and gravitational forces act on plastic bucket. The force acting in state of motion because they are acting in opposite directions with equal magnitudes. Therefore, the net force on bucket remains zero.

9. What is atmospheric pressure?
Ans. The envelop of air around the earth is known as atmosphere. The atmospheric air extends up to many kilometres above the surface of the earth. The pressure exerted by the air is called atmospheric pressure.

SECTION – C

Questions 10 to 13 carry 3 marks each.

10. A man is pushing a cart down a slope. Suddenly the cart starts moving faster and he wants to slow it down. What should he do ?
Ans. Man can do followings things :
(i) He can start pulling the cart instead of pushing it in order to balance the downwards force due to gravity.
(ii) He can go the opposite side by moving himself very fast in the direction of motion and try to slow down the speed of cart by giving an opposite force to the moving cart.

11. What happens when (i) Two forces are exerted in same direction? (ii) Two forces are exerted in opposite directions?
Ans. (i) When two forces are exerted in same direction on an object, then the forces are added and action becomes easy.
(ii) When two forces act in the opposite directions on an object, the net force acting on it is the difference between the two forces.

12. If the area of your head is 15 cm × 15 cm, how much force air will exert on your head?
Ans. The force due to air in a column of the height of the atmosphere and area 15 cm × 15 cm is nearly equal to the force of gravity on of an object of mass 225 kg (2250 N). We have air inside our body, so we are not crushed under this force of gravity and the pressure inside our bodies is also equal to the atmospheric pressure and balances the pressure from outside.

13. How can a force change the states of motion?
Ans. There are two states of an object: (i) Rest and (ii) Motion.

When a force is applied on a body then it can move. In the same way a force can change the direction of a moving object as well as its speed. A force can stop a moving object.
If the force is applied in the direction of motion at an object, then its speed is increased. If the force acts in opposite direction, then the speed of the object is decreased.

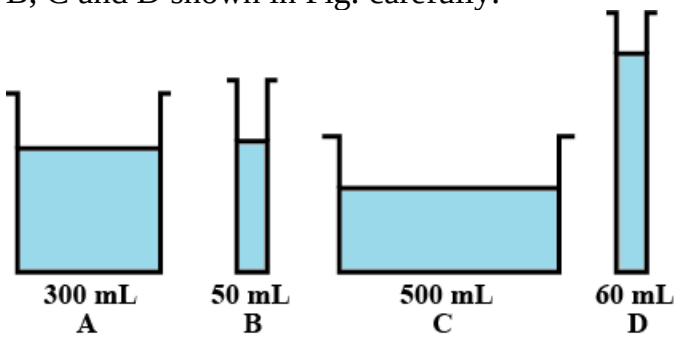
SECTION – D

Questions 14 to 16 carry 4 marks each.

14. What are the two factors on which effect of force depends?
Ans. There are following two factors on which the effect of force depends:
(i) Magnitude: The strength of force is usually expressed by its magnitude.
(ii) Direction of force: We have also to specify the direction of force in which it acts.
If the direction or magnitude of force changes, its effect also changes.

15. In the following situations identify the agent exerting the force and the object on which it acts. State the effect of the force in each case.
(a) Squeezing a piece of lemon between the fingers to extract its juice.
(b) Taking out paste from a toothpaste tube.
(c) A load suspended from a spring while its other end is on a hook fixed to a wall.
(d) An athlete making a high jump to clear the bar at a certain height.
Ans. (a) The fingers are the agents, lemon is the object. The effect of force is the lemon juice being expelled by squeezing.
(b) The hand is the agent, toothpaste tube is object and the coming out of paste from toothpaste tube is the effect of force.
(c) Suspended load is agent, spring is the object, the effect of force can be seen in the form of elongation of spring on suspension of load.
(d) Athlete is the agent, bar is the object. The force can be seen in the form of jump.

16. Observe the vessels A, B, C and D shown in Fig. carefully.



Volume of water taken in each vessel is as shown. Arrange them in the order of decreasing pressure at the base of each vessel. Explain.
Ans. Pressure at depth due to liquid column depends upon :
(i) gravitational acceleration (g)
(ii) density of liquid
(iii) height of liquid.
And in this case, g and density are same, so only thing that can change pressure is height. So, the order of pressure exerted by the fluids A, B, C and D at base is given by $P_D > P_B > P_A > P_C$.

SECTION – E (Case Study Based Question)

Question 17 carry 4 mark

17. The Push and Pull Adventure
Rahul and Priya were helping their father rearrange the furniture in their living room. As they pushed the heavy sofa across the floor, they noticed it was much harder to move than the lighter

chairs. Their father explained that they were applying a force to move the objects, and how the size and direction of the force affect movement.
Rahul tried to push the sofa alone but found it difficult, while Priya suggested they both push it together. They noticed that when they applied force in the same direction, the sofa moved more easily. Their father also showed them how pulling a table instead of pushing it made it easier to move over the carpet.

Later, their curiosity grew, and they asked their father how these forces worked and why the objects moved differently depending on the surface and the way they pushed or pulled them.
(i) Rahul and Priya found it easier to move the sofa when both of them applied force together in the same direction. Explain why. (2)
(ii) What are states of motion? (2)

OR

(ii) What is muscular force? Why is it called contact force? (2)
Ans. (i) When two or more forces act on an object in the same direction, the net force increases, making it easier to move the object. In Rahul and Priya's case, their combined forces were greater than the force applied by Rahul alone, which made moving the sofa easier.
(ii) The state of motion of an object is described by its speed and the direction of motion. The state of rest is also considered to be the state of zero speed. So, an object may be at rest or in motion; and both are its states of motion.

OR

(ii) Muscular force and force of friction are the examples of contact forces. Non-contact forces: The forces which come into play without any contact of objects with one another are called non-contact forces.