

Exercises

Question 1:

Give two examples each of situations in which you push or pull to change the state of motion of objects.

Answer 1:

- Hitting the ball, coming to us.
- Kicking to football.

Question 2:

Give two examples of situations in which applied force causes a change in the shape of an object.

Answer 2:

- Stretching a rubber belt.
- Reshaping clay to make toys.

Question 3:

Fill in the blanks in the following statements:

- To draw water from a well we have to _____ at the rope.
- A charged body _____ an uncharged body towards it.
- To move a loaded trolley we have to _____ it.
- The north pole of a magnet _____ the north pole of another magnet.

Answer 3:

- To draw water from a well we have to **pull** at the rope.
- A charged body **attracts** an uncharged body towards it.
- To move a loaded trolley we have to **push** it.
- The north pole of a magnet **repels** the north pole of another magnet.

Question 4:

An archer stretches her bow while taking aim at the target. She then releases the arrow, which begins to move towards the target. Based on this information fill up the gaps in the following statements using the following terms:

muscular, contact, non-contact, gravity, friction, shape, attraction

- (a) To stretch the bow, the archer applies a force that causes a change in its _____.
- (b) The force applied by the archer to stretch the bow is an example of _____ force.
- (c) The type of force responsible for a change in the state of motion of the arrow is an example of a _____ force.
- (d) While the arrow moves towards its target, the forces acting on it are due to _____ and that due to _____ of air.

Answer 4:

- (a) To stretch the bow, the archer applies a force that causes a change in its *shape*.
- (b) The force applied by the archer to stretch the bow is an example of *contact* force.
- (c) The type of force responsible for a change in the state of motion of the arrow is an example of a *muscular* force.
- (d) While the arrow moves towards its target, the forces acting on it are due to *gravity* and that due to *friction* of air.

Question 5:

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.

Answer 5:

S. No.	Agent	Object	Effect
(a)	Fingers	Lemon	Juice is extracted by force.
(b)	Fingers	Toothpaste tube	Toothpaste coming out by force.
(c)	Load	Spring	Expansion of spring.
(d)	Athlete	Athlete's body	Athlete jump over the bar.

Question 6:

A blacksmith hammers a hot piece of iron while making a tool. How does the force due to hammering affect the piece of iron?

Answer 6:

The force due to hammering *change the shape* of the piece of iron.

Question 7:

An inflated balloon was pressed against a wall after it has been rubbed with a piece of synthetic cloth. It was found that the balloon sticks to the wall. What force might be responsible for the attraction between the balloon and the wall?

Answer 7:

The force which is responsible for the attraction between the ball and the wall is *electrostatic force*.

When we rub the balloon by a synthetic cloth, it gets charged. When it is taken near the wall, it will get attracted towards the uncharged wall because of the electrostatic force which is the force exerted by a charged body on another uncharged body.

Question 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.

Answer 8:

The force acting on a plastic bucket are:

- *Gravitational force:* It is acting downwards.
- *Muscular force:* It is applied by our hands to lift the bucket in upward direction.

Although these forces are acting on the bucket but no change is found in its state of motion because the two forces are balancing each other and as a result net force is zero.

Question 9:

A rocket has been fired upwards to launch a satellite in its orbit. Name the two forces acting on the rocket immediately after leaving the launching pad.

Answer 9:

Two forces acting on the rocket immediately after leaving the launching pad are:

- *Frictional force* due to air.
- *Force of gravity* pulling in downward direction.

Question 10:

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 the earth
- (c) shape of rubber bulb
- (d) atmospheric pressure

Answer 10:

The rise of water in the dropper is due to (d) atmospheric pressure.