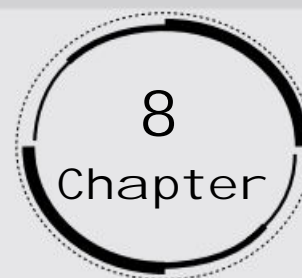


## Force and Pressure



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

**Ans:** The following are the required examples-

Push force examples:

- i. A toy car is at rest and is moved by applying a push force.
- ii. We move a bicycle by pushing it.

Pull force examples include:

- i. Taking out a drawer.
- ii. Drawing water from a well by pulling a rope.

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

**Ans:** The following are two instances of situations in which a force can modify the shape of an object:

- i. When plastic bottles are squeezed, they change shape.
- ii. A rubber band's shape changes when it is stretched.

**3. Fill in the blanks in the following statements.**

- (a) To draw water from a well we have to \_\_\_\_ at the rope.
- (b) A charged body \_\_\_\_ an uncharged body towards it.
- (c) To move a loaded trolley, we have to \_\_\_\_\_ it.
- (d) The north pole of a magnet \_\_\_\_\_ the north pole of another magnet.

**Ans:**

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

**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, noncontact, gravity, friction, shape, attraction**

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

**Ans:**

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

**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.**

**Ans:**

- (a) When squeezing a lemon, the hands exert muscular force on the fruit. As a result, the lemon's form shifts.
- (b) The hand exerts muscular strain on the tubing of the syringe. As a result of the toothpaste, the tube's shape changes.
- (c) A downward force is applied to the spring by the suspended weight. The spring lengthens as a result of this.
- (d) When attempting a high leap, an athlete's feet exert muscular power on the ground. As a result, he leaps over the bar, changing his state of motion.

**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?**

**Ans:** A blacksmith hammers a molten iron piece. He imparts a massive compressive force to the iron, causing it to alter shape.

**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?**

**Ans:** An inflated balloon becomes charged when it is rubbed against a wall after being rubbed with synthetic fabric. The balloon attaches to the wall because a charged body attracts an uncharged body. The electrostatic force is the force that exists between the charged balloon and the wall.

**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:** The muscular force applied by the hand and the weight owing to gravity are the forces operating on the plastic bucket. Because these two forces are equal and opposite one another, there is no change in the state of motion.

**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.**

**Ans:** The force of gravity/weight and friction caused by the earth's atmosphere are the two forces that act on the rocket shortly after launch.

**10. When we press the bulb of a dropper with its nozzle kept in water, the 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) the gravity of the earth**
- (c) the shape of a rubber bulb**
- (d) Atmospheric pressure**

**Ans:** (d) Atmospheric pressure. When air escapes from the dropper's nozzle, it creates a pressure difference, which causes water to be pulled into the nozzle.

### **Extended Learning — Activities and Projects**

**1. Make a 50 cm × 50 cm bed of dry sand about 10 cm in thickness. Make sure that its top surface is levelled. Take a wooden or a plastic stool. Cut two strips of graph paper each with a width of 1 cm. Paste them vertically on any leg of the stool—one at the bottom and the other from the top. Now gently put the stool on the sand bed with its legs resting on the sand. Increase the size of sand bed if required. Now put a load, say a school bag full of books, on the seat of the stool. Mark the level of sand on the graph strip. This would give you the depth, if any, to which the legs of stool sink in sand. Next, turn the stool upside down so that now it rests on its seat on the sand bed. Note the depth to which the stool sinks now. Next, put the same load on the stool and note the depth to which it sinks in the sand. Compare the pressure exerted by the stool in the two situations.**

**Ans:** The choice of construction materials essentially depends on their suitability, their local availability and the amount of money you are prepared to invest.

**3. If you are a beginner fish farmer and your farm is very small, it is best to use simple structures and not to spend too much on material.**

2. Take a tumbler and fill it with water cover the mouth of the Tumbler with a thick card similar to that of a postcard hold the Tumbler with one hand while keeping the card pressed to its mouth with your other hand turn the Tumbler upside down while keeping the card pressed to its mouth make sure that the Tumbler is held vertical gently remove the hand pressing the card What do you observe? Does the card get detached allowing the water to spill? With a little practice you will find that the card continues to hold water in the Tumbler even after it is not supported by your hand



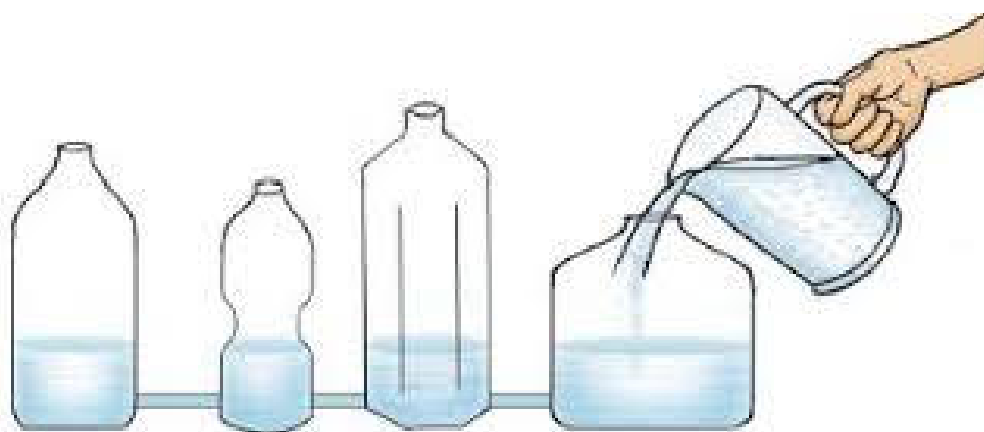
**Ans:** HAT TO DO:-

Once you have everything in place, fill up the glass with water right upto its brim. Carefully place the glossy side of the postcard down on the rim of the glass. Keep the palm of your hand placed on the card and turn the glass upside down.

**WHAT HAPPENS:-**

The card remains attached t

- 3 Take 4-5 plastic bottles of different shapes and sizes. Join them together with small pieces of glass or rubber tube as shown in ig. 11.22. Keep this arrangement on a level surface. Now pour ater in any one of the bottles. Note whether the bottle in which ater is poured gets filled first or all the bottles get filled imultaneously. Note he level of water in all the bottles from time 3.upto time. Try to explain your observations.



**Ans:** If the bottles are on the same level surface then the level of water in all the bottles will same. Therefore all the bottles will get filled together.

The water transfers from the first bottle to the rest and the level rise together.

Hence, the level of water will rise together in all the bottles. No