

# NCERT solution for Friction

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## Question 1

Fill in the blanks.

- (a) Friction opposes the \_\_\_\_\_ between the surfaces in contact with each other.
- (b) Friction depends on the \_\_\_\_\_ of surfaces.
- (c) Friction produces \_\_\_\_\_.
- (d) Sprinkling of powder on the carom board \_\_\_\_\_ friction.
- (e) Sliding friction is \_\_\_\_\_ than the static friction.

## Answer

- (a) motion
- (b) nature
- (c) heat
- (d) reduces
- (e) less

## Question 2

Four children were asked to arrange forces due to rolling, static and sliding frictions in increasing order. Their arrangements are given below. Choose the correct arrangement.

- (a) rolling, static, sliding
- (b) rolling, sliding, static
- (c) static, sliding, rolling
- (d) sliding, static, rolling

## Answer

- (c) static, sliding, rolling

## Question 3

Alida runs her toy car on dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in increasing order will be

- (a) wet marble floor, dry marble floor, newspaper and towel.

- (b) newspaper, towel, dry marble floor, wet marble floor.  
(c) towel, newspaper, dry marble floor, wet marble floor  
(d) wet marble floor, dry marble floor, towel, newspaper

**Answer**

(a) wet marble floor, dry marble floor, newspaper and towel.

**Question 4**

Suppose your writing desk is tilted a little. A book kept on it starts sliding down. Show the direction of frictional force acting on it.

**Answer**

Frictional force is acting opposite to the movement of the book. Since the movement of book is downwards, friction force will act upwards.

**Question 5**

You spill a bucket of soapy water on a marble floor accidentally. Would it make it easier or more difficult for you to walk on the floor? Why?

**Answer**

It would make it more difficult for us to walk on a soapy floor because layer of soap makes floor smooth. The coating of soapy water reduces the friction and the foot cannot make a proper grip on the floor and it starts getting to slip on the floor.

**Question 6**

Explain why sportsmen use shoes with spikes.

**Answer**

Sportsman use shoes with spike to increase the friction so that the shoes do not slip while they run or play.

**Question 7**

Iqbal has to push a lighter box and Seema has to push a similar heavier box on the same floor. Who will have to apply a larger force and why?

### Answer

Seema pushes a heavier object than Iqbal. So Seema will have to apply a larger force since she will experience more frictional force because a heavy object will be pressed hard against the opposite surface and produces more friction.

### Question 8

Explain why sliding friction is less than static friction.

### Answer

Sliding friction is always less than static friction because two sliding objects find less time to get interlocked against each other's irregularities of surfaces as a result of which they experience less friction.

### Question 9

Give examples to show that friction is both a friend and a foe.

### Answer

| Friction as friend  | Friction as foe   |
|---|---|
| We are able to walk because of friction                             | Tyres and soles of shoes wear out because of friction.  |
| Friction between the tip of the pen and a paper allows us to write. | Friction between the different parts of machines produces heat. This can damage the machines. |
| Friction between Matchstick and match box produces fire             |   |
| Friction produces heat so in winter we rub our hand and feel warm   |   |

### Question 10

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Explain why objects moving in fluids must have special shapes.

### **Answer**

When a body moves through a fluid, it experiences an opposing force which tries to oppose its motion through the fluid. This opposing force is known as the drag force.

This frictional force or drag force depends on the shape of the body.

To overcome it or minimize, objects are given special shape. So that becomes easier for the body to move through the fluid.

Airplanes, bullet trains have streamlined curve surface to reduce air drag.