

CBSE Class–VIII Science
NCERT SOLUTION
Chapter-12
Friction

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.

Ans. Fill in the blanks.

- (a) Friction opposes the **relative motion** between the surfaces in contact with each other.
- (b) Friction depends on the **nature** of surfaces.
- (c) Friction produces **heat**.
- (d) Sprinkling of powder on the carom board **reduces** friction.
- (e) Sliding friction is **less** than the static friction.
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2. Four children were asked to arrange forces due to rolling, static and sliding frictions in a decreasing 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

Ans. (c) static, sliding, rolling

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

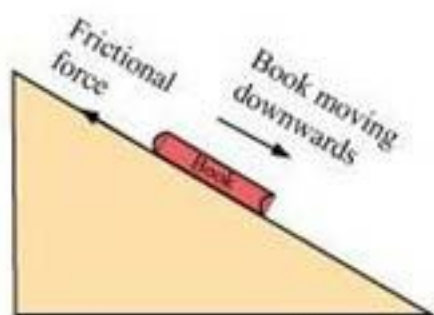
(c) Towel, newspaper, dry marble floor, wet marble floor

(d) Wet marble floor, dry marble floor, towel, newspaper

Ans. (a) Wet marble floor, dry marble floor, newspaper and towel.

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.

Ans. The frictional force will act parallel to the inclined surface, opposite to the direction of the sliding of book i.e., upward.



Concept insight: Friction opposes the motion.

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?

Ans. it is difficult to walk on a soapy floor because soapy floor reduces the frictional force

and hence we can slip on such floors.

6. Explain why sportsmen use shoes with spikes.

Ans. It is done to provide the shoes better grip on the ground.

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?

Ans. Seema will have to apply a larger force, because the force of friction is increased if two surfaces are pressed harder. So heavier box will apply more force on the floor and hence Seema will experience more frictional force.

8. Explain why sliding friction is less than static friction.

Ans. Suppose a box kept on the surface has to be pushed. If the box is slide then, when the box starts sliding, the contact points on its surface do not get enough time to lock into the contact point on the floor. So, the sliding friction is slightly less than the static friction and we find it easier to move the box already in motion than to get it started.

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

Ans.

- **Friction as a friend:**

1. To hold a glass, we have ridges on our palm, which increase the friction between palm and glass.
2. We do write anything with pen or pencil because there is friction between the surfaces of paper and point of pen or pencil.
3. Teacher writes on black-board with chalk because of friction between black-board surface and the chalk.
4. If there is no friction, then a moving body would never stop.

- **Friction as a foe:**

1. Friction wears out materials, whether they are screws, ball-bearing or soles of shoes.
2. Friction can also produce heat, which increases wear and tear of machine parts. It also causes much wastage of energy because this heat is not utilized.

10. Explain why objects moving in fluids must have special shapes.

Ans. 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 depends on the shape of the body. By giving objects a special shape, the force of friction acting on it can be minimised. Hence, it becomes easier for the body to move through the fluid.
