

CBSE NCERT Solutions for Class 8 Science Chapter 12

Back of Chapter Questions

1. Fill in the blanks.

- (a) Friction opposes the _____ between the surfaces in contact with each other.

Solution: relative motion

By definition of friction, friction opposes the relative motion between the surfaces in contact with each other.

- (b) Friction depends on the _____ of surfaces.

Solution: nature

Friction depends on the nature of the surfaces in the contact.

- (c) Friction produces _____.

Solution: heat

If surfaces of different bodies in contact are sliding with each other, due to friction heat will be generated.

- (d) The sprinkling of powder on the carrom board _____ friction.

Solution: reduces

Lubricants reduce friction between surfaces.

- (e) Sliding friction is _____ than the static friction.

Solution: less

Sliding friction is less than static friction. It is relatively easy to push an object which in motion than setting motion of a stationary object.

2. Four children were asked to arrange forces due to rolling, static and sliding friction in 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

Solution: (C)

Static friction is greater than sliding friction. Due to this reason, it is relatively easy to push an object which is in motion rather than setting motion of the same object.

Rolling friction is smaller than sliding friction. Due to this reason, it is easy to pull luggage with wheels than pulling the same luggage without wheels.

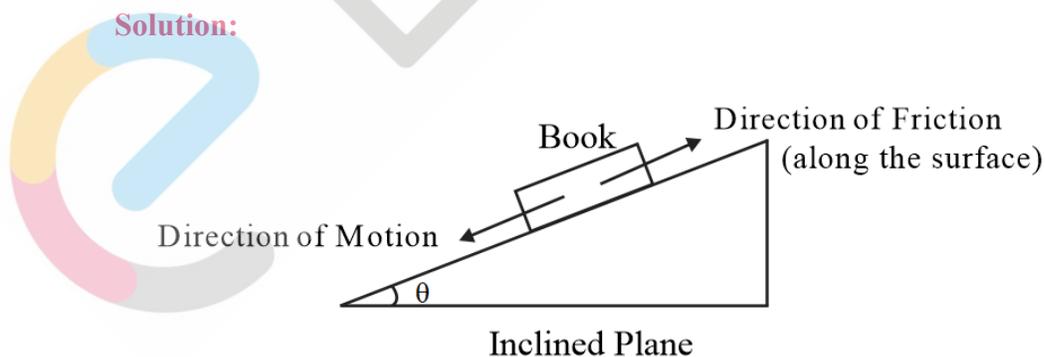
3. Alida runs her toy car on a dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in increasing order will be
- (a) wet marble floor, dry marble floor, newspaper and towel.
 - (b) newspaper, towel, dry marble floor, wet marble floor.
 - (c) towel, newspaper, dry marble floor, wet marble floor.
 - (d) wet marble floor, dry marble floor, towel, newspaper

Solution: (A)

Friction depends on the surfaces in contact. Surfaces with the more irregular surface will experience more friction. Arrangement in the increasing order of irregularity is 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 the frictional force acting on it.

Solution:



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?

Solution:

While walking, when our feet push the ground backwards, the floor pushes us in the forward direction. Friction plays the most important role in this process. When you spill a bucket of soapy water on a marble floor, friction between your feet and floor decreases and the force responsible for pushing you forward weakens. Therefore it becomes more difficult for you to walk on the floor.

6. Explain why sportsmen use shoes with spikes.

Solution:

While walking, when our feet push the ground backwards, the floor pushes us in the forward direction. Friction plays the most important role in this process. Sportsmen use shoes with spikes to increase the interlocking of the surfaces in contact, which in turn increases the friction and gives them a better grip.

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?

Solution:

Friction depends on the weight of an object. A heavier object will experience more friction because the surfaces will be pressed harder, which will result in the greater interlocking of irregularities of surfaces in contact and thus will require larger force to move the heavier object.

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

Solution:

When the irregularities between two contact surfaces get interlocked, it results in resistance known as friction. In sliding friction, the time for which the surfaces are in contact is very small; therefore, the interlocking of irregularities does not create much resistance. As less force is required to overcome this resistance, sliding friction is less than static friction.

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

Solution:

friction as a friend:

- (a) Friction helps in walking.
- (b) We are able to write with a pen on paper due to friction.

Friction as a foe:

- (a) Friction leads to loss of energy as heat
- (b) Because of friction, the tires and soles of shoes wear out.

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

Solution:

As it happens between the ground and feet, a body moving through fluid also experiences an opposing force called drag force that depends on the nature of the surface and the shape of the body. By giving objects special shape, this drag force can be minimised.