



INDIAN SCHOOL AL WADI AL KABIR



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| Class: VIII | Department: SCIENCE 2023-24 | Date of completion: 20.08.2023 |
| Textbook exercises WITH ANSWERS | Topic: FRICTION | Note: A4 FILE FORMAT |
| Name of the student: | Class & Section: | Roll no. |

1. Fill in the blanks.

- (a) Friction opposes the 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 carrom board reduces friction.
- (e) Sliding friction is less than the static friction.

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

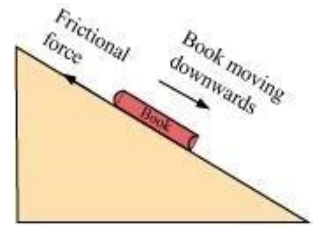
3. Alida runs her toy car on the dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car on different surfaces in **increasing order** will be

- (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

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.



Ans: When a book slides on the writing desk, a frictional force acts between the book and the surface of the desk. The direction of the frictional force on the book is opposite to the direction of its motion and acts in an upward direction, as shown in the figure.

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: The force of friction between the ground and feet decreases when there is soapy water spilt on the floor. Hence, it becomes difficult to walk on the soapy floor.

6. Explain why sportsmen use shoes with spikes.

Ans: Sportsmen use shoes with spikes because these shoes give them a better grip while running. This is because the force of friction between the shoes and the ground increases with the help of spikes.

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: The force of friction arises because of the interlocking of irregularities on the two surfaces in contact. When a heavy object is placed on the floor, the interlocking of irregularities on the surfaces of the box and floor becomes strong. This is because the two surfaces in contact are pressed harder. Hence, more force is required to overcome the interlocking. Thus, to push the heavier box, Seema has to apply a greater force than Iqbal.

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

Ans: Friction comes into play when irregularities present in the surfaces of two objects in contact get interlocked with each other. In sliding, the time given for interlocking is very small. Hence, interlocking is not strong. Therefore, less force is required to overcome this interlocking. Because of this reason, sliding friction is less than static friction.

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

Ans: Advantages of friction:

(i) We can walk because of friction.

(ii) Friction between the tip of the pen and the paper allows us to write.

Disadvantages of friction:

(i) Tyres and soles of shoes wear out because of friction.

(ii) Friction between the different parts of machines produces heat. This can damage the machines.

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 them can be minimised. Hence, it becomes easier for the body to move through the fluid.

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