

CBSE Class 8 Science
NCERT Exemplar Solutions
CHAPTER – 12
Friction

SHORT ANSWER QUESTIONS

14. You might have noticed that when used for a long time, slippers with rubber soles become slippery. Explain the reason.

Ans: The rubber soles of new slippers are treaded to increase the friction. When slippers have been used for a long time, the treads wear off and the surface of the soles become smooth. As a result, the friction between the rubber soles and the floor decreases and the slippers become slippery.

Explanation: Friction depends on the nature of surfaces in contact and for a given pair of surfaces, it depends on the roughness/smoothness of the two surfaces.

15. Is there a force of friction between the wheels of a moving train and iron rails? If yes, name the type of friction. If an air cushion can be introduced between the wheel and the rail, what effect will it have on the friction?

Ans: Yes, the force of friction between the wheels of a moving train and iron rails is **rolling friction**. If an air cushion is introduced between the wheels and the rails, the friction between the two surfaces will decrease.

16. Cartilage is present in the joints of our body, which helps in their smooth movement. With advancing age, this cartilage wears off. How would this affect the movement of joints?

Ans: The wearing off of cartilage will increase the friction between the joints of our body. As a result, the movement of joints will become difficult with advancing age. It may also lead to joint pains.

17. While playing tug of war (Fig.12.4), Preeti felt that the rope was slipping through her

hands. Suggest a way out for her to prevent this.



Fig. 12.4

Ans: Preeti can rub soil between her hands to increase the friction between the rope and her hands. Increased friction will prevent slipping of rope through her hands.

18. The handle of a cricket bat or a badminton racquet is usually rough. Explain the reason.

Ans: The handle of a cricket bat or a badminton racquet is usually made rough to make a **better grip**. Roughness of handle increases the friction between the handle of the bat /racquet and the hands of the player.

Explanation: Friction depends on the nature of surfaces in contact and for a given pair of surfaces, it depends on the roughness/smoothness of the two surfaces. If the handle of the bat /racquet is smooth, it may slip out of the hands of the player.

19. Explain why the surface of mortar and pestle (silbatta) used for grinding is etched again after prolonged use?

Ans: The surface of mortar and pestle (silbatta) used for grinding is etched again after a prolonged use to increase the friction at the time of grinding. Etching makes the mortar and pestle (silbatta) more effective for grinding again.

20. A marble is allowed to roll down an inclined plane from a fixed height. At the foot of the inclined plane, it moves on a horizontal surface (a) covered with silk cloth (b) covered with a layer of sand and (c) covered with a glass sheet. On which surface will the marble move the shortest distance. Give reason for your answer.

Ans: The distance covered by the marble will depend upon the nature of the surface on

which it is moving. The marble will cover the shortest distance on the surface covered with a layer of sand. The layer of sand has a rough surface and offers the maximum friction for the motion of the marble. Silk cloth and glass sheet are comparatively smoother and will offer lesser friction.

21. A father and son pushed their car to bring it to the side of road as it had stalled in the middle of the road. They experienced that although they had to push with all their might initially to move the car, the push required to keep the car rolling was smaller, once the car started rolling. Explain.

Ans: The father and son experienced that they had to put in lesser effort to keep the car rolling because initially they had to apply a force to overcome the static friction of the car to set the car in motion. Once the car was in motion and started rolling, they had to apply a force only to balance the rolling friction of the car. The value of rolling friction is lesser as compared to the value of static friction.

Explanation: **Static friction** comes into play when we try to move an object from the position of rest. **Rolling friction** comes into play when an object is rolling over another surface. Rolling friction is lesser than static friction.