



STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
TELANGANA, HYDERABAD
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Class : VIII Medium: English Subject: Physical Science
Name of the chapter : Friction Worksheet: 14
Topic/ Concept: Effect of Roughness on Frictional Force

CONCEPT:

- ✓ Effect of roughness on frictional force.

LEARNING OUTCOMES:

Students...

1. Explain the effect of roughness on frictional force.
2. Perform activities to understand effect of roughness on frictional force.
3. Use the knowledge of effect of roughness on frictional force in day to day life.

Explanation: Effect of roughness on frictional force.

- ✓ Is the friction same in all the surfaces?
- ✓ Does the contact surface effects the nature of the friction?
- ✓ Let us do the following activity. Then we can conclude what are the factors that effects friction .

Activity-1

Motion on the inclined plane

1. Set up an inclined plane on the horizontal floor. Using wooden board as inclined plane.
2. Put a mark at any point “A” on the inclined plane.
3. Now let a glass marble or ball move down from this point.
4. Note the distance covered by the glass marble from the bottom of the inclined plane to point where it comes to a stop.
5. Now, spread a cloth over the floor. Make sure that there are no wrinkles in the cloth.
6. Try again with glass marble. Now note down the distance.
7. What are your observations from these experiments?
8. In which case the distance is covered maximum?
9. In which case the distance is covered minimum?
10. Repeat the experiment with pencil, cell again and notice the observations.

The glass marble/pencil/cell moves more distance when they are rolled on wooden plane.



Repeat the experiment by replacing the cloth with white marble surface or glass surface, can you predict the distance covered by the pencil / cell?

11. Why is the distance covered by the pencil / cell different on different surfaces?

12. If you do the above activity by replacing the cloth with white marble surface or glass surface, can you predict the distance covered by the pencil / cell?

13. You can conclude that smoothness /roughness of the surfaces of both the floor and the glass marble could affect the distance travelled by it.

- Though many surfaces look like perfect planes, there exists many ups and downs (irregularities of surface) on them.
- Friction is caused by the irregularities on the two surfaces which are in contact.
- Irregularities on the two surfaces lock into one another, when we attempt to move on any surface.
- We have to apply a force to overcome interlocking.
- On rough surfaces, there exist a large number of irregularities (ups and downs). Hence, the force of friction is greater if a rough surface is involved.

ASSESSMENT

1. Why does the roughness influence the force of friction?
2. List the material required to verify effect of roughness on frictional force.
3. Explain the experimental procedure to verify effect of roughness on frictional force.
4. Draw the FBD of object moving on inclined plane.

MCQ

1. We slip down on soapy surface because ()
 - A) Friction is more on that surface.
 - B) Soap water does not affect the friction force of the surface.
 - C) Soapy surface decreases the friction
 - D) Friction does not depend on the surface.