



**STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING  
TELANGANA, HYDERABAD  
ACADEMIC YEAR - 2020-21, LEVEL -2**

Class: **VIII**

Medium : **English**

Subject: **Physical Science**

Name of the chapter : **Friction**

Worksheet: **12**

Topic/ Concept: **Nature of Friction and Concept of Static Friction**

**Concepts:** Nature of friction and concept of static friction

**Learning outcomes:**

**Students.....**

1. Explain the nature of friction using an experiment.
2. Able to give day to day life examples for static friction.

**LAB ACTIVITY**

**Aim :** To understand the nature of the friction and concept of static friction.

**Materials required:**

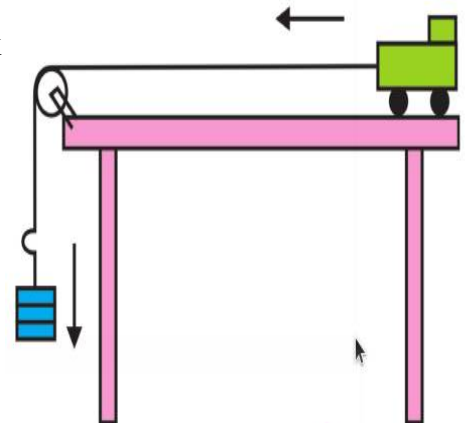
- |                        |                   |
|------------------------|-------------------|
| 1. Toy Trolley         | 5. Pulley         |
| 2. Small wooden block  | 6. Weight hangers |
| 3. Inextensible string | 7. Table          |
| 4. Weights             |                   |

**Precautions:**

1. Increase the weights on weight hangers gradually.
2. Do not drop down the hanger with weights suddenly.

**Procedure :**

1. Take a small Toy Trolley and Keep a wooden block on it as shown in the figure.
2. Tie an inextensible string to the trolley and pass it over a pulley.
3. Other end of the string is fixed to the weight hanger.
4. Take a small weight and keep it on weight hanger and observe the changes in the motions of the block and trolley.
5. Guess what will happen?
6. You will notice that the trolley along with a block on it moves towards left with some acceleration.
7. The block is at rest with respect to the surface of the trolley, but is in motion with respect to the surface of the table.
8. Now keep on increasing the weights on the hanger, observe the motion of both trolley and block.
9. The surface of the trolley tries to keep the block at rest here with respect to its surface.
10. Thus, the force of friction by the surface of the trolley acts on the block in the direction of the motion.



11. At the same time the block also applies a force on the trolley in opposite direction and tries to move forward (to your right side).
12. We can increase the trolley's acceleration by increasing the weights on the hanger.
13. If we increase the acceleration of the trolley gradually, at a certain limiting acceleration or limiting weight, the block comes into the motion in the reverse direction..
14. This means that, now, there exists a relative motion between the surface of the trolley and the block.

**Result:** In this experiment at certain acceleration the block did not move with respect to the surface of the trolley. In this state, the frictional force present between the surfaces of trolley and block is called static friction.

**“The Frictional force which comes into play when surfaces of the objects are at rest relative to each other is called static friction”.**

### Activity -2

Do the same activity with the following materials.

Use a stone and iron block of same masses and different masses.

- ✓ Do the experiment by applying some grease to the bottom of the wooden block and then keep on the trolley.
- ✓ What is your observe?
- ✓ Is there any change in the maximum weight (limiting weight)?
- ✓ Is there any change in the motions of trolley and block?
- ✓ We can observe static friction and sliding friction between the trolley and the block.
- ✓

**“Sliding friction is the friction which comes into play when the surface of one object moves relative to the surface of the another object”.**

**Examples of static friction:**



