

ACTIVITY NO. -10- Why do objects resist a change in motion?

Subject	Science
Class	IX
Chapter/Unit	Chapter 9-Force and laws of motion
Topic	Mass and Inertia
Time	20 Min
Nature of Activity	Group work

What will I learn (Learning Outcome)?

To relate the mass of an object to its inertia.

Skills: Analyzing and Creating

What I have to do?

To derive a relationship between mass and inertia using three discs of different masses.

What do I require?

A metal disc, a fiber glass disc and a wooden disc (attached to supports with which they can rotate about their centers) and a stop watch

What do I need to know?

The tendency of an object to resist changes in its state of motion varies with mass. Mass is that quantity that is solely dependent upon the inertia of an object. The more mass that an object has, the more inertia it has. A more massive object has a greater tendency to resist changes in its state of uniform motion or rest. This is the law of Inertia which is also called First law of Motion.

➤ Teacher's Activity

The teacher will

1. explain the concept of inertia and mass of an object.
2. explain the steps to be taken for this activity
3. divide the class into groups (having four members in each group) and ensure that each student performs the activity.

How will I proceed?

➤ Students activity

1. Take a plastic disc, a fibre glass disc and a metal disc and rotate it about its support with equal forces. Then leave it.
2. Use a stop watch to find the time taken for each disc to stop and record the observations.

What have I observed?

S. No	Material	Time (s)
<u>1.</u>	<u>Metal disc</u>	
<u>2.</u>	<u>Fibre glass disc</u>	
<u>3.</u>	<u>Wooden disc</u>	

What have I learnt?

- Inertia of an object depends on its _____.
- More the _____ of an body, more is the inertia.

What am I curious to learn?

- Let us find out if some milk is taken in a cup and stirred with a spoon, will the milk keeps on swirling even after the spoon is lifted? Why or why not?

Let me evaluate myself

Q.1. Why the discs should be rotated with equal force in the beginning of the activity?

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Q.2. How is the mass of the disc related to the inertia possessed by the particular disc?

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Q.3. How is this activity related to Newton's first law?

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Q.4. Why leaves fall down from the tree when branches of the tree are shaken?

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Q.5. What are the two things that keep an object in orbit in space? Explain.

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