

Pre-Content/content Post-Content	Learning outcomes/Objectives	
	General	Specific
Pre-Content Force, acceleration, speed and velocity. Content Inertia, Law of Inertia, applications of Law of Inertia, momentum, Second law of motion and its applications, Third law of motion and its applications, conservation of momentum. Post-Content Numerical problems based on: momentum, second law of motion and conservation of momentum	Students will be able to: analyse the first law of motion. • apply Second law of motion to daily life situations. • analyse and illustrate the Third law of motion. • Correlate the relevance of law of conservation of momentum in our day to day life.	Students will be able to: • comprehend Inertia and its relation with mass. • Develop the statement of first law of motion on the basis of their understanding. • apply the law in various situations. • comprehend the term momentum and its significance. • develop statement of second law of motion on the basis of their understanding. • apply the law in various situations. • develop statement of third law of motion on the basis of their understanding. • apply the law in various situations. • comprehend the statement of Law of conservation of momentum. • solve numerical problems based on the law of conservation of momentum. • apply the law in various situations.

Home Work /Assignments

NCERT textbook: Exercise questions can be given as the home task

Worksheets can be discussed in the class.

AND PROGRESS

Month- JULY/AUGUST
CLASS IX

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will: <u>Annexure 9(A)</u> demonstrate the Law of Inertia by rotating three discs of different materials and masses and observing the time required by them to stop. This activity shows a relation between mass and inertia. explain momentum and Second law of motion . discuss various examples of the Newton's Third law of motion and give worksheets with questions based on the Third law of motion. Mathematically prove the statement of law of conservation of momentum. guide the students to solve the NCERT questions and worksheet questions in the class.	Students will: <u>Annexure 9 (a)</u> perform the activity and answer the questions given in the worksheet prepared. comprehend the term momentum and its application in deriving the equation of Second law of motion. comprehend the examples and answer the questions in the worksheets. comprehend the proof of the law of conservation of momentum . solve the questions given in the NCERT exercise and worksheets.	

Teaching Aids: NCERT, Internet access, discs of different materials, activity kits prepared by teacher.

Methodology/Innovative: Discussion, Hands- on- activity, Demonstration method.

Interdisciplinary Links: Sports and athletics.

HOD

Coordinator

Vice-Principal.

Principal

Annexure 9 A , (a)- 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 metal disc, a fibre glass disc and wooden 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?

- We will take some milk in a cup and stir with a spoon. Will the milk keep 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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