

Pre-Content/content Post-Content	Learning outcomes/Objectives	
	General	Specific
<u>Pre Content</u> Difference between rest and motion, uniform and non-uniform motion. <u>Content</u> Rest and motion as relative terms, scalar and vector quantities, distance, displacement, speed, velocity, average speed and average velocity, acceleration, s-t and v-t graphs, equations of motion and uniform circular motion. To derive the three equations of motion with the help of velocity-time graphs. They are: 1. $v = u + at$ 2. $s = ut + \frac{1}{2} at^2$ 3. $v^2 - u^2 = 2as$. <u>Post Content</u> Numerical calculation of : distance, displacement, speed, velocity, average speed and average velocity, acceleration and equations of motion	Students will be able to: explain the concept of motion in detail. comprehend the concepts of speed, velocity, average speed, acceleration and circular motion. analyse the graphs . apply the equations of motion for calculating speed, distance, time and acceleration.	Students will be able to: - distinguish between scalar and vector quantities. differentiate between distance and displacement. illustrate uniform and non-uniform motion with the help of day to day life examples. differentiate between speed and velocity. - comprehend the definition of acceleration. demonstrate uniform circular motion. - draw and interpret s-t and v-t graphs and calculate speed and distance from them respectively. derive equations of motion graphically. - solve numericals using equations of motion.

NCERT exercise discussed in the class is given as the home task.

Worksheets can be prepared and given to the students.

AND PROGRESS

Teacher's Activity	Student's Activity	Teacher's observation and Remedial
Teacher will introduce the concept of motion and rest from the perspective of frame of reference by giving examples. explain scalar and vector quantities and ask students to classify given quantities as scalar or vector. illustrate the following quantities with the help of examples: distance and displacement, speed and velocity, average speed and average velocity and acceleration. explain the use of V-T graphs in deriving the three equations of motion. <u>Annexure 8(A)</u> demonstrate the tangential motion of a ball (originally moving in circular motion) , after it is released from a Hula hoop. discuss NCERT questions and assignments in detail.	Students will : comprehend that state of motion and rest depends on the frame of reference of the observer. classify the given quantities as scalar or vector quantity. identify differences and similarities between distance and displacement, speed and velocity and average speed and average velocity; and analyse the physical significance of acceleration. draw the graphs and analyse them. <u>Annexure 8(a)</u> perform the activity and understand the tangential motion followed by an object after it is released from a circular motion. solve the questions of NCERT and complete assignments .	

Teaching Aids: NCERT, Internet access, Power Point presentations.

Methodology/Innovative methods: Lecture, Enquiry, Discussion methods.

Interdisciplinary Links: **Mathematics:** calculation of distance and speed, interpretation of graphs, drawing graphs on the basis of given data, calculation of slope of the given graph.

English: Communication skills and confidence building while giving presentation/role play in the class.

HOD

Coordinator

Vice-Principal/Academic Supervisor

Principal

ANNEXURE 8 A, (a). – Circular motion to a linear motion.

Subject	Science
Class	IX
Chapter/Unit	Chapter 8-Motion
Topic	Tangential motion followed by an object after it is released from a uniform circular motion
Time	10 minutes
Nature of Activity	pair work

What will I learn (Learning Outcome)?

To verify that the velocity of an object undergoing uniform circular motion is tangential to the circular path at every point.

Skills: Analyzing and Creating

What I have to do?

To demonstrate through the activity that an object follows a tangential path when released from a uniform circular motion.

What do I require?

A circular plastic tube (Hula Hoop) and a ball .

What do I need to know?

Uniform circular motion can be described as the motion of an object in a circle at a constant speed. As an object moves in a circle, it is constantly changing its direction. At all instances, the object is moving tangential to the circle. A centripetal force is a force that acts on an object to keep it moving along a circular path. The direction of this force is same as the direction of acceleration.

➤ **Teacher's Activity**

Teacher will :

1. discuss uniform circular motion and the meaning of tangential motion.
2. will explain the steps of the activity.
3. make pairs and ensure that each participant in the pair performs the activity .

How will I proceed?

Students activity

1. A Hula Hoop is taken and placed on the ground.
2. A ball is taken and made to move inside the Hula Hoop in circles.
3. Once it starts moving with uniform speed, the loop is lifted from the ground.
4. The direction of the ball is observed after the loop is lifted.

What have I observed?

S. No	Motion of the ball	Type of motion
1.	Moving in the loop	
2.	Released from the loop	

What have I learnt?

Inside the circular hoop, the ball was moving in apath.

After the hoop is lifted , the ball moves in apath.

What am I curious to learn?

If I stand on a merry- go- round moving in a circular motion and jump out, what motion should be followed after jumping down from merry-go-round and why?

Let me evaluate myself

Q.1. What remains constant in a uniform circular motion?

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Q.2. Give two examples of uniform circular motion?

Q.3. Earth is moving around sun in a nearly circular path. At any instant if the gravitational force of sun is removed, what will be the path of earth? Explain your answer with the help of a diagram.

Q.4. If a bucket filled half with water is made to rotate in a circular motion, the water does not fall out. Why?

Q.5. The direction of centripetal acceleration/force is towards the centre. Then why doesn't the Earth fall inside the sun?

