

CLASS – IX
LESSON PLAN
CH- 08 Motion

Unit	PHYSICS (CH- 08 Motion)
Topic/sub-topic	CH-8 MOTION
Class Transaction	Total: 9 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires • Basic knowledge of motion and rest. • Basic different types of motion in everyday life.
Assessment of qualifying knowledge	1. Lab activity 2. Group Discussion 3. HW notebook
Objective	Students will be able to • Define motion and rest • List different types of motion • Differentiate between distance and displacement, speed and velocity • Explain scalar and vector quantities • Define acceleration • Represent various types of motion in distance time and velocity time graphs • Derive the equations of motion graphically • Explain uniform circular motion
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to • Motion is movement of an object w.r.t. reference point. • <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Critically analyse the different type of motion. • Cite examples (communication)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Class Demonstration followed by drawing inferences The students will be shown soft module and class demonstration on motion and rest. They will be asked the difference between the two. The students will then point out that the motion is relative and there is nothing like absolute rest in this universe. Active learning- <i>Rally robin</i> (Critical thinking) Introduction of the topic by the teacher Questioning- <i>Multiple level question</i>- Teacher will prepare a list of questions based on the activity and will ask these questions during

	discussions. (Critical thinking, Communication) <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. <i>Introduction of the topic</i>- PPT and Digital Content would be shared <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem MCQ Peer Assessment Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), collaborative learning, Research work/surveys
Resources	Text Book: NCERT text book for Science. Reference Book 1. CBSE Exemplar
Closure	One minute paper- what was the most important thing they learnt, what they liked , importance of the concept in our daily life
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the monthly planner by which we can assess their critical thinking and creativity HW notebooks to be marked as per the given plan: <i>Assessment Parameters:</i> The total marks for the activity is 5 marks On time submission.....1 mark Presentation/ Neatness(creativity).....1 mark Content(critical thinking and creativity).....3 marks It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.
Assessments	4 UNIT TESTS (20, 20,20, 20).....80 Marks HALF YEARLY EXAMINATION.....80 Marks ANNUAL EXAMINATION.....80 Marks PERIODIC TEST-By administering pen paper test we assess creativity and critical thinking. Half Yearly and Annual examination= Total of 80 marks each INTERNAL ASSESSMENT=20 Marks as follows (to be added at the end

	of the term) :- - Periodic Test (Unit Test) 10 Marks By administering pen paper test we assess creativity and critical thinking. - Subject Enrichment 05 Marks Science toon making depicting motion and its uses in our daily life. - Note Book Submission 05 Marks
Addressing Classroom Diversity	Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups: <i>For gifted students:</i> - Encouragement for referring other resources <i>For weak students:</i> - Buddy help to be provided - Provide grade-up classes <i>For differently abled students:</i> - Ignore spelling mistakes. - Call parents at regular intervals - Provide grade-up classes
Marks	The weightage would be given by CBSE. 1. Differentiate between the following i) scalar and vector ii) Distance and displacement 2. A train starting from a railway station and moving with uniform acceleration attains a speed 40 km per hour in 10 minutes. Find its acceleration. 3. Draw velocity-time graph for the following cases. (a) When the object is at rest (b) When the object is thrown vertically upwards 4. An artificial satellite is moving in a circular orbit of radius 42250 km. Calculate its speed if it takes 24 hours to revolve around the earth. 5. If a car moving with 36 km/hr increases its speed to 54 km/hr in 10 seconds, find (i) acceleration and (ii) distance covered by the car in this time.

Unit	PHYSICS (CH- 08 Motion)
Topic/sub-topic	Day 1 (Motion and different types of motion.)
Class Transaction	approx. 40 min

Pre-requisite for the course	This lesson requires • Basic knowledge of motion and rest. • Basic different types of motion in everyday life.
Assessment of qualifying knowledge	4. Lab activity 5. Group Discussion 6. HW notebook
Objective	Students will be able to • Define motion and rest • List different types of motion
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to • Motion is movement of an object w.r.t. reference point. • <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Critically analyse the different type of motion. • Cite examples (communication)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Class Demostration followed by drawing inferences The students will be shown soft module and class demonstration on motion and rest. They will be asked the difference between the two. The students will then point out that the motion is relative and there is nothing like absolute rest in this universe. Active learning- <i>Rally robin</i> (Critical thinking) Introduction of the topic by the teacher Questioning- <i>Multiple level question</i>- Teacher will prepare a list of questions based on the activity and will ask these questions during discussions. (Critical thinking, Communication) <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. <i>Introduction of the topic</i>- PPT and Digital Content would be shared <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem MCQ Peer Assessment Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast

	matrix), collaborative learning, Research work/surveys
Resources	Text Book: NCERT text book for Science. Reference Book 2. CBSE Exemplar
Closure	One minute paper- what was the most important thing they learnt, what they liked , importance of the concept in our daily life
Self Study, Home Work, Assignments	Link of video followed by questions

Topic	DAY 2- Distance and Displacement
Class Transaction	(40 min each)
Pre-requisite for the course	This topic requires knowledge of path travelled by a body
Assessment of qualifying knowledge	One sentence summary on basic difference between distance and displacement
Objective	Student will be able to • Differentiate between distance and displacement • Explain scalar and vector quantities
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will know and understand</i> • Uniform and non-uniform motion • Illustrate with examples scalar and vector quantities • <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Critically analyse that vector quantity has a magnitude whereas scalar quantity does not have • Explain distance is the path travelled by body whereas displacement is shortest path between initial and final position (communication)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and	Transaction would proceed in the following manner- Group Activity followed by drawing conclusions. The students will be divided into 5 groups. Each group will be provided with one problem sheet. They will find answer to the problem given in the worksheet. They will come on board using peer teaching explain to their peers their problem and result calculated. The students will then draw out the conclusion and record it. (Collaboration and critical thinking)

can use any other too.)	<i>Guided practice</i> Worksheet will be given to the students to record their observation and draw out the conclusion for the same. They will compare and contrast distance and displacement, uniform and non- uniform motion. <i>followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem MCQ Peer Assessment Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), collaborative learning, Research work/surveys
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Independent Practice- ncert questions

Topic	DAY 3- Uniform and non-uniform motion
Class Transaction	(40 min each)
Pre-requisite for the course	Basic knowledge of distance, time, speed
Assessment of qualifying knowledge	One minute paper- what is distance and how is it related to speed.
Objective	Student will be able to - Define uniform and non-uniform motion - Cite daily life examples of uniform and non-uniform motion
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will know and understand</i> - Speed, distance - Illustrate with examples scalar and vector quantities <u>SKILLS AND COMPETENCIES</u> - <i>Students would be able to</i> - Critically analyse that vector quantity has a magnitude whereas scalar quantity does not have

	- Define uniform and non-uniform motion (communication) - Cite daily life examples of uniform and non-uniform motion (critical thinking)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Group Activity followed by drawing conclusions. The students will be divided into 5 groups. Each group will be provided with one problem sheet. They will find answer to the problem given in the worksheet. They will come on board using peer teaching explain to their peers their problem and result calculated. The students will then draw out the conclusion and record it. (Collaboration and critical thinking) <i>Guided practice</i> Worksheet will be given to the students to record their observation and draw out the conclusion for the same. They will compare and contrast distance and displacement, uniform and non- uniform motion. <i>followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem MCQ Peer Assessment Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), collaborative learning, Research work/surveys
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Numericals based on distance and displacement

Topic	DAY 4 – Speed and Velocity
Class Transaction	40 min
Pre-requisite for the course	This topic requires Basic knowledge Distance, displacement and speed.
Assessment of	One minute paper- what is difference between speed and velocity

qualifying knowledge	
Objective	Given the content (topic) the students will be able to understand that sound is a
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to • Explain speed and velocity • Make calculations using correct formulae <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Solve simple numerical based on speed and velocity (critical thinking)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Group learning- Teacher will draw out the basic difference between speed and velocity with the help of class discussion. The students will be divided into 5 groups. Each group will be provided with one problem sheet. They will find answer to the problem given in the worksheet. They will come on board using peer teaching explain to their peers their problem and result calculated. The students will then draw out the conclusion and record it. (Communication, Collaboration) Techniques to be used: Quiz Daily Practice Problem Student -teacher interaction, collaborative learning, Research work/surveys
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	One sentence summary- difference between speed and velocity
Self Study, Home Work, Assignments	Link of video followed by questions

Topic	DAY 5 (Acceleration)
Class Transaction	approx. 40 min
Pre-requisite for the course	This topic requires Basic knowledge motion, scalar vector and speed velocity

Assessment of qualifying knowledge	QUIZ
Objective	Students will be able to • Explain the rate of change in velocity i.e acceleration • Explain uniformly and non-uniformly accelerated motion with examples
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to • Define Average speed and average velocity • Explain uniformly and non-uniformly accelerated motion with examples <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Translate given data into graphical representation(creativity)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- <i>Think pair and Share</i> Teacher will draw out the basic difference between average speed and average velocity and then extend the discussion to the rate of change of velocity i.e. acceleration with the help of class discussion. The students will be divided into groups of two students each. Students will solve problems based on average speed, average velocity and acceleration by doing group work ‘Think pair share’. . (critical thinking and communication) <i>Introduction of the topic</i>- PPT and Digital Content would be shared Students will then draw a sound wave and label the terms learned. <i>Guided practice</i> Students will solve problems based on the concepts taught and muddiest point discussion will take place <i>followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem Questioning Student -teacher interaction, silent/ loud reading, collaborative learning,
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	On the basis of your understanding Make calculations using correct formulae
Self Study,	Ncert numericals

Home Work, Assignments	
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Topic	DAY 6 (Distance time graph)
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This topic requires Basic knowledge of velocity speed distance and displacement
Assessment of qualifying knowledge	Translate given data into graphical representation
Objective	Plotting distance time graph and velocity time graph.
Learning Outcomes	<u>SKILLS AND COMPETENCIES</u> - <i>Students would be able to</i> • Translate the given data into graphical representation.(critical thinking) • Calculate slope(speed) from the given distance time graph
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Group learning-Loud reading of NCERT and selected article from school's HT PACE Newspaper having graphs. Teacher will extend the reading to discussion on different kinds of graphs and applications of graphs. Using Star Board and help of student volunteers to plot Distance -Time Graph and velocity-time graph from the given data. Peer teaching to find distance, time and slope (speed) from the Distance- Time graph. Peer teaching to find velocity, time, slope (speed) and area(distance) from the Velocity- Time graph .(Critical thinking and collaboration) Based on their observation they will fill the observation sheet and each group will draw conclusion and explain (communication) Techniques to be used: Daily Practice Problem MCQ Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), collaborative learning,
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Cognitive closure- Students will plot graphs and interpret them from the given worksheet.
Self Study,	Worksheet based on graphs

Home Work, Assignments	
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Topic	DAY 7 (Velocity time graph)
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	This topic requires Basic knowledge of velocity speed distance and displacement
Assessment of qualifying knowledge	Translate given data into graphical representation
Objective	Plotting velocity time graph.
Learning Outcomes	<u>SKILLS AND COMPETENCIES-</u> <i>Students would be able to</i> • Translate the given data into graphical representation.(critical thinking) • Calculate the slope of given velocity time graph
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Group learning-Loud reading of NCERT and selected article from school's HT PACE Newspaper having graphs. Teacher will extend the reading to discussion on different kinds of graphs and applications of graphs. Using Star Board and help of student volunteers to plot velocity -Time Graph and velocity-time graph from the given data. Peer teaching to find slope (acceleration) from the velocity- Time graph. Peer teaching to find velocity, time, slope (acceleration) and area(distance) from the Velocity- Time graph .(Critical thinking and collaboration) Based on their observation they will fill the observation sheet and each group will draw conclusion and explain (communication) Techniques to be used: Daily Practice Problem MCQ Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table, compare- contrast matrix), collaborative learning
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Cognitive closure- Students will plot graphs and interpret them from the given worksheet.
Self Study,	Ncert Questions

Home Work, Assignments	
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Topic	DAY 8 (Equations of Motion)
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	Basic knowledge of velocity time graphs
Assessment of qualifying knowledge	one minute paper- deduce equation of motion from graph
Objective	Derivation of equation of motion.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to Deduce equation of motion from graph <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> Solve simple numericals based on equations of motion(critical thinking)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Group work- Using the velocity time graphs drawn in previous class, derivation of equations of motion graphically using deductive reasoning approach. Peer teaching and think pair square group work for solving numerical based on equations of motion using inductive reasoning approach (Critical thinking) Techniques to be used: Daily Practice Problem MCQ Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare- contrast matrix), collaborative learning,
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Cognitive closure- students will solve numerical based on equations of motion from given worksheet
Self Study, Home Work, Assignments	Link of video followed by questions

Topic	DAY 9(Uniform Circular Motion)
Class Transaction	(approx. 40 min each)
Pre-requisite for the course	Different types of motion.
Assessment of qualifying knowledge	Give one get one- graphs and applications of graph
Objective	Deduce velocity in a circular motion.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> Students will be able to • Explain circular motion and uniform circular motion as accelerated motion. <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> • Deduce expression for velocity in circular motion. (Critical thinking and problem solving)
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Students will perform a string and stone NCERT activity to depict circular motion. Findings of the activity will be extended to discuss circular motion and uniform circular motion as accelerated motion. Using deductive approach students will deduce expression for velocity in circular motion. (Critical thinking and collaboration) Guided practice - Students will solve numericals based on circular motion from the given worksheet with group work Think Pair Square. Techniques to be used: Daily Practice Problem MCQ Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table, compare- contrast matrix), collaborative learning,
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Cognitive closure- summarization by students
Self Study, Home Work, Assignments	How can you say that uniform circular motion is an accelerated motion?