

CLASS – IX
LESSON PLAN
CHAPTER – 4: LINEAR EQUATIONS IN TWO VARIABLES

Unit	Chapter 4: Linear equations in two variables.
Class Transaction	Total: 5 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Basic knowledge of x-axis and y-axis. 2. Knowledge of how to locate a point on the number line.
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. Group Discussion 4. HW notebook
Objective	Students would be able to explore the idea of location of an object with frame of reference, to learn to locate a point in four quadrants with reference to x – axis and y – axis and to draw the graph of a given linear equation, thereby inculcating competencies like collaboration, critical thinking and creativity
Learning Outcomes	KNOWLEDGE- <i>Students will develop the ability to understand</i> 1. The Cartesian/co-ordinate plane. 2. The co-ordinate axes. 3. The quadrants and the sign of the co-ordinates of a point in different quadrants. 4. The meaning of origin. 5. Plot the points in the Cartesian plane if the co-ordinates are given. SKILLS and COMPETENCIES- <i>Students would be able to</i> 1. Write the equation in standard form 2. Frame linear equations for a given situation. 3. Plot the linear graph after finding three sets of solution for a given equation, develop critical thinking and collaboration in the process.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Inductive Deductive Reasoning, Graphic Organizers, Think, pair and share Dimensions of Learning : D1, D2, D3 Transaction would proceed in the following manner- Brain Storming-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. Introduction of the topic- ppt and Digital Content would be shared Guided practice followed by Independent Practice- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz Daily Practice Problem

	MCQ Peer Assessment Lab Activities Any Other
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks. 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.....1 mark Content.....3marks 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	Through Pen Paper Test Students will be assessed creatively and critically 4 UNIT TESTS 20 Marks each HALF YEARLY EXAMINATION 80 Marks ANNUAL BOARD EXAMINATION 80 Marks INTERNAL ASSESSMENT 10 Marks - Note Book Submission 05 Marks - Lab Practical (Subject Enrichment) 05 Marks Through lab Practical Students are assessed for Collaboration, Character building
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> - Spiral Level 3 questions to be done - Encouragement for referring other resources <i>For weak students:</i> - Spiral Level 1 to be completed - Buddy help to be provided - Provide grade-up classes <i>For differently abled students:</i> - Ignore spelling mistakes and formulae, if not written. - Call parents at regular intervals. - Provide grade-up classes. - Encourage and motivate them at every level.

Marks	The weightage would be given by CBSE.
Assessment Questions	1. Find the solution of $x - 2y = 10$. Find the points where the equation of this line cuts x-axis and y-axis. 2. Write four solutions of $5x + 2y - 7 = 0$. 3. Draw the graph of the equation $3x - 5y - 11 = 0$ and check whether the point $(1, -3)$ belongs to the line. 4. Solve the equation $3y + 1 = 2y - 4$ and represent the solution(s) on • The Number line • The Cartesian plane 5. Find the value of a if $(-1, 1)$ is a solution of the equation $3x - ay = -7$.

DAY	ONE
Objective	Enhance ability to accurately recognize and use appropriate terminology related to linear equations in two variables and developing the art of communication and critical thinking.
Assessment of qualifying knowledge	Quiz and knowledge testing on how to write equation in standard form.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the standard form of a linear equation and write the values of a, b and c <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically describe standard form of linear equation
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Inductive Deductive Reasoning, Graphic Organizers, Think pair, share Dimensions of Learning : D1, D3 Anticipatory Set: 10 min Transaction would proceed in the following manner- Facilitator will ask few questions to introduce the topic •What is an equation? •What is the meaning of coefficient? •What do you mean by linear? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to write different equation in one or two variables. The facilitator would take rounds and ensure that each learner is engaged. Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 4.1 in their notebook in the class with the help of their facilitator. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex4.1 of NCERT text book. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks.
Assessments	Oral quiz (5 minutes)
DAY	TWO
Objective	Enhance ability to accurately recognize and use appropriate terminology related to linear equations in two variables and developing the art of communication and critical thinking.
Assessment of qualifying	Quiz and knowledge testing on how to find plot the graph of a given linear equation

knowledge	
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the points by analyzing two independent information for finding the position of the point. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and creatively draw graphs of linear equations in two variables.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Inductive Deductive Reasoning, Graphic Organizers, Think pair, share Dimensions of Learning : D1, D3 Transaction would proceed in the following manner- Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic •How to locate a point on a number line? •How many solutions does a linear equations have ? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to write different real life situations in which they are supposed to draw the graph of linear equationThe facilitator would take rounds and ensure that each learner is engaged. Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 4.2in their notebook in the class with the help of their facilitator. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 4.2 of NCERT text book. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks.
Assessments	Oral quiz (5 minutes)
DAY	THREE
Objective	Enhance ability to accurately recognize and learn creatively Graph of a Linear Equation in Two Variables
Assessment of qualifying knowledge	Quiz and knowledge testing on how to plot the Graph of a Linear Equation in Two Variables
Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to understand the Plotting of point in the coordinate plane . <u>SKILLS and COMPETENCIES</u> - Students would be able to critically apply the concepts

	in given situations and collaboratively realize the fact that the order of x and y is important while plotting the coordinate (x,y) in the coordinate plane.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Inductive Deductive Reasoning, Graphic Organizers, Think pair, share Dimensions of Learning : D1, D3 Transaction would proceed in the following manner- Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min (Critical thinking) Exercise 4.3 would be discussed and students would solve different questions per group and then the questions would be crosschecked. Digital content would be used. The facilitator would take rounds and help students with their doubts. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 4.3 in their notebook in the class with the help of their teacher. The teacher would ensure that each student tries to be independent at the work as well as be under the teacher’s guidance. Independent Practice: Students will complete the remaining HW parts given in the monthly planner of Exercise 4.3 in their Math HW notebook. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks.
Assessments	Oral quiz (5 minutes)
DAY	FOUR
Objective	To solve the questions of Ex- 4.4 based on Equations of Lines Parallel to the x-axis and y-axis
Assessment of qualifying knowledge	Quiz and knowledge testing on how to plot the Graph of a Linear Equation of Lines Parallel to the x-axis and y-axis.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will develop the ability to understand the Plotting of point in the coordinate plane . <u>SKILLS and COMPETENCIES</u> - Students would be able to critically apply the concepts in given situations and collaboratively realize the fact that The graph of $x = a$ is a straight line parallel to the y-axis and the graph of $y = a$ is a straight line parallel to the x-axis.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies Used : Inductive Deductive Reasoning, Think pair, share Dimensions of Learning : D1, D3 Transaction would proceed in the following manner- Recapitulation: 5 min Oral test on the previous concept would be taken up. Discussion of topic through Collaborative Learning: 15 min

	(Critical thinking) Exercise 4.4 would be discussed and students would solve different questions per group and then the questions would be crosschecked. Digital content would be used. The facilitator would take rounds and help students with their doubts. Guided Practice: 15 min The students will solve the questions from NCERT book of Exercise – 4.4 in their notebook in the class with the help of their teacher. The teacher would ensure that each student tries to be independent at the work as well as be under the teacher’s guidance. Independent Practice: Students will complete the remaining HW parts given in the monthly planner of Exercise 4.4 in their Math HW notebook. Closure: 5 min A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks.
Assessments	Written test (5 minutes)