

CLASS – X
LESSON PLAN
CHAPTER-7: CORDINATE GEOMETRY

Unit	Algebra (Chapter 7: Coordinate Geometry)
Class Transaction	Total: 11 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires 1. Knowledge of Cartesian Plane 2. Knowledge of algebraic formulae and identities
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. HW notebook
Objective	To help the students acquire knowledge about distance formula, section formula, area of triangle, their derivation and their application.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and understand • the development of Coordinate Geometry as an algebraic tool for studying geometry of figures. • the application of Coordinate Geometry in various fields such as Physics, Engineering, Navigation, Seismology and Art. <u>SKILLS</u>- Students would be able to critically and collaboratively 1. Identify and apply Coordinate Geometry applications in various situations 2. Use different formulae to find the required fields.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Brainstorming, Muddiest Point Discussion, Think pair and Share, Numbered Heads Think Pair and Share: In this activity, students think about a particular question individually, then they form pairs to discuss their answers. Following this, the results are shared in a large classroom discussion. Alternatively, two pairs of students can pair up to compare and discuss answers. This process forces students to think individually, and then allows them to analyze and clarify their response collaboratively. Brain Storming: In this activity, students are asked to generate ideas on a certain topic, category or question while facilitator facilitate and record the answers on the board. Numbered Heads: Students are placed in groups and each person is given a number (from one to the maximum number in each group). The teacher poses a question and students "put their heads together" to figure out the answer. The teacher calls a specific number to respond as spokesperson for the group. Muddiest Point: Check comprehension and identify confusion, what was

	most confusing about the material? <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: Numbered Heads Daily Practice Problem MCQ Peer Assessment Case Studies Lab Activities Any Other	
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar	
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions from NCERT and Exemplar 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.....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	3 UNIT TESTS (20, 30, 30) MID TERM EXAMINATION HALF YEARLY EXAMINATION PRE BOARD-I EXAMINATION PRE BOARD-II EXAMINATION ANNUAL BOARD EXAMINATION PERIODIC TEST Average of the best two tests to be taken that will have a weightage of 10 marks.	80 Marks 80 Marks 80 Marks 80 Marks 80 Marks 80 Marks

	Best 2 Tests out of: Units tests, Midterm examination, Half Yearly examination. INTERNAL ASSESSMENT 20 Marks • Periodical Test 10 Marks • Note Book Submission 05 Marks • Lab Practical 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> • High order thinking questions from NCERT Exemplar • 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 and formulae, if not written • Call parents at regular intervals • Provide grade-up classes
Marks	The weightage would be given by CBSE.
Assessment Questions	Q1 Find the distance of the point (4,3) from the origin. Q2 Find the coordinates of a point which divides internally the line segment joining the points (-3, -4) and (-8, 7) in the ratio 7:5. Q3 Find k so that A(-2,3), B(3, -1) and C(5, k) are collinear. Q4 The coordinates of vertices of ΔABC are A(4,-6), B(3, -2) and C(5,2). Prove that the median divides it into two triangles of equal area. Q5 Find the ratio in which the line segment joining A (1, -5) and B (-4, 5) is divided by the x- axis. Also, find the coordinates of the point of division

DAY	ONE
Objective	Identifying the need and use of coordinate geometry.
Assessment of qualifying knowledge	Quiz and knowledge testing on coordinate axes and plane.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the different axes and points on them. <u>SKILLS</u> and <u>COMPETENCIES</u> Students would be able to Relate coordinate axes with every day life and its uses.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Brainstorming Anticipatory Set: 10 min Facilitator will ask few questions to introduce the topic like: • What do you require to locate the position of a point on a plane? • What is the distance of a point from y-axis called? • What is the distance of a point from x-axis called? • How is the graph of linear equation in 2 variables when represented graphically? Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked to make a coordinate axis and see if it goes in verse with the concepts that they have already studied. Students would be given points to plot and try to find distance between two given points on a graph sheet. Guided practice: 10 min The students will try to find distance between a given point and origin. The facilitator would take rounds and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 7.1 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 CBSE Exemplar
Self Study, Home Work,	Independent Practice: Students would do the given questions in their H.W. notebooks.

Assignments	
Assessments	Oral Test (5 minutes)
DAY	TWO
Objective	Identify when to use distance formula and use it effectively.
Assessment of qualifying knowledge	Oral test of distance formula
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Distance Formula <u>SKILLS</u> and <u>COMPETENCIES</u> Students would be able to Reason effectively and critically regarding the use of Distance Formula
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	The students will solve the questions from NCERT book, solved examples before Ex 7.1 in their notebook in the class with the help of their facilitator. The facilitator would take rounds Transaction would proceed in the following manner- Strategies Used: Inquiry Based Learning Anticipatory Set: 10 min The students would be shown various points in coordinate plane and asked about their distance from any given point. Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked shown the proof of Distance Formula using Pythagoras Theorem and hence different questions from Ex 7.2 would be discussed. Guided practice: 10 min and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 7.1 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Oral Test (5 minutes)

DAY	THREE
Objective	Identify when to use distance formula and use it effectively.
Assessment of qualifying knowledge	Quiz and knowledge testing on distance formula
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Distance Formula <u>SKILLS</u> and <u>COMPETENCIES</u> Students would be able to Reason effectively and critically regarding the use of Distance Formula
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	The students will solve the questions from NCERT book, solved examples before Ex 7.1 in their notebook in the class with the help of their facilitator. The facilitator would take rounds Transaction would proceed in the following manner- Strategies Used: Inductive Reasoning Anticipatory Set: 10 min The students would be shown various points in coordinate plane and asked about their distance from any given point. Discussion of topic through Collaborative Learning: 15 min <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be asked shown the proof of Distance Formula using Pythagoras Theorem and hence different questions from Ex 7.2 would be discussed. Guided practice: 10 min and help the students in solving the questions. Independent Practice: Students will go through the solved examples before Ex 7.1 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	FOUR

Objective	Identify and apply Section formula with 100% accuracy.
Assessment of qualifying knowledge	Quiz and knowledge testing on section formula.
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Section Formula <u>SKILLS</u> and <u>COMPETENCIES</u> Students would be able to attempt questions and apply knowledge with 90% accuracy.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Brainstorming Anticipatory Set: <u>10 min</u> • The students will be shown pictures depicting difference between similarity and congruency. • The students will be told about the criteria's of similarity and its applications. Discussion of topic through Collaborative Learning: <u>15 min</u> <u>Inquiry based learning</u> (Critical Thinking and Problem Solving) Students would be taught the Section Formula to calculate the coordinates of the point which divides a line segment joining 2 given points in a given ratio will be derived and explained to students. It will be explained to students how is it related to similarity of triangles. Guided practice: <u>10 min</u> The students will solve the questions from NCERT book, questions Ex 7.2 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 Ex 7.2 of NCERT text book. Closure: <u>5 min</u> 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	FIVE

Objective	Design a formula for finding the coordinates of the mid point of the given line segment.
Assessment of qualifying knowledge	Written test
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Mid Point Formula for given line segment. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically design a new formula from already known concepts..
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Inquiry Based Learning, Inductive and Deductive Learning. Anticipatory Set: 10 min • The students will be shown different points and asked to use section formula. • Students would then be asked to apply the same for a point when the ratio is 1:1 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 ratios for given points and find mid point formula as an off shoot of section formula. Guided practice: 10 min The students will solve the questions from NCERT book, questions from Ex 7.2 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 Ex 7.2 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	SIX

Objective	Compare the various cases of section formula where line segment is divide in two halves
Assessment of qualifying knowledge	Knowledge testing on derivation of formulae
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Mid Point Formula for given line segment. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically find midpoint of a given line segment.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Inquiry Based learning Anticipatory Set: 10 min The students will be given different points and asked to derive mid points of line segments joining them. 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 points an derive mid points and then apply it to further lines. <u>Guided practice: 10 min</u> The students will solve the questions from NCERT book, questions from Ex 7.2 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. <u>Independent Practice:</u> Students will go through the solved examples before Ex 7.2 of NCERT text book. <u>Closure: 5 min</u> 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 CBSE Exemplar
Self Study, Home Work, Assignments	<u>Independent Practice:</u> Students would do some questions from NCERT in their H.W. notebooks
Assessments	Oral Test (5 minutes)
DAY	SEVEN
Objective	Demonstrate the ability to solve questions with 100 % accuracy
Assessment of qualifying	Oral test on formulae and their derivations

knowledge	
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Mid Point and section formulae and their varied usage. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically differentiate between cases when to use both formulae objectively.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Brainstorming Anticipatory Set: 10 min The students will be asked to write the formulae and their derivation within five minutes as part of a surprise test. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking and Problem Solving) Students would be asked to write different formulae and then asked about various triangles related concepts like median and centroid. Formula for centroid would be discussed. Guided practice: 10 min The students will solve the questions from NCERT book from Ex 7.2 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 Ex 7.2 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions from NCERT in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	EIGHT
Objective	Compare the various cases of distance , section and mid point formulae
Assessment of qualifying knowledge	Quiz and knowledge testing on coordinate planes and their points

Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the usage of distance, section and mid point formulae on coordinate plane. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically different scenarios for different formulae and their usage.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Story Boarding Anticipatory Set: 10 min The students will be asked about the three mentioned formulae and black board too be used for jotting points relevant to the topics. Discussion of topic through Collaborative Learning: 5 min (Critical Thinking and Problem Solving) Students would be given a review explanation for a surprise test on different formulae and their applications. Guided practice: 25 min The students will solve the questions given and a strict time of 15 minutes would be given. The facilitator would take rounds and help the students in solving the questions. Next ten minutes would be set aside for discussion of the questions and their solutions. Independent Practice: Students will go through the solved examples before Ex 7.2 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions from NCERT in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	NINE
Objective	Demonstrate the ability to appreciate new formula for finding area of a triangle.
Assessment of qualifying knowledge	Quiz and knowledge testing on area of triangle
Learning	<u>KNOWLEDGE</u> - Students will know and identify the concept of finding

Outcomes	area of triangle using coordinate geometry <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically understand the formula for finding area of a triangle.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Deductive Reasoning Anticipatory Set: 10 min - The students will be shown different triangle and asked if the vertices are collinear - They would then be introduced to the concept of collinearity and hence the formula for finding area of a triangle. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking and Collaboration) Students would be shown different triangles and given idea about finding area of a triangle using coordinate geometry concepts. Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 7.3 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 Ex 7.3 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions from NCERT in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	TEN
Objective	Demonstrate the ability to solve questions with 90% accuracy
Assessment of qualifying knowledge	Quiz and knowledge testing on area of triangle
Learning	<u>KNOWLEDGE</u> - Students will know and identify the concept of finding

Outcomes	area of triangle using coordinate geometry <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically use the formula for finding area of a triangle.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Strategies Used: Numbered Heads Anticipatory Set: 10 min Oral Test will be taken up using Numbered Heads to recapitulate. Discussion of topic through Collaborative Learning: 15 min (Critical Thinking and Collaboration) Guided practice: 10 min The students will solve the questions from NCERT book, solved examples before Ex 7.3 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 Ex 7.3 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 CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some questions in their H.W. notebooks.
Assessments	Oral Test (5 minutes)
DAY	ELEVEN
Objective	Demonstrate the ability to solve questions with 90% accuracy
Assessment of qualifying knowledge	Quiz and knowledge testing on area of triangle
Learning Outcomes	<u>KNOWLEDGE</u>- Students will know and identify the concept of Distance Formula, Section formula, Mid Point Formula, Formula for Centroid and Area of Triangle. <u>SKILLS and COMPETENCIES</u> Students would be able to Reason effectively and critically differentiate between usage of different formulae
Transaction	Transaction would proceed in the following manner-

Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Recapitulation: <u>5 min</u> Oral Test would be taken up. Discussion of topic through Collaborative Learning: <u>10 min</u> (Critical) Students will be shown how collinearity can be shown with distance formula as well as Triangle's formula of coordinates. Guided Practice: <u>20 min</u> The teacher would explain the concept of collinearity and area of triangle. Independent Practice: Students would try questions from the NCERT and Exemplar. Closure: <u>5 min</u> Summarization, preferably by a student, would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Mathematics Reference Book CBSE Exemplar
Self Study, Home Work, Assignments	Independent Practice: Students would do some of the questions from NCERT and Exemplar in their H.W. notebooks.
Assessments	Oral Test (5 minutes)