LESSON PLAN - 7

Class: **X** Subject: **Mathematics**

Name of the teacher:

School:

Name of the chapter	Topic	Number of periods required (15)	Timeline for teaching		Any specific information
			From	To	
7. CO-ORDINATE GEOMETRY	7.1.Introduction	1			
	7.2 Distance between two points	1			History about Rene Descartes
	7.3 Distance between two points on a line parallel to the coordinate axes	1			Longitudes and latitudes of different cities
	7.4 Distance between any two points on a line in the X-Y plane.	3			
	7.5 Section formula	2			
	7.6 Centroid of a triangle	1			Information about concurrent points in a triangle
	7.7 Tri sectional points of line	2			
	7.8 Area of the triangle	3			

	7.8.1 Collinearity 7.8.2 Area of a triangle – Heron' formula				
	7.9 Straight lines 7.9.1 slope of the straight line 7.9.2 slope of a line joining two points	1			

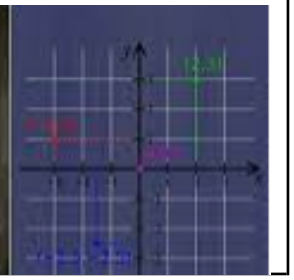
Prior Concept / Skills:	
1. Representation of integers on number line 2. Basic information about point, plane, lines and line segment 3. Concepts of Intersecting, parallel and perpendicular lines 4. Squares and square roots of numbers 5. Ratios and its terms 6. Pythagoran triplets 7. Areas and perimeters of geometrical shapes of different polygons like triangles and quadrilaterals 8. Radius, diameter and Circumference of circle 9. Median of a triangle	
Learning outcomes	**Number of Periods**

Students are able to: 1. Read and write the points located in a plane (graph)	1
2. justify the distance between two points lying on x and y - axes	1
3. Verify the distance between two points lying on a line parallel to x, y axes.	1
4. Find the relation between points under given rules.	3
5. Apply the coordinate system to find the position of towers etc., in real life	2
6. Connect the coordinate geometry to analytic geometry to find centroid of a triangle	1
7. trisect the given line segments according to the need using section formula	2
8. solve the problems related to find areas of triangle using different methods	3
9. check and give reasons for given points which are straight lines and which are not.	1

TEACHING LEARNING PROCESS

Induction/Introduction(Generating interest, informing students about the outcomes and expectations for the lesson)

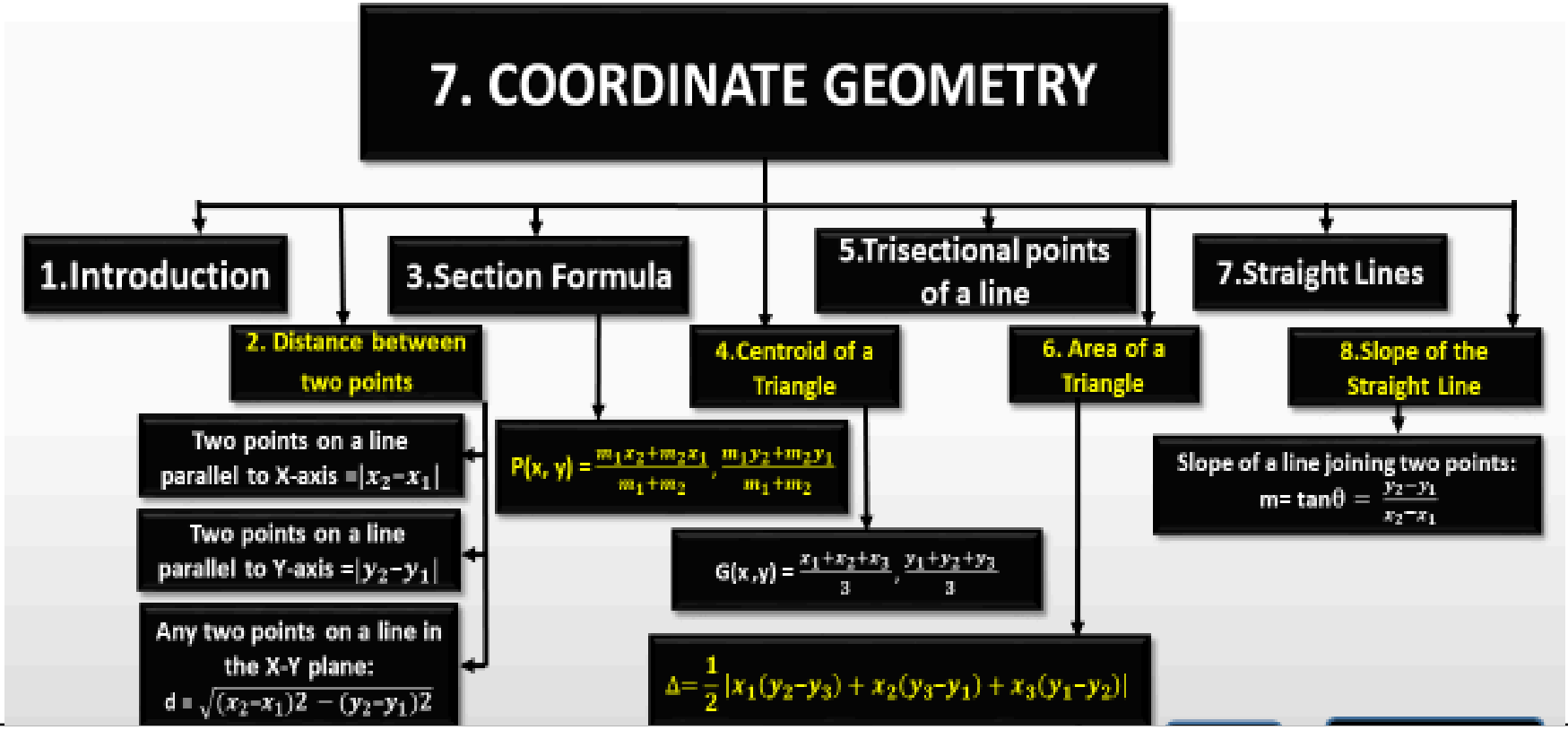
- Through an activity identify different points given different graph
- Create interest by giving historical information about the mathematician “Rene Descartes” who is known as father of co-ordinate geometry

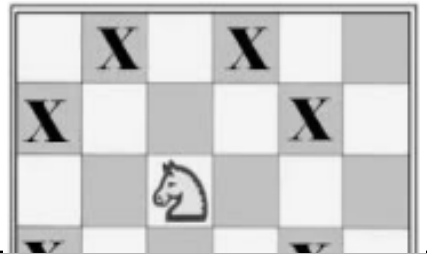
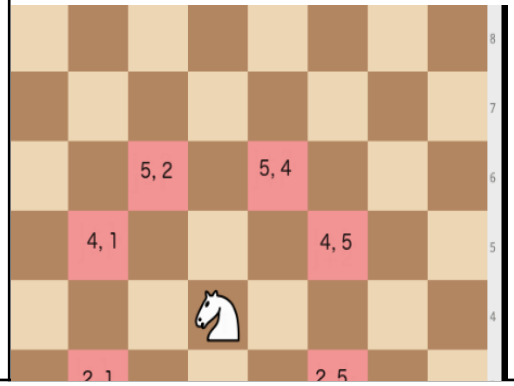
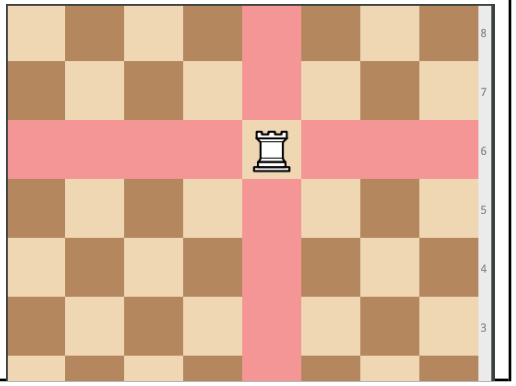


- Prepare a model of Cartesian plane with coordinate axes denoting quadrants and position of points

Experience and Reflection(Task/question that helps students explore the concept and connect with their life)

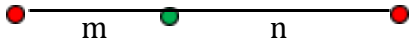
- Understand that to locate a point exactly, two references are needed.
- Apply the concepts of parallel and intersecting lines in Cartesian plane
- What is the intersecting point of x, y axes?
- Collecting and recording the different sketches of shapes which involves line segments
- Draw flow chart of the whole chapter

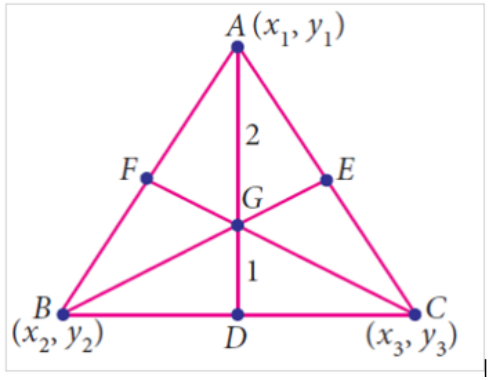
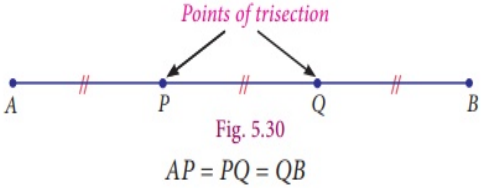
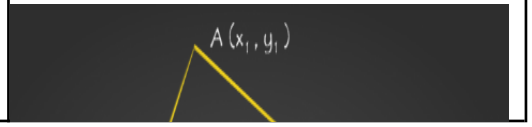


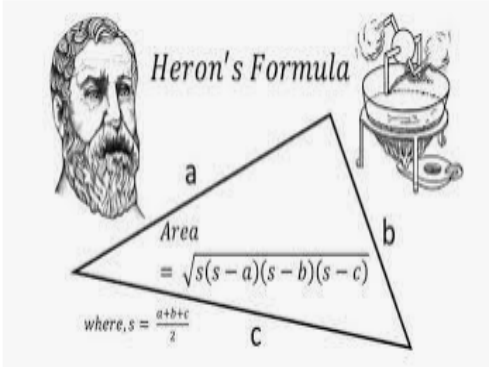
Explicit Teaching/Teacher Modelling (I Do)	Group Work (We Do)	Independent Work (You Do)	Notes
7.1 INTRODUCTION: (1) Using chessboard and its pieces, first consider the knight position as origin at the beginning, explain its movement in 4 directions. 	Write the coordinates of position of knight at first and after movement in 4 directions as Shown in figure. 	• **Do this** (page. 159)	Activity: Draw a chess board, and consider Rook and write all possibel coordinate of its position 

			in horizontal and vertical movements.
7.2 DISTANCE BETWEEN TWO POINTS: (1) Explains that the distance between any two points on x-axis or on y-axis is just the absolute difference between the x or y coordinates.	The distance between two points $(x_1, 0)$ and $(x_2, 0)$ on x- axis is $\lvert x_2 - x_1 \rvert$ The distance between two points $(0, y_1)$ and $(0, y_2)$ on y- axis is $\lvert y_2 - y_1 \rvert$	• **Do this** (page.160) • **Try This** (pg.161) • **Think – Discuss** (pg.161)	
7.3 DISTANCE BETWEEN TWO POINTS ON A LINE PARALLEL TO THE COORDINATE AXES. (1) The line joining the two points (x_1, y_1) and (x_2, y_1) parallel to x-axis, then the distance between these two points is	discussing with the friends, give the formula for distance between the line joining two points (x_1, y_1) and (x_2, y_1) to y – axis as $\lvert y_2 - y_1 \rvert$, the difference between y - coordinates.	• **Do this** (page.162) • **Do this** (page.162) • **Try This** (pg.162)	**Lab activity:** Plot some points in a graph sheet, some on x, y coordinates and some on lines parallel to x, y axes and then find the distances between them.

$\lvert x_2 - x_1 \rvert$, the difference between x-coordinates. ● Explain the examples 1 and 2 **7.4 DISTANCE BETWEEN ANY TWO POINTS ON A LINE IN THE X-Y PLANE: (3)** Explain the method of finding the formula for finding the distance between two points $A(x_1, y_1)$ and $B(x_2, y_2)$ on a line in XY- plane and gave the formula as below: AB = $\sqrt{(x_2 - x_1)^2 - (y_2 - y_1)^2}$ ● Explain examples 3 to 9 **7.5 SECTION FORMULA: (2)**	● **Think – Discuss** (pg.163) ● **Think – Discuss** (pg.164) ● Solves the problems 5, 7, 8, 11, 12 of exercise 7.1 by discussing with friends and with the help of teacher	● **Do this** (page.164) ● **Try This** (pg.164) ● Solve the problems of **Exercise 7.1**	Display the chart showing section formula and midpoint

Explains the need for finding a point which divides the given line segment. The coordinates of the point P(x, y) which divides the line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$ internally in the ratio $m_1 : m_2$ is $P(x, y) = \left(\frac{m_1x_2 + m_2x_1}{m_1+m_2}, \frac{m_1y_2 + m_2y_1}{m_1+m_2}\right)$ • Explain the examples 10 and 11	When the ratio becomes 1:1 then the point P (x, y) becomes midpoint of the given line segment AB • The midpoint joining the line segment joining the points $A(x_1, y_1)$ and $B(x_2, y_2)$ is $P(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$	• **Do this** (page.171) • **Try This** (pg.172)	$A(x_1, y_1)$ P $B(x_2, y_2)$  m n
7.6 CENTROID OF A TRIANGLE (1) Recall that centroid of a triangle is the point of concurrent of medians of a triangle. This point is denoted by 'G' and this point divides the median in the ratio 2:1.	Recall that median is a line segment joining the vertex and midpoint of its opposite side in a triangle. • The centroid $G(x, y) = \left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{2}\right)$	• **Do this** (page.173) • **Try This** (pg.173)	Chat showing the diagram of medians in a triangle and properties of its point of intersection.

• Using section formula derive the coordinates of centroid of a triangle whose vertices are $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ • Explains examples 12 and 13	• **Think _ Discuss (pg.174)**		
7.7 TRISECTIONAL POINTS OF A LINE : (2) The points which divides the line segment into three equal parts are said to be points of tri sectional. • Explains examples 14 to 17 of text book • Explain problems 7,8 and 9 of exercise 7.2	Recollect and write the properties of a parallelogram and parts of circle such as radius, diameter and circumference.	• **Do this** (page.175) • Solve the problems of exercise 7.2	 Fig. 5.30 $AP = PQ = QB$
7.8 AREA OF THE TRIANGLE: (3)	Understand the difference between methods of finding area of triangle	• **Try This** (pg.178)	

The area of triangle ABC of vertices $A(x_1, y_1)$, $B(x_2, y_2)$ and $C(x_3, y_3)$ is $\Delta = \frac{1}{2}\lvert x_1(y_2 - y_3)\rvert$ = $\frac{1}{2}\lvert x_1(y_2 - y_3) + x_2(y_3 - y_1$ • Explain the examples 18,19,20 **7.8.1 COLLINIARITY:** If three points lying on the same line, they cannot form a triangle. If three points are collinear, then the area of triangle formed by them is zero. Conversely, if area of a triangle is zero, then the given points are collinear.	(i) When two points lie on x and y axis and the origin as third vertex. (ii) When two points lies on x or y axis and the third point in any one of the quadrant (iii) When the points lie on a line parallel to x axis or y axis and the third point in any one of the quadrant. • **Think _ Discuss (pg.178)** • **Think _ Discuss (pg.181)** Recall that three or more points lying on the same line are called collinear points. • Solve the problem given in example 21 with the help of teacher.	• **Do this** (page.180) • **Try This** (pg.181) • **Do this** (page.182) • **Do this** (page.182)	**Historical Note:** 

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEAD MASTER

VISITING OFFICER WITH REMARKS