LESSON PLAN-3

Name of the teacher : Jasega E.A

Subject : Mathematics

Unit : Co-ordinates

Topic : Distances

Duration : 40'

Name of the school :

Standard : X

Strength : 17

Present : 17

Date : 8/2/2023

Curricular Objective

To understand how to find distance between 2 points on 2D plane

Content Analysis

Terms : Distance formula

Fact : All point with same y co-ordinate are on a line parallel to x-axis

- All points with same x co-ordinate are on a line parallel to y-axis.

Concept : Concept of distance between two points on a 2D plane

Formula: Distance between two points (x_1, y_1) and (x_2, y_2) is

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Symbols: (x_1, y_1), (x_2, y_2), d

Definition: Distance between two points with co-ordinates (x_1, y_1) and (x_2, y_2) is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Learning Outcome

The pupil;

- develops competency in acquiring knowledge about distance between 2 points in a plane.
- develops competency in comprehending the above mentioned facts, concepts etc.
- develops competency in applying above concept in new and unfamiliar situations such as co-ordinates of flight, aircraft etc.

- develops creativity is using above concepts in designing, construction of building etc.
- develops positive and scientific attitude towards above concept

Learning Strategies

- Collaborative learning
- Brain storming
- Group activity
- Visualization

Pre-requisites

Idea of plotting co-ordinates on 2D plane, distance on number line, idea of modulus, pythagoras theorem.

Learning Material

- Chart - to arrive at distance formula
- Activity cards - to recall previous knowledge
- Ordinary classroom equipments.

Process

- Teacher divide the class into four groups by counting numbers 1, 2, 3, 4.
- Teacher check students previous knowledge about plotting co-ordinates on 2D plane by giving activity cards.
- Teacher mark some points on board with same y co-ordinate are on a line parallel to x-axis and by help of teacher students get formula of distance between such points.
- By same process, students understand distance between points with same x co-ordinate.
- Applying pythagoras theorem students find distance between two points with x and y co-ordinates are different on activity cards.
- Using chart students arrived at the formula of distance between points (x_1, y_1) and (x_2, y_2).
- Apply formula on other situations.

Body of the lesson plan

Learning Activity	Response
Introductory Activity (10') Teacher enters the classroom and create rapport with students. Teacher divides the class into 4 groups by taking numbers 1, 2, 3, 4 and give activity cards to each group and ask them to complete it. Plot the points by drawing x and y axis A(-3, 2) B(-1, 4) C(-2, -1) D(0, 3)	Students draw x and y axis and plot A, B, C and D.

Learning Activity	Response

Answer : Students mark points on activity cards

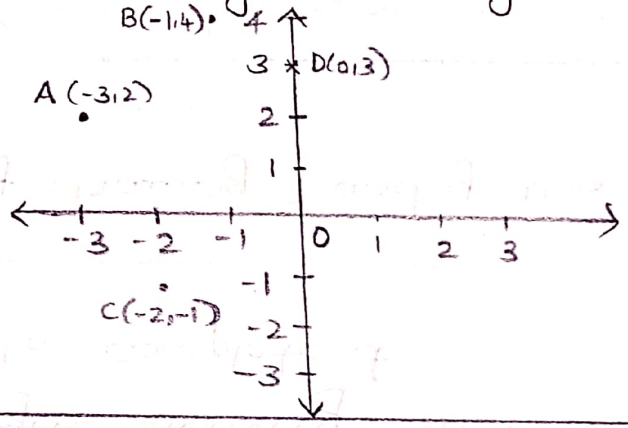
Plot the points by drawing x and y axis

A(-3,2)

B(-1,4)

C(-2,-1)

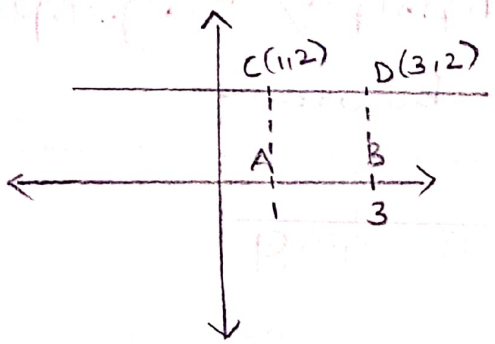
D(0,3)

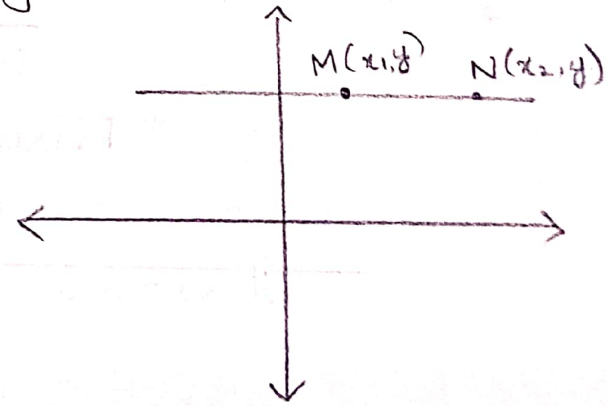


Developmental Activity

Activity-1 (5')

Teacher draw following figure on board.





Anna replied

Distance between A and B = 2

Distance between C and D = 2

Distance between M and N = $|x_2 - x_1|$

Teacher asks following questions.

- What is the distance between A and B?
- What is the distance between C and D?
- Then what is the distance between M and N?

Answer:
- 2
- 2
- $|x_2 - x_1|$

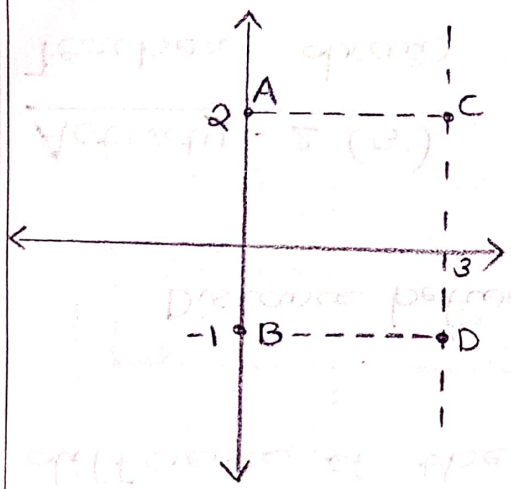
By this activity, students understand distance between two points with same y-coordinate is difference of their x-co-ordinates.

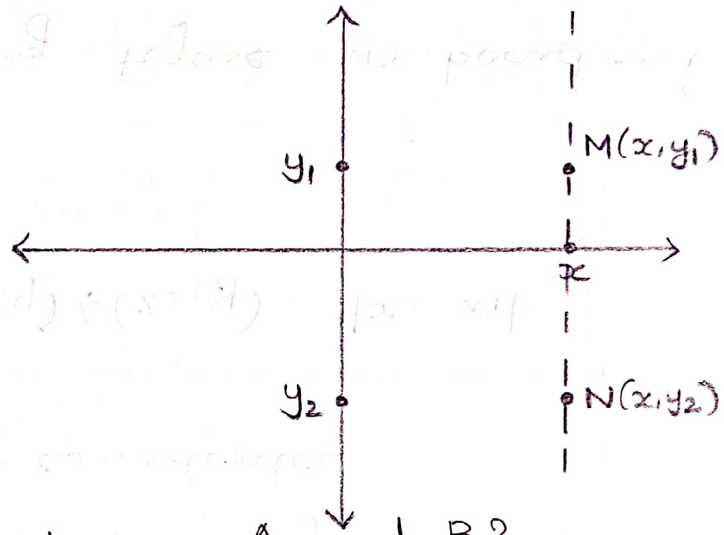
Distance between (x_1, y) & (x_2, y) = $\lvert x_2 - x_1 \rvert$

Activity - 2 (5')

Teacher draw following figure on board and ask following questions.

Learning Activity





- What is the distance between A and B?
- What is the distance between C and D?
- What is the distance between M and N?

Answer:

- 3
- 3
- $|y_2 - y_1|$

By this activity students understand the distance between 2 points with same x co-ordinate is the

Response

Amina replied distance between A and B = 3
Distance between C and D = 3
Distance between M and N = $|y_2 - y_1|$

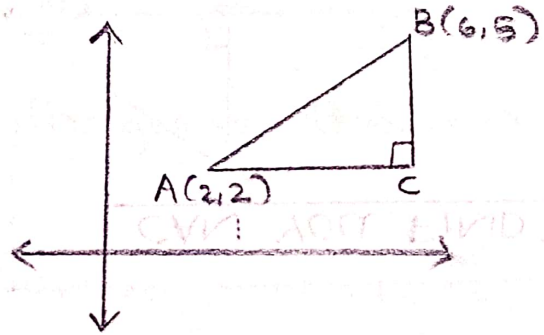
difference of this y- co-ordinates.

Distance between (x, y_1) & $(x, y_2) = \lvert y_2 - y_1 \rvert$

Activity - 3 (5')

Using chart teacher show a figure and ask students to find distance between A and B.

CAN YOU FIND?



Co-ordinate of C =

AC = BC = AB =

Dona find distance between A and B by using pythagoras theorem,

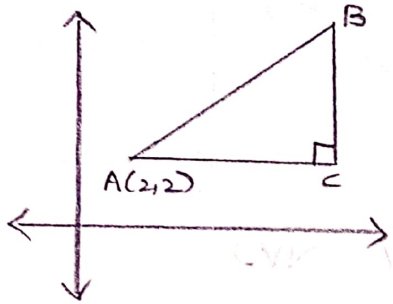
$AB = \sqrt{4^2 + 3^2} = \sqrt{25} = 5$ cm

on chart.

Learning Activity	Response

Using previous knowledge students find co-ordinates of C and sides of triangle.

CAN YOU FIND?



Co-ordinates of C = (6,2)

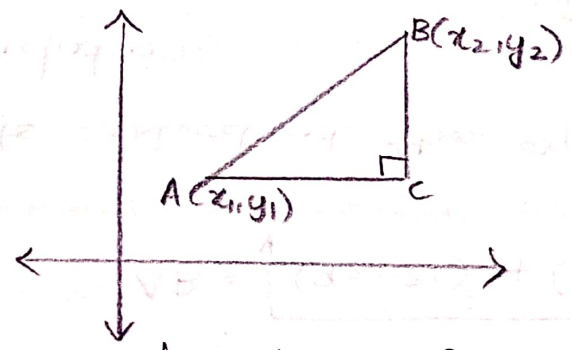
AC = 4 cm BC = 3 cm AB = 5 cm

By this activity, students understand to find distance by using pythagoras theorem.

Activity - 4 (10')

Using chart teacher show a figure and ask students to complete it.

CAN YOU FIND?



Co-ordinates of C

AC =

BC =

Distance between A and B

AB =

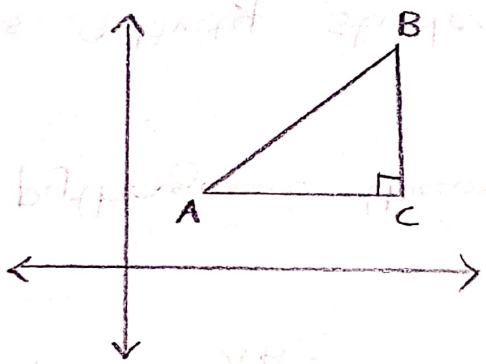
Using pythagoras theorem, students find sides

By this activity students arrived at equation to find distance.

Sreehari write distance between A & B by using pythagoras theorem and arrived at the concept.

Learning Activity	Response

CAN YOU FIND?



Co-ordinates of C $= (x_2, y_1)$

$AC = |x_2 - x_1|$ $\qquad$ $BC = |y_2 - y_1|$

Distance between A and B

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Students arrived at the equation to find distance.

Consolidation:

Distance between 2 points with co-ordinates (x_1, y_1) and (x_2, y_2) is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Application Activity (5')

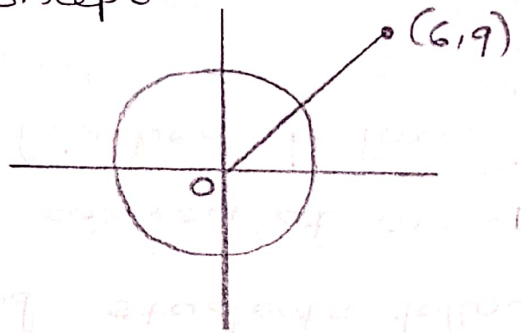
A circle of radius 10 is drawn with origin as centre

i) Check whether point (6,9) is inside, outside or on circle.

Answer: Students find distance of (6,9) from origin by applying above concept.

$\sqrt{6^2+9^2} = \sqrt{36+81} = \sqrt{117} > 10$

Outside the circle.



Feedback Activity (3')

- What is the distance between (x_1, y) and (x_2, y) ?
- What is distance formula?

By using $d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ students check distance between (0,0) & (6,9)

Akhila replied distance $= |x_2 - x_1|$

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

Learning Activity	Response
Followup Activity (2') Find distance between $(2,-4)$ and $(-2,-1)$ **Reflection** Overall the class was good students follows the instructions and finally arrived at concept as planned way. Also could finished before time up.	