

**WEEKLY HOME STUDY PACKAGE - WEEK 1 (05/07/21 – 09/07/21)**

Subject	MATHEMATICS	Year/Level	11
Strand	5 – Coordinate Geometry		
Sub-strand	5.1 – Coordinates		
Content Learning Outcome	Explore and analyze two points on a Cartesian plane		

LESSON NOTES:

The coordinates are always written in a certain order:

- the horizontal distance first,
- then the vertical distance.
- This is called an "ordered pair"

Example: (3,2) means 3 units to the right, and 2 units up

Example: (0, 5) means 0 units to the right, and 5 units up.

The point (0,0) is given the special name "The Origin", and is sometimes given the letter "O".

Distance Formula:

Used to find the distance between any two points.

1. Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. Label the ordered pairs.
3. Substitute the values into the formula.
4. Use order of operations to simplify.

Example 1:

Find the distance between the points (3,2) and (-2,-4).

Solution:

$$\begin{aligned} \text{Let } x_1 &= 3; x_2 = -2; y_1 = 2; y_2 = -4 \\ \text{Then } d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(-2 - 3)^2 + (-4 - 2)^2} \\ &= \sqrt{25 + 36} \\ &= \sqrt{61} \\ &= \underline{7.81 \text{ units}} \end{aligned}$$

Example 2:

The point (5,4) lies on a circle. What is the length of the radius of this circle if the center is located at (3,2)?

Solution:

$$\begin{aligned} \text{Let } x_1 &= 5; x_2 = 3; y_1 = 4; y_2 = 2 \\ \text{Then } d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\ &= \sqrt{(3 - 5)^2 + (2 - 4)^2} \\ &= \sqrt{4 + 4} \\ &= \sqrt{8} \\ &= \underline{2.83 \text{ units}} \end{aligned}$$

ACTIVITIES:

1. Find the distance between the points $(-4,-5)$ and $(1,-2)$.

[2 marks]

2. Find the length of the line segment whose endpoints are $(-3, 4)$ and $(5,4)$.

[2 marks]

3. The point $(5,4)$ lies on a circle. What is the length of the diameter of this circle if the center is located at $(3,2)$?

[2 marks]

4. The distance between points $(-2, 3)$ and $(x, 3)$ is 7. Find the value of x .

[2 marks]