

**WEEKLY HOME STUDY PACKAGE - WEEK 2 (12/07/21 – 16/07/21)**

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

**LESSON NOTES:**

Mid-Point formula is used to find the middle of a segment that connects two points.

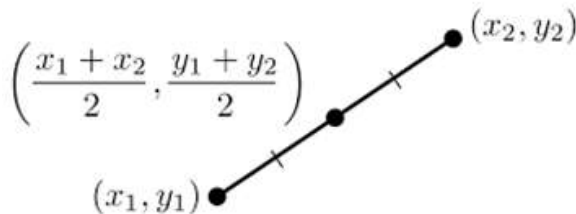
Mid-Point Formula:

1. Use  $MP = \left( \frac{x_1+x_2}{2}, \frac{y_1+y_2}{2} \right)$

2. Label the ordered pairs.

3. Substitute the values into the formula.

4. Use order of operations to simplify.

**Example 1:**

Find the midpoint of the segment connecting the points (6, 4) and (3, -4).

Solution:

$$\text{Let } x_1 = 6; x_2 = 3; y_1 = 4; y_2 = -4$$

$$\begin{aligned} MP &= \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\ &= \left( \frac{6 + 3}{2}, \frac{4 + (-4)}{2} \right) \\ &= (4.5, 0) \end{aligned}$$

**Example 2:**

M is the midpoint of  $\overline{AB}$ . The coordinates of A are (2,3) and the coordinates of M are (4, 6). Find the coordinates of B.

Solution:

$$\text{Let } x_1 = 2; x_2 = x; y_1 = 3; y_2 = y$$

$$MP = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$(4, 6) = \left( \frac{2 + x}{2}, \frac{3 + y}{2} \right)$$

$$\text{Implies } 4 = \frac{2+x}{2} \text{ and } 6 = \frac{3+y}{2}$$

$$8 = 2 + x \text{ and } 12 = 3 + y$$

$$x = 6 \quad \text{and} \quad y = 9$$

**ACTIVITIES:**

- Find the midpoint of the segment connecting the points (1, 2) and (3, 6). **(2 marks)**
- M is the midpoint of  $\overline{AB}$ . The coordinates of A are (-2, 3) and the coordinates of M are (1,0). Find the coordinates of B. **(2 marks)**