

Finding The Midpoint Coordinates

The midpoint of a line segment in a coordinate plane is the point that is exactly halfway between the endpoints. To find the midpoint, use the formula:

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

where (x_1, y_1) and (x_2, y_2) are the coordinates of the endpoints.

Worked Example

Example: Find the midpoint between the points $A(2,3)$ and $B(8,11)$.

Solution:

$$M = \left(\frac{2 + 8}{2}, \frac{3 + 11}{2} \right) = (5,7)$$

Multiple Choice Questions

1. What is the midpoint of the line segment joining $(4,6)$ and $(8,2)$?
 - a) $(6,4)$
 - b) $(12,8)$
 - c) $(2,4)$
 - d) $(8,6)$

2. Which of the following is the midpoint of the segment with endpoints $(-3,5)$ and $(5,-1)$?
 - a) $(1,2)$
 - b) $(4,2)$
 - c) $(1,-3)$
 - d) $(2,1)$

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Fill in the Blank Questions

1. The midpoint of the segment with endpoints $(0,0)$ and $(10,4)$ is _____.
2. The midpoint between $(-6, -2)$ and $(2,6)$ is _____.

True/False Questions

1. True or False: The midpoint of $(7,3)$ and $(1,9)$ is $(4,6)$.
2. True or False: The midpoint of $(-4,8)$ and $(0,4)$ is $(-2,6)$.

Short Answer Questions

1. Explain why the midpoint formula works for any two points on a coordinate plane.
2. Find the midpoint of the points $(12, -4)$ and $(6,8)$.

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Answer Key

Multiple Choice Answers:

1. a) (6,4)
2. a) (1,2)

Fill in the Blank Answers:

1. (5,2)
2. $(-2,2)$

True/False Answers:

1. True
2. True
- 3.

Short Answer Answers:

1. The midpoint formula averages the x and y values of the endpoints, giving a point exactly halfway between them.
2. (9,2)