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Midpoint Of A Line Segment

- Part I. *Model Problems(with solutions)*
- Part II. *Practice Problems with challenge problems*
Think Pair Share
- Part III. *Find endpoint given midpoint practice*

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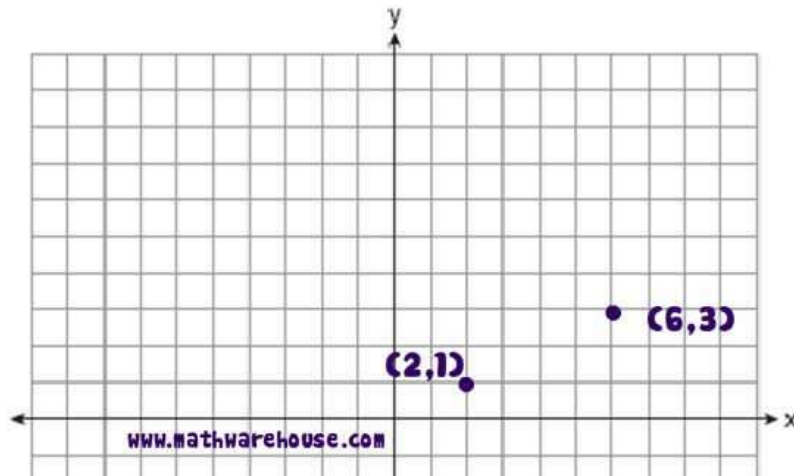
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Midpoint Of A Line Segment

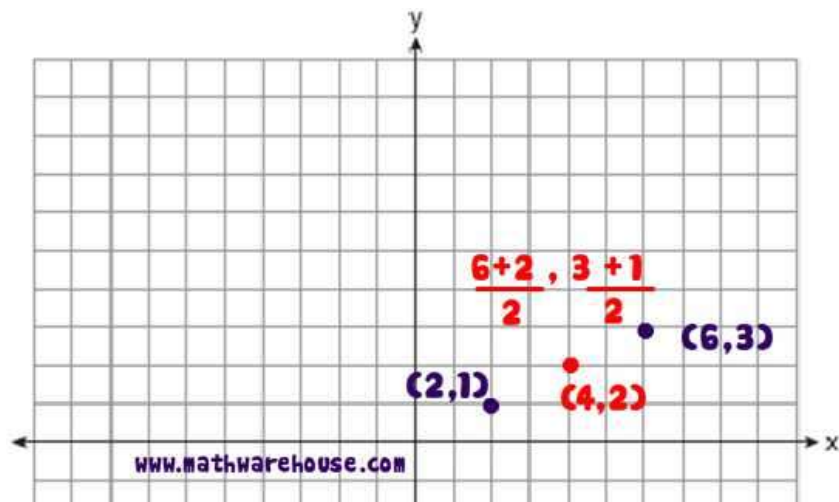
Model Problem 1) What is the midpoint of $(6,3)$ and $(2,1)$?



Model Problem 2) What is the midpoint of $(8,7)$ and $(4,3)$?

Model Problem Answers

1) What is the midpoint of (6,3) and (2,1) ?



Midpoint Formula

The midpoint M of a line segment with endpoints A(x_1, y_1) and B(x_2, y_2) is:

$$\text{Midpoint} = \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$

II. Practice Calculating the Midpoint

Find the midpoint of the line segment whose endpoints are:

a) $(6, 1)$ and $(2, 3)$

b) $(0, 3)$ and $(-4, 1)$

c) $(-2, 3)$ and $(2, 3)$

d) $(5, -3)$ and $(5, 7)$

e) $(-4, -5)$ and $(6, -3)$

f) $(-4, -3)$ and $(-6, -2)$

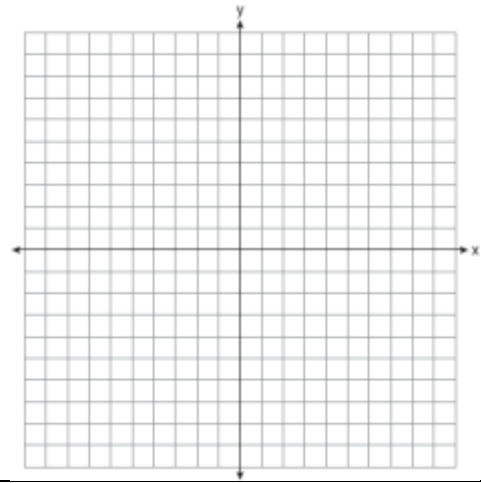
g**) $(3a, -b)$ and (a, b)

H**) $(4a, d)$ and $(6a, 3d)$

Think Pair Share

If you know that the endpoint of a segment is $(2,3)$ and its midpoint is $(4,7)$, is it possible to find the other endpoint? (try graphing the points out to try to answer this)

If so, what is the other endpoint?



Part III. If you know the midpoint and 1 point, how do you find the other point.

1) The midpoint of line segment \overline{AB} is M. The coordinates of M are (3, -2) and the coordinates of A are (-1, 0). What are the coordinates of B?

2) The coordinates of the midpoint of a segment are (3, 7). If the coordinates of one endpoint are (-2, 4), find the coordinates of the other endpoint.

3) The midpoint M of \overline{AB} has coordinates (4, 9). If the coordinates of A are (2, 8), what are the coordinates of B?

4) If the midpoint of a line segment is (-5, -2) and one endpoint is (-2, -2), what is the other endpoint?

5) If the midpoint of a line is (4, 1) and an endpoint is (8, 1), what is its other endpoint?
(a) (3, 5) (b) (4, 0) (c) (0, 1) (d) (-4, 1)

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