

Midpoints

Thank you for your interest in my product. This Sample should give you a good idea of the quality of the material as well as the method of content presentation you will see in the complete version. Most of the content has been removed.

This Sample showcases the Teacher version that has all the blanks filled in. In the student version, anything that is bolded and enlarged here will not be present. I do this to ensure my students are engaged in the lesson but at the same time, aren't spending all their time writing. This leaves more time for discussion and practice.

Summary:

1. The x coordinate of the midpoints of a horizontal line segment are the mean of the x coordinates of the endpoints. That, is

$$x_M = \frac{x_1 + x_2}{2}$$

Therefore, its coordinates are $\left(\frac{x_1 + x_2}{2}, y\right)$ where y is the y coordinate of both endpoints.

2. The **This section of the lesson has been removed.**

Example 1: Determine the midpoints of the following line segments without graphing.
State whether the line segment is vertical or horizontal.

a) **This section of the lesson has been removed.**

b) **This section of the lesson has been removed.**

Horizontal since the y coordinate is constant.

$$x_M = \frac{x_1 + x_2}{2}$$

$$x_M = \frac{-3 + 9}{2}$$

$$x_M = \frac{6}{2}$$

Therefore, the coordinates of the midpoint are (3, -6).

Summary: The coordinates of the midpoints of any line segment are the mean of the x

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

Example 2: This section of the lesson has been removed.

Example 3: This section of the lesson has been removed.

Finding the Endpoint of a Line Segment Given Coordinates of the other Endpoint and the Midpoint

Example 4: For line segment PQ, one endpoint is P(3, 5) and the midpoint is (2, -7). Determine the coordinates of endpoint Q.

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

$$(2, -7) = \left(\frac{3 + x}{2}, \frac{5 + y}{2} \right)$$

$$2 = \frac{3 + x}{2}$$

$$2 \times 2 = 3 + x$$

$$4 - 3 = x$$

$$1 = x$$

$$-7 = \frac{5 + y}{2}$$

$$-7 \times 2 = 5 + y$$

$$-14 - 5 = y$$

$$-19 = y$$

Therefore, the endpoint Q is (1, -19).

Terminology Related to Midpoint

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