Title of Lesson: 5.1.1 Line Segments

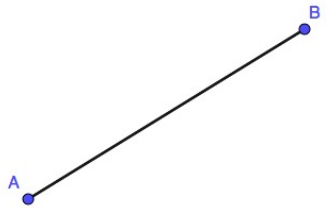
By the end of this lesson, I will be able to answer the following questions…

1. What is a line segment and what notation is used to represent it?

2. How do I use slope and ratio to dissect a line into equal parts?

Vocabulary

1. **Line Segment** - part of a **line** that is bounded by two distinct end points, and contains every point on the **line** between its endpoints.



Line Segment AB can be written as $\overline{AB}$ or $\overline{BA}$

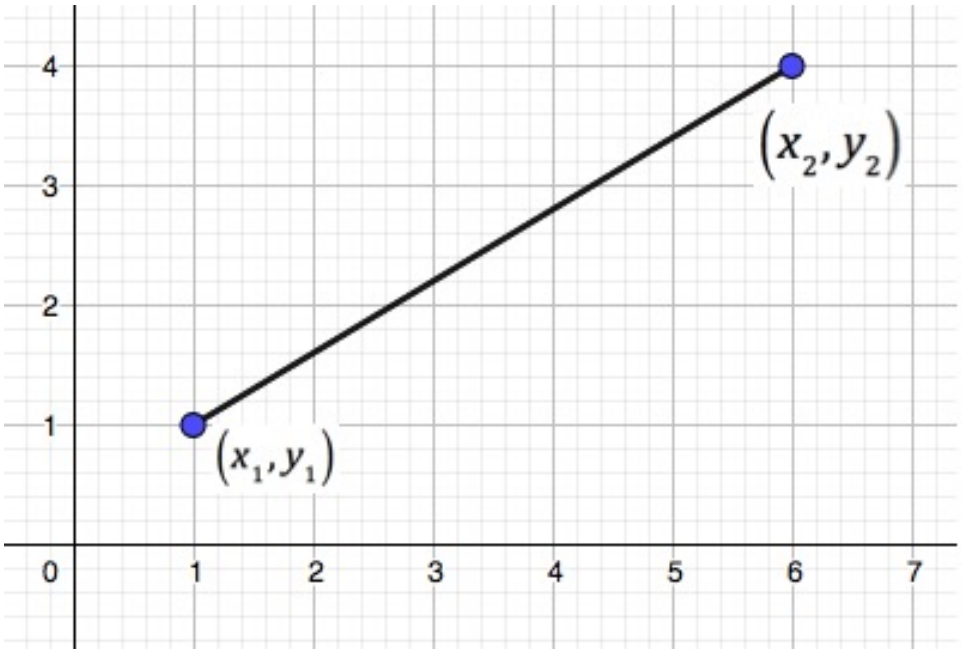
2. **Slope** $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

3. **Midpoint Formula**

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

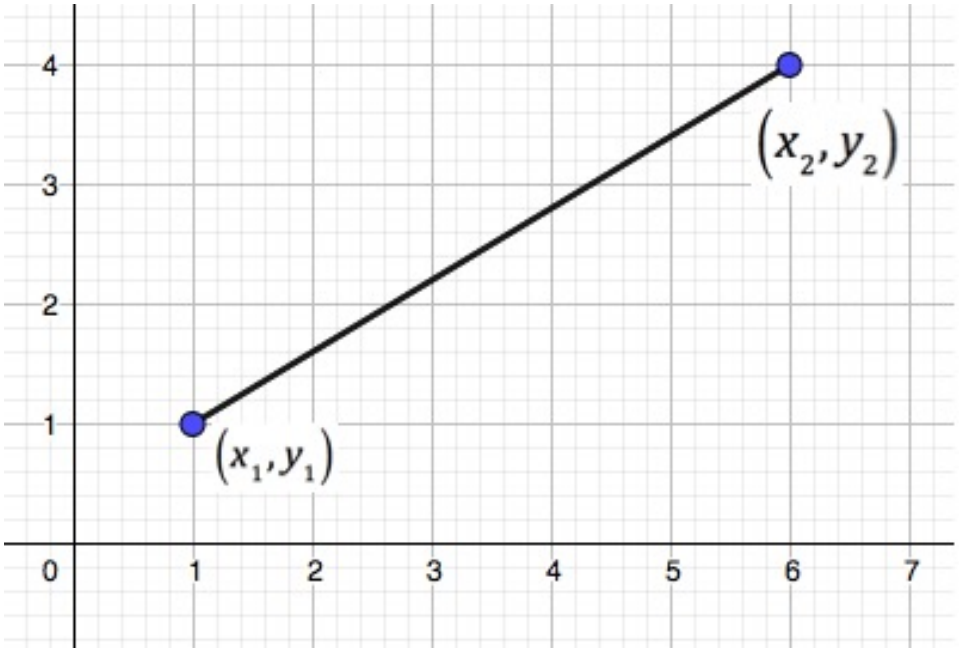
4. **Distance Formula**

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$



Prerequisite Skills with Practice

Discovering the Distance Formula from the Pythagorean Theorem.



Calculate the *slope, midpoint and length* of the line segment with endpoints (–2, 1) and (4, 10).

SLOPE

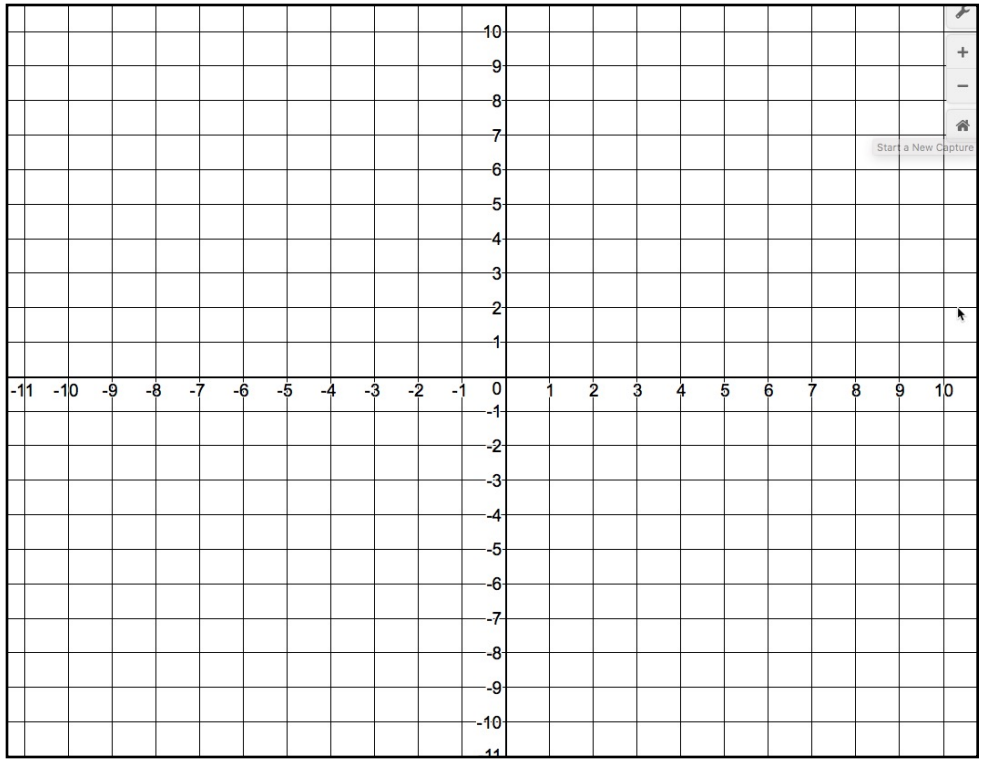
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

MIDPOINT

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

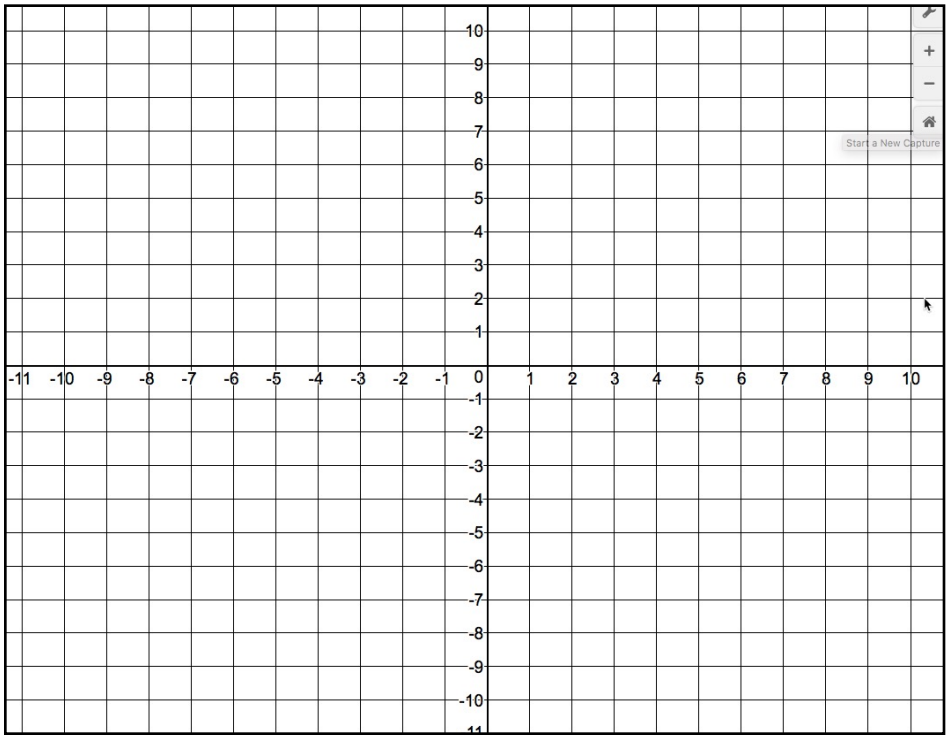
DISTANCE

$$d = \sqrt{\left(x_1 - x_2\right)^2 + \left(y_1 - y_2\right)^2}$$

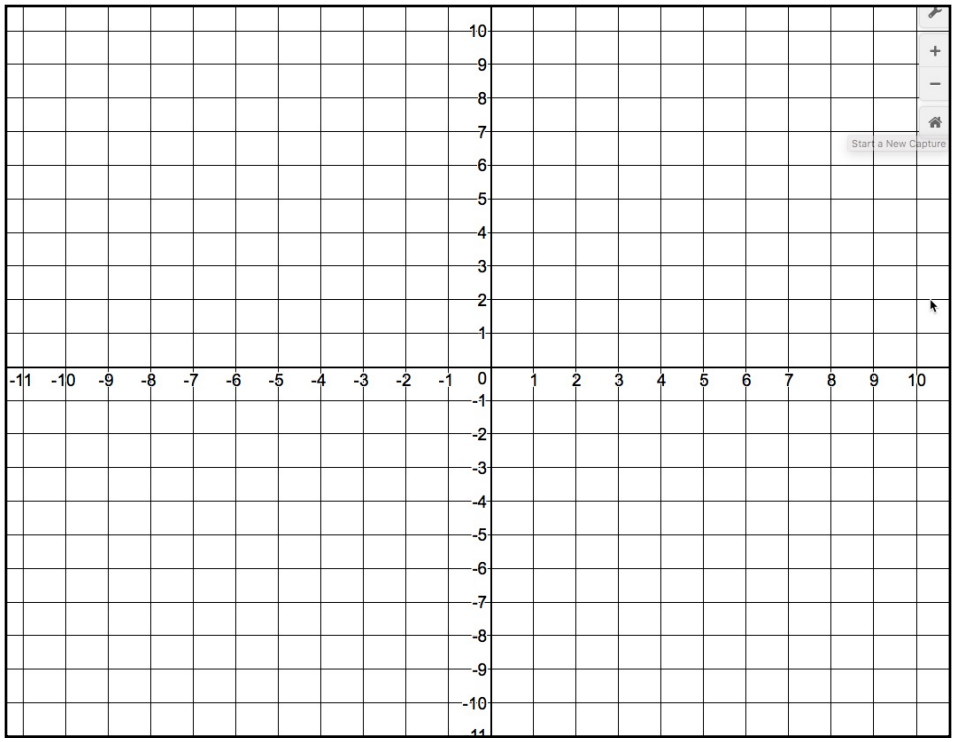


Determine the point that is 1/4 the distance from the endpoint (–3, 7) of the segment with endpoints (–3, 7) and (5, –9).

Determine the point that is 2/3 the distance from the endpoint (-3, 7) of the segment with endpoints (-3, 7) and (–9, 4).



A line segment has one midpoint at (2, 0) and a endpoint of (10, –2). Locate the second endpoint.



THE END

Visit PlottsMath for assignment details