

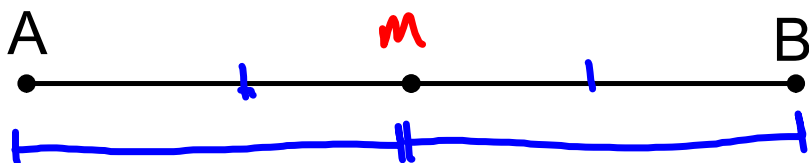
Geometry - Section 1.3

- Terms
 - > Midpoint (Formula)
 - > Bisector (Segment Bisector)
 - > Distance (Formula)

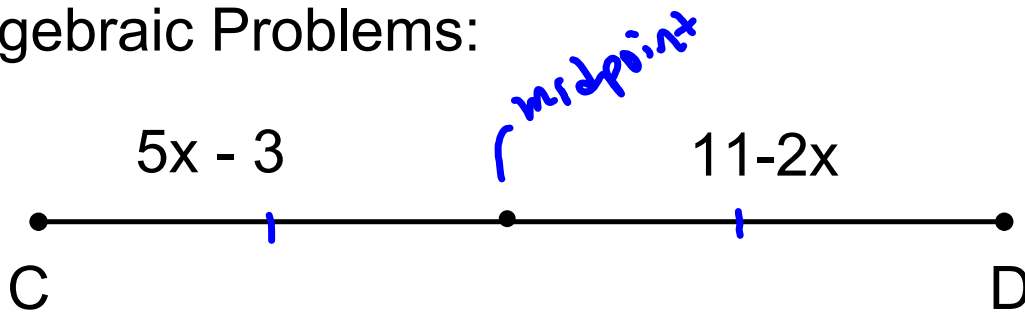
In 1.2 we were using a Ruler to measure the lengths of segments, approximating the length. Today we'll be using a formula that gives Exact answers.

Midpoint: The midpoint divides a segment into two congruent segments.

Using hash marks to demonstrate congruence.



Algebraic Problems:



Solve for x.

$$5x - 3 = 11 - 2x$$

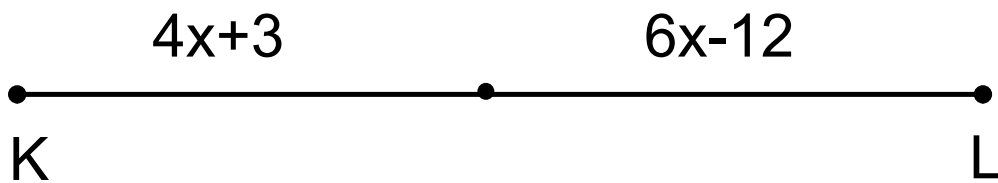
$$\begin{array}{c} +2x \quad \downarrow \quad +2x \\ 7x - 3 = 11 \end{array}$$

$$\begin{array}{c} +3 \quad +3 \\ 7x = 14 \end{array}$$

$$\frac{7x}{7} = \frac{14}{7}$$

$$x = 2$$

Now you try!



Solve for x.

$$4x+3 = 6x-12$$

-4x -4x

$$3 = 2x - 12$$

+12 +12

$$\frac{15}{2} = \frac{2x}{2}$$

$$x = \frac{15}{2}$$

*you can
move the
x's to either
side*

1.3 Using Midpoints and Distance Formula.notebook

Finding the Midpoint Algebraically:

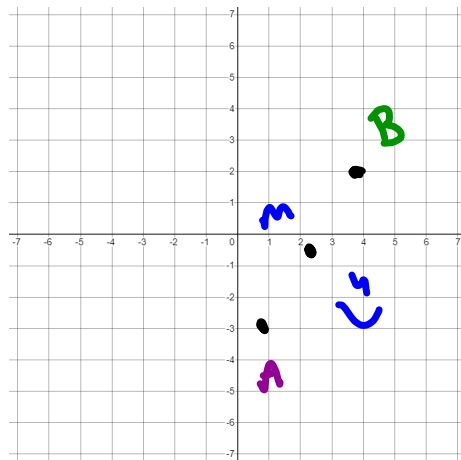
Given (x_1, y_1) (x_2, y_2)

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

Find the Midpoint of

$(1, -3)$ and $(4, 2)$

$$\frac{1+4}{2}, \frac{-3+2}{2}$$
$$\left(\frac{5}{2}, -\frac{1}{2} \right)$$



Plot it, does it look like the midpoint?

You can also find the length of a segment by using the distance formula.

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

Given (x_1, y_1) (x_2, y_2)

Find the distance of RS given that R(2, 3) and S(4, -1)

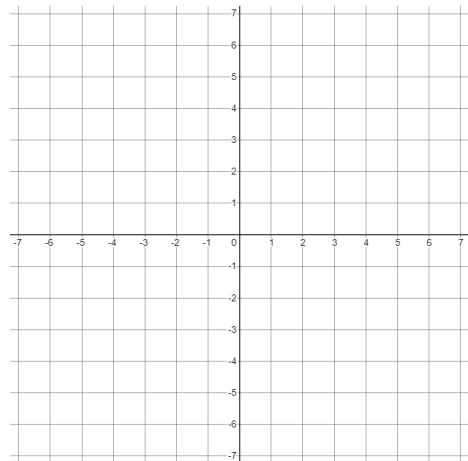
x_1, y_1

x_2, y_2

$$d = \sqrt{(4 - 2)^2 + (-1 - 3)^2}$$

$$d = \sqrt{2^2 + (-4)^2} = \sqrt{4 + 16}$$

$$d = \sqrt{20}$$



Homework:

Pages 24-26

Numbers: 7-9, 15-17, 23, 24, 37, 38

Tip on #38: Draw a coordinate plane and use ordered pairs to help you. For example, "20 blocks EAST and 12 blocks NORTH would be (20, 12) since you went Right(east) 20 and Up(north) 12.