Lesson 1.2 Line Segments

Sunday, September 07, 2025 9:35 PM

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Lesson 1.2 Line

Lesson 1.2 Line Segments

Workbook pages 15-18

MA.912.GR.5.1

Construct a copy of a segment or an angle.

Content Objective

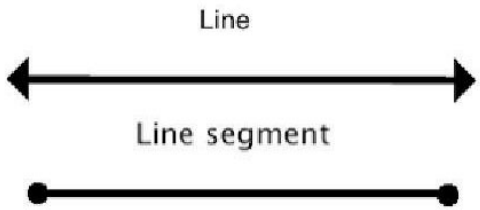
Students will calculate measures of line segments.

Learn

Betweenness of Points

A **line segment** is a measurable part of a line that

consists of two points, called endpoints, and all the points between them. The two endpoints are used to name the segment.



Students, drag the icons!

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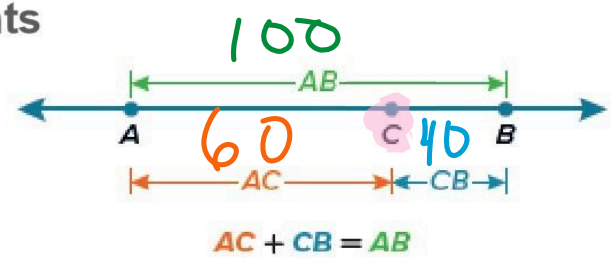
Learn

Betweenness of Points

Key Concept: Betweenness of Points

Point *C* is between *A* and *B* if and only if *A*, *B*, and *C* are collinear and *AC* + *CB* = *AB*.



In the example above, line segment *AB*, also written $\overline{AB}$, has endpoints *A* and *B* and contains point *C*. *AB* is the measure of $\overline{AB}$, *AC* is the measure of $\overline{AC}$, and *CB* is the measure of $\overline{CB}$.

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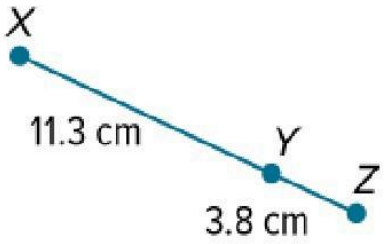
Example 1
Find Measurements by Adding

Find the measure of $\overline{XZ}$.



$$\begin{array}{r} 11.3 \\ +\ 3.8 \\ \hline 15.1 \end{array}$$

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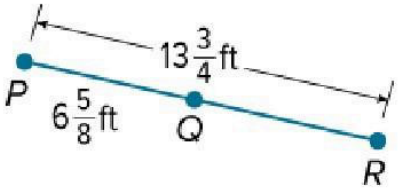
Example 2
Find Measurements by Subtracting

4, 8, 12, 16
8, 16

Find the measure of $\overline{QR}$.



$$13\tfrac{3}{4} \times \tfrac{2}{2} = 13\tfrac{6}{8}$$

$$-\ 6\tfrac{5}{8} \times \tfrac{1}{1} = 6\tfrac{5}{8}$$

$$7\tfrac{1}{8}$$

8

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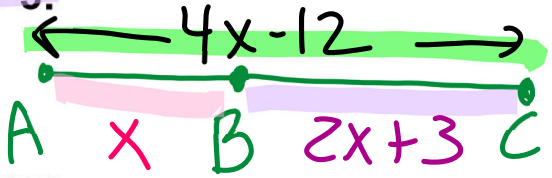
Example 3

Write and Solve Equations to Find Measurements

Find the value of *x* and *BC* if *B* is between *A* and *C*, *AC* = 4*x* − 12, *AB* = *x*, and *BC* = 2*x* + 3.



Step 1 Sketch two points and label them *A* and *C*. Connect the points.

Step 2 Sketch point *B* between points *A* and *C*.

Step 3 Label segments *AB*, *BC*, and *AC* with their given measures.

$x + 2x + 3 = 4x - 12$

$3x + 3 = 4x - 12$

$-3x \quad -3x$

$3 = x - 12$

$3 = 1x - 12$

$+12 \quad +12$

$15 = x$

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Example 3

Write and Solve Equations to Find Measurements

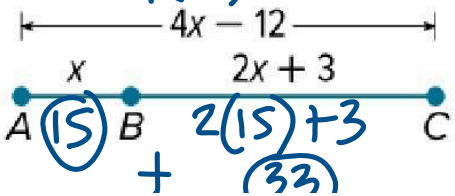
Step 4 **Use betweenness of points to write an equation and solve for *x*.**

Betweenness of points

$AC = AB + BC$

$4x - 12 = x + 2x + 3$

$4(15) - 12 = 48$ ✓



$4x - 12 = 3x + 3$
$-3x \quad -3x$
$x - 12 = 3$
$+12 \quad +12$
$x = 15$

Step 5 Find *all the lengths to prove:*

AB = 15 ***BC =*** 33 ***AC =*** 48

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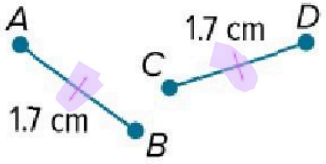
Learn
Line Segment Congruence

If two geometric figures have exactly the same shape and size, then they are **congruent**. Two segments that have the same measure are **congruent segments**.

Key Concept: Congruent Segments

$\cong$ is read *is congruent to*. Tick marks on the figure also indicate congruence. Use a consecutive number of tick marks for each new pair of congruent segments in a figure.



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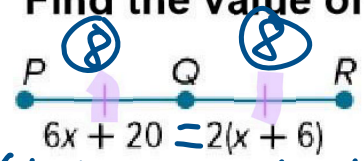
Example 5
Write and Solve Equations by Using Congruence

Find the value of *x*.



$6(-2)+20$ $\quad 2(-2+6)$

$-12+20$ $\quad 2(4)$

$8 \quad 8$

$6x+20=2(x+6)$

$6x+20=2x+12$

$-20 \quad -20$

$6x=2x-8$

$-2x \quad -2x$

$\frac{4x}{4}=\frac{-8}{4}$

$x=-2$

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