

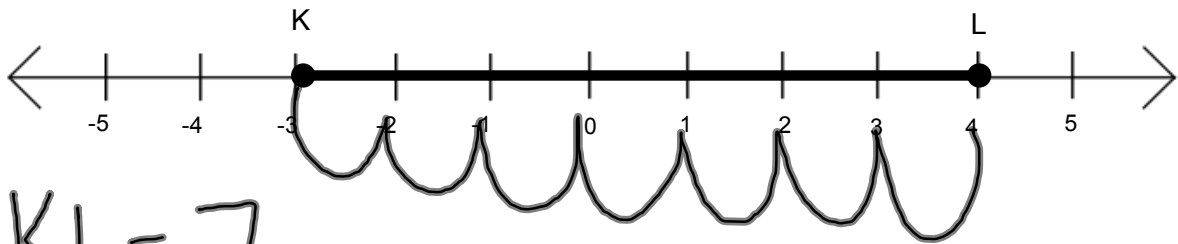
Bellwork 08/19/2011

1. Find CE.



$$7 + 15$$
$$CE = 22$$

2. Find KL.

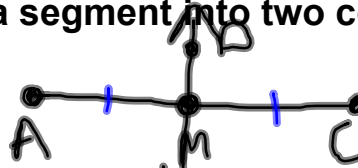


$$KL = 7$$

Geometry
1.3 Use Midpoint and Distance Formulas
Standard(s): 3

Vocabulary:

1. **Midpoint:** the point that divides a segment into two congruent segments.



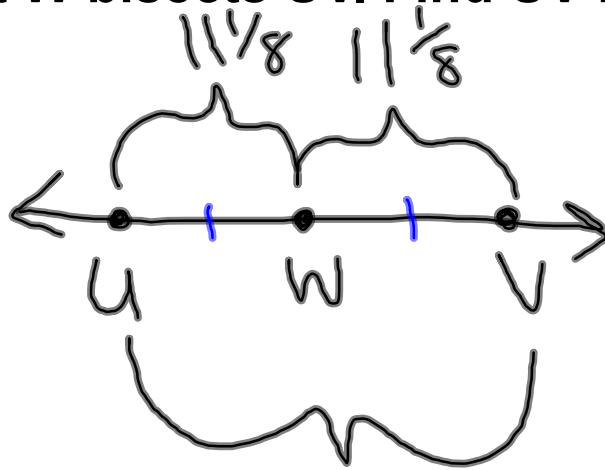
2. **Segment Bisector:** a point, ray, line segment, or plane that intersects the segment at its midpoint.

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

4. **The Distance Formula:** $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

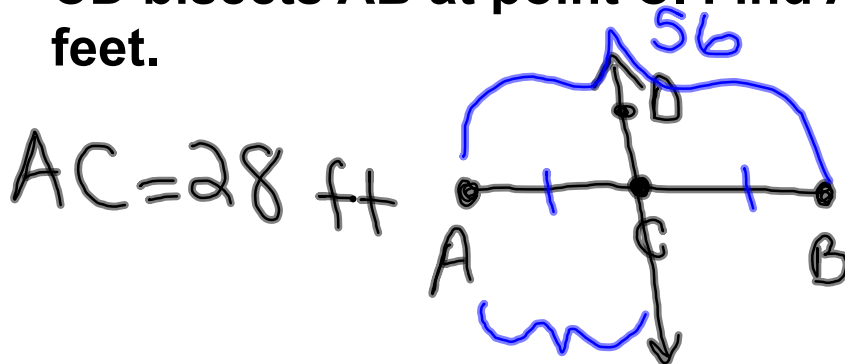
Find Segment Lengths

Point W bisects \overline{UV} . Find UV if $WV = 11\frac{1}{8}$ in.



$$11\frac{1}{8} + 11\frac{1}{8}$$
$$UV = 22\frac{1}{4} \text{ in.}$$

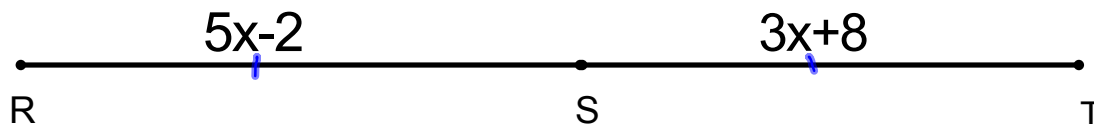
\overline{CD} bisects \overline{AB} at point C. Find AC if $AB = 56$ feet.



$$AC = 28 \text{ ft}$$

Use Algebra with Segment Lengths

Point S is the midpoint of \overline{RT} . Find ST.

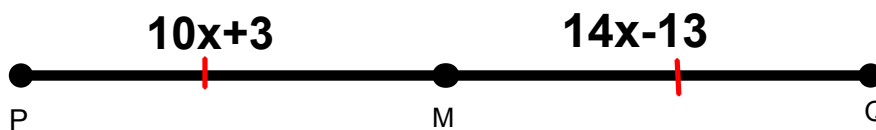


$$\begin{array}{r}
 5x-2 = 3x+8 \\
 -3x \quad -3x \\
 \hline
 2x-2 = 8 \\
 +2 \quad +2 \\
 \hline
 2x = 10 \\
 x = 5
 \end{array}$$

$$\begin{array}{r}
 3(5) + 8 \\
 15 + 8
 \end{array}$$

$$ST = 23$$

Find PQ.



$$\begin{array}{r}
 10x+3 = 14x-13 \\
 -10x \quad -10x \\
 \hline
 3 = 4x-13 \\
 +13 \quad +13 \\
 \hline
 16 = 4x \\
 4 = x
 \end{array}$$

$$4x = 16$$

$$x = 4$$

$$10(4) + 3 + 14(4) - 13$$

$$PQ = 86$$

Use the Midpoint Formula

Find the coordinates of the midpoint of the segment with the given endpoints.

\overline{GH} : $G(7, -2)$ and $H(-5, -6)$

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

$$\left(\frac{7 + (-5)}{2}, \frac{-2 + (-6)}{2} \right)$$

$$\left(\frac{2}{2}, \frac{-8}{2} \right)$$

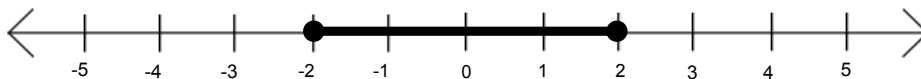
$$(1, -4)$$

\overline{VW} : $V(2, 4)$ and $W(7, 6)$

Find the length of the segment. Then find the coordinate of the midpoint of the segment.

$$\left(\frac{-2 + 2}{2} \right) = \frac{0}{2} = 0$$

Number line \rightarrow $\left(\frac{x_1 + x_2}{2} \right)$



Use the Distance Formula

The endpoints of the segment are given. Find the segment length.

\overline{PQ} : $P(x_1, y_1)$ and $Q(x_2, y_2)$
 $PQ: P(2, 5)$ and $Q(-4, 8)$.

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

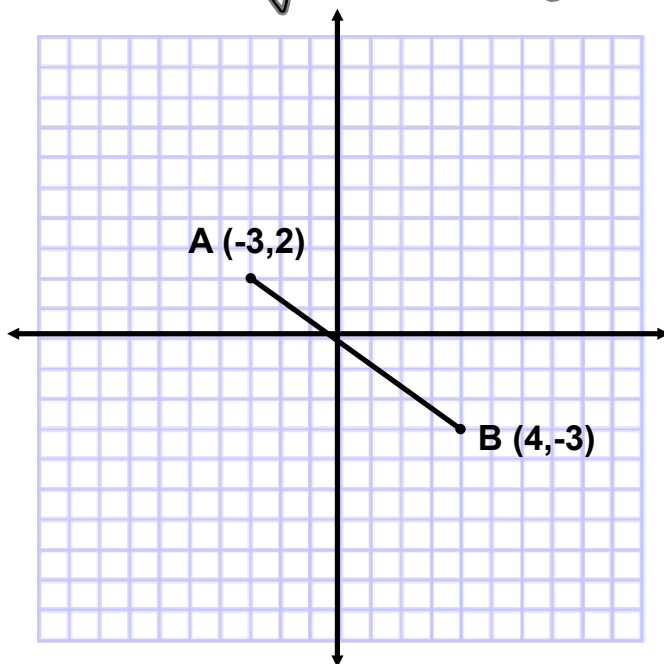
$$\sqrt{(-4 - 2)^2 + (8 - 5)^2}$$

$$(-6)^2 + (3)^2$$

$$\sqrt{36 + 9}$$

$$\sqrt{45} \approx 6.7$$

$$PQ \approx 6.7$$



\overline{AB} : $A(x_1, y_1)$ $B(x_2, y_2)$
 $AB: A(-3, 2)$ $B(4, -3)$

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

$$(7)^2 + (-5)^2$$

$$\sqrt{49 + 25}$$

$$\sqrt{74} \approx 8.6$$

$$AB \approx 8.6$$

Homework Assignment

Worksheet 1.3B

