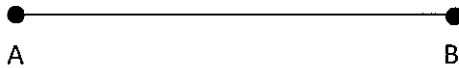


Coordinate - A number used to identify the location of a point.

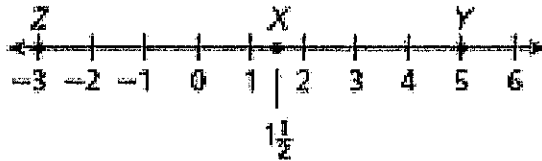
Distance - The distance between any two points is the absolute value of the difference of the coordinates. Distance is also referred to as the length.

Why is it important to mention absolute value when defining distance? Distance can't be negative!



Notation: AB NOT \overline{AB}
 length distance figure segment

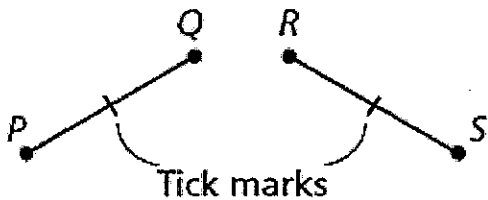
Example 1: Finding the Length of a Segment (Using a number line) \rightarrow Count the length!



A. $XY = 3.5$ Distance from point X to point Y $|1\frac{1}{2} - 5| = |-3.5| = 3.5$

B. $XZ = 4.5$ Distance from point X to point Z $|-3 - 1\frac{1}{2}| = |-4.5| = 4.5$

Congruent Segments - Segments that have the same length.

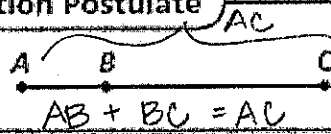


Notation is extremely important!!

$PQ \cong SR$ \rightarrow length / distance
 $\overline{PQ} \cong \overline{SR}$ \rightarrow segment / name of figure

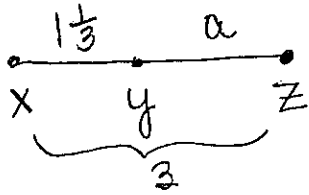
Postulate 1-2-2 Segment Addition Postulate

If B is between A and C, then $AB + BC = AC$.



* DRAW A PICTURE *

Y is between X and Z, $XZ = 3$ and $XY = 1\frac{1}{3}$. Find YZ.



$$1\frac{1}{3} + a = 3$$

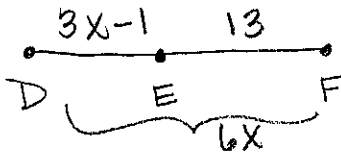
$$a = 3 - 1\frac{1}{3} \rightarrow 3 - \frac{4}{3}$$

$$a = 1\frac{2}{3} \text{ un.}$$

$$\frac{9}{3} - \frac{4}{3} = \frac{5}{3} = 1\frac{2}{3}$$

Example 2:

Example 3: E is between D and F. $DE = 3x - 1$, $EF = 13$, and $DF = 6x$. Find DF.



$$3x - 1 + 13 = 6x$$

$$3x + 12 = 6x$$

$$12 = 3x$$

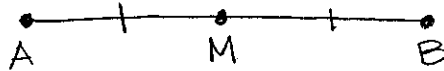
$$x = 4$$

$$DF = 6(4)$$

$$DF = 24 \text{ un.}$$

Midpoint - The midpoint is the "halfway" point. If point M is the midpoint of \overline{AB} , then M bisects, or divides, the segment into two congruent segments. (What do we know about congruent segments?)

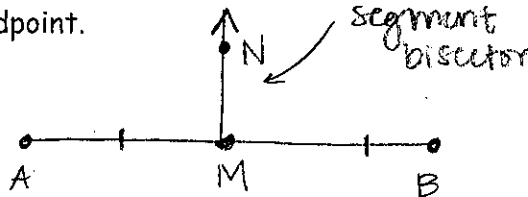
same length!



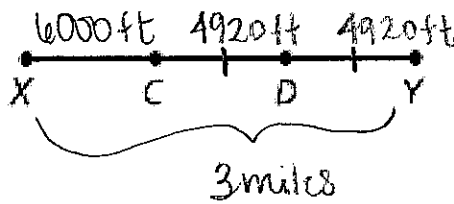
If M is the midpoint of \overline{AB} , then $\overline{AM} = \overline{MB}$

(Because $\overline{AM} \cong \overline{MB}$)

Segment Bisector - Any ray, segment, or line that intersects a segment at its midpoint. It divides the segment into two equal parts at its midpoint.



Example 4: The map shows the route for a race. You are at X, 6000 feet from the first checkpoint C. The second checkpoint D is located at the midpoint between C and the end of the race Y. The total race is 3 miles. How far apart are the two checkpoints?



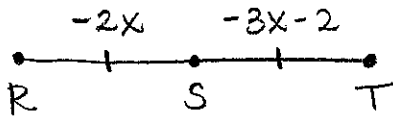
$$15,840 \text{ ft}$$

$$\begin{array}{r} 15,840 \\ - 6,000 \\ \hline 9,840 \text{ ft} \end{array}$$

$$\frac{9,840}{2} = 4,920 \text{ ft}$$

Points C and D are 4,920 ft. apart

• Example 5: S is the midpoint of \overline{RT} . $RS = -2x$ and $ST = -3x - 2$. Find RS , ST , and RT .



$$-2x = -3x - 2$$

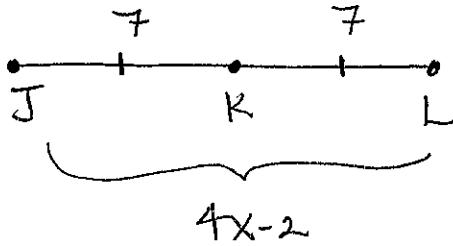
$$x = -2$$

$$RS = -2(-2) = 4 \text{ un.}$$

$$ST = -3(-2) - 2 = 6 - 2 = 4 \text{ un.}$$

$$RT = 4 + 4 = 8 \text{ un.}$$

Example 6: K is the midpoint of \overline{JL} . $JL = 4x - 2$, and $JK = 7$. Find x , KL , and JL .



$$14 = 4x - 2 \quad \text{or} \quad \frac{1}{2}(4x - 2) = 7$$

$$16 = 4x$$

$$x = 4$$

$$2x - 1 = 7$$

$$2x = 8$$

$$x = 4$$

$$KL = 7 \text{ un.}$$

$$JL = 4(4) - 2$$

$$JL = 16 - 2$$

$$JL = 14 \text{ un.}$$

