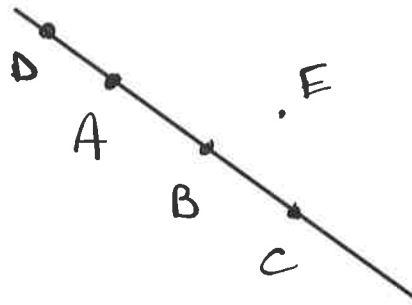


Definitions from Section 1.3 - Segments, Rays, and Distance  
 Make sure to read and take notes on pages 11-13.

Segment AC, denoted  $\overline{AC}$ , consists of points A and C and all points that are between A and C. Points A and C are called the endpoints of  $\overline{AC}$ .



$\overline{AC}$  or  $\overline{CA}$

Between means  
 on the line |  
 segment!

### Segments and Lengths

$\overline{AB}$

"Segment AB"  
 This is an object (figure).

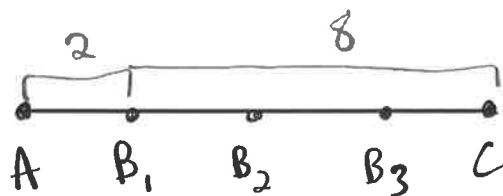
$AB$

"Length of Segment AB"  
 This is a number (constant).

### Segment Addition Postulate

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

on the  
 line segment  $\rightarrow$



Please note that my definition of Ray is different than the one in the book!

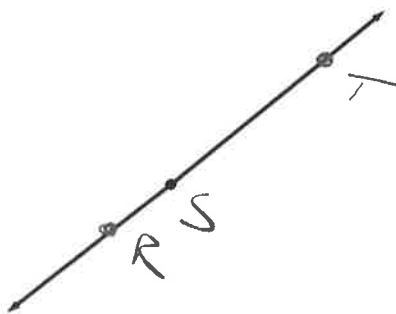
Ray  $AC$ , denoted  $\overrightarrow{AC}$ , consists of a point  $A$  and all points on  $\overline{AC}$  that are on the same side of  $A$  as  $C$ . The endpoint of  $\overrightarrow{AC}$  is  $A$ , the point named first.



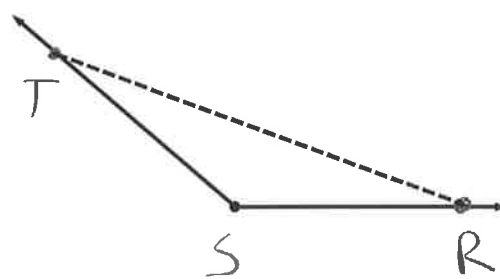
$\overrightarrow{AC}$  is the same as  $\overrightarrow{AB}$

$\overrightarrow{BA}$  is different from  $\overrightarrow{BC}$

$\overrightarrow{SR}$  and  $\overrightarrow{ST}$  are called opposite rays if  $S$  is between  $R$  and  $T$ .



These are opposite rays!  
Why?  
 $S$  is between  $T$  and  $R$ !

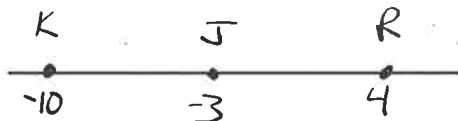


These are not opposite rays!  
Why not?  
 $S$  is NOT between  $T$  and  $R$ !

Finding Lengths and Midpoints - Coordinate Geometry

Example 1: Given: K has coordinate -10.  
 R has coordinate 4.  
 J is the midpoint of  $\overline{KR}$ .

Find KR and the coordinate of J.



☆ To find the length of a segment, find the positive difference of the endpoints' coordinates.

$$KR = |-10 - 4| \text{ or } KR = \text{big} - \text{small}$$

$$KR = |-14| \qquad KR = 4 - (-10)$$

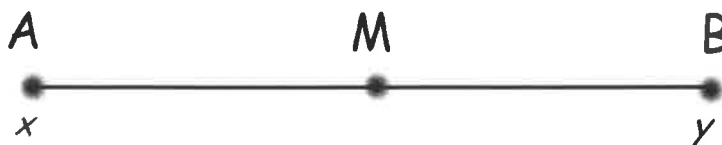
$$\boxed{KR = 14} \qquad \boxed{KR = 14}$$

☆ To find the coordinate of the midpoint, find the average of the endpoints' coordinates.

$$J \left( \frac{-10 + 4}{2} \right)$$

$$J(-3)$$

Given: M is the midpoint of  $\overline{AB}$



☆ To find the length of a segment, find the positive difference of the endpoints' coordinates.

$$AB = |x - y| \text{ or if } y > x, AB = y - x.$$

☆ To find the coordinate of the midpoint, find the average of the endpoints' coordinates.

$$M \left( \frac{x + y}{2} \right)$$

Use the coordinates given to determine the length and the midpoint of each segment. Show all formulas used and steps.

Example 2: T (-3) and P (5)

Length:

$$TP = 5 - (-3)$$

$$TP = 8 \text{ units}$$

Midpoint:

$$m\left(\frac{-3+5}{2}\right)$$

$$m(1)$$

Example 3: K (-5.6) and J (-2.5)

Length:

$$KJ = -2.5 - (-5.6)$$

$$KJ = 3.1 \text{ units}$$

Midpoint:

$$m\left(\frac{-5.6+(-2.5)}{2}\right)$$

$$m\left(\frac{-8.1}{2}\right)$$

$$m(-4.05)$$

### Assignment #8

Part I: p. 14-15 CE #1-6, 11-12

WE #1-4, 5-29 odd

Part II: p. 15-16 WE #31-32, 36, 39-40, 46-47