

1.2 Use Segments and Congruence

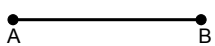
G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance along a line, and distance around a circular arc.

Big Idea: What it means to be congruent segments. What is the difference between stating that two segments are congruent versus when two segments are equal.

***Postulate / Axiom** - A rule that is accepted w/o proof.

Theorem - A rule that can be proven.

Ruler Postulate: The points on a line can be matched one to one with the real numbers. The real number that corresponds to a point is the coordinate of the point.

RECALL:  is written as \overline{AB} or \overline{BA}

MEASURE OF \overline{AB} is written as $m\overline{AB}$ or AB . **NOTICE: NO LINE!!*

The Length of a Segment:

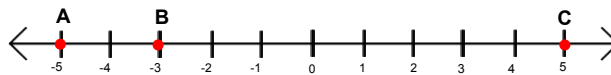
A coordinate of a point on a number line is a real number.



Example: Coordinate of Point A is -4 Coordinate of Point B is 2

Distance between two points is calculated by the difference of the two coordinates and taking the absolute value.

Example: Find the DISTANCE between points A and B.



Find the measures (lengths) of \overline{AB} , \overline{BC} and \overline{AC} on the number line.

- $m\overline{AB} = |-5 - (-3)| = |-2| = 2$
- $m\overline{AC} = |-5 - 5| = |-10| = 10$
- $m\overline{BC} = |-3 - 5| = |-8| = 8$

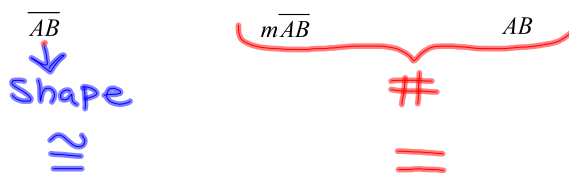
Congruent Figures - figures that are the SAME size and shape.

Congruence Symbol \cong .


How could you symbolize segment AB is congruent to segment DC?


$$\overline{AB} \cong \overline{DC}$$

DON'T DON'T DON'T DON'T CONFUSE:



*****IMPORTANT*****

mAB  This represents NOTHING!!!

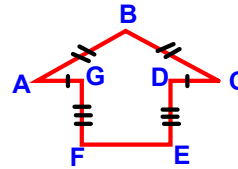
 You are saying "measure the number, AB"

YOU CAN'T MEASURE A NUMBER SILLY!!!!

Congruence is represented using "tick marks" in figures.

Which segments are congruent?

$\overline{AB} \cong \overline{CB}$, $\overline{AG} \cong \overline{CD}$, $\overline{GF} \cong \overline{DE}$



SEGMENT CONGRUENCE POSTULATE:

If two segments have the **same length** then the segments are **congruent**.

If two segments are **congruent**, then they have the **same length**.

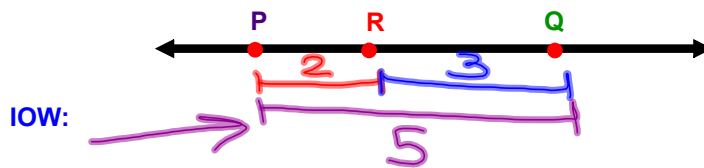
Keywords

IOW: IF $XY = YZ$, THEN $\overline{XY} \cong \overline{YZ}$ IF $\overline{XY} \cong \overline{YZ}$, THEN $XY = YZ$

SEGMENT ADDITION POSTULATE:

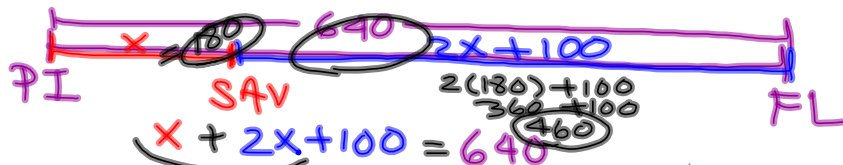
If point **R** is between points **P** and **Q** on a line, then

$PR + RQ = PQ$



Example:

Suppose Pawleys Island, Savannah and Ft. Lauderdale are located along a straight line. Savannah is located between Pawleys and Ft. Lauderdale. The distance from Pawleys to Ft. Lauderdale is 640 miles. The distance from Savannah to Ft. Lauderdale is 100 miles more than two times the distance from Pawleys to Savannah. What is the distance from Pawleys to Savannah and Savannah to Ft. Lauderdale?



Congruence Example: $3x + 100 = 640$

Plot J(-3, 4), K(2, 4), L(1, 3), and M(1, -2) in a coordinate plane. Then determine whether \overline{JK} and \overline{LM} are congruent.

$= =$

$JK = |-3 - 2| = |-5| = 5$

$LM = |3 - -2| = |5| = 5$

$JK = LM$

$\overline{JK} \cong \overline{LM}$

