



- I can use the Ruler Postulate to find lengths of segments. (CC.9-12.G.CO.1)
- I can use the Segment Addition Postulate to find lengths of segments. (CC.9-12.G.CO.1)
- I can use segment postulates to identify congruent segments. (CC.9-12.G.CO.7)

In Geometry, a rule that is accepted without proof I called a **postulate** or an **axiom**. A rule that can be proven is called a **theorem**. Let's start by looking at some geometric postulates.

POSTULATE
For Your Notebook

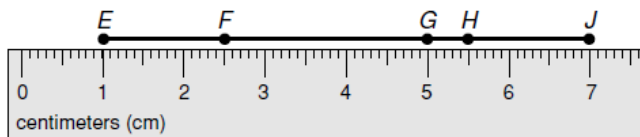
POSTULATE 1 Ruler Postulate

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.

The **distance** between points A and B , written as AB , is the absolute value of the difference of the coordinates of A and B .

The Ruler Postulate is helpful when trying to find lengths of segments. We can find the lengths of segments by looking at the **distance** between two points.

The **distance** between any two points is the **length** of the segment that connects them.



The distance between E and J is EJ , the length of \overline{EJ} . To find the distance, subtract the numbers corresponding to the points and then take the absolute value.

$$\begin{aligned}
 EJ &= |7 - 1| \\
 &= |6| \\
 &= 6 \text{ cm}
 \end{aligned}$$

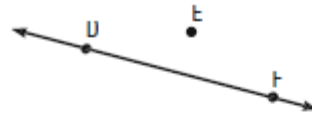
Example 1 – Use the figure above to find each length:

- A) $EG =$ _____ B) $EF =$ _____ C) $FH =$ _____

When 3 points are collinear, you can say that one point is **between** the other two.



Point B is between points A and C .



Point E is not between points D and F .

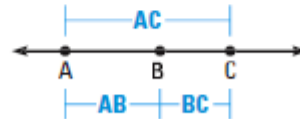
POSTULATE

For Your Notebook

POSTULATE 2 Segment Addition Postulate

If B is between A and C , then

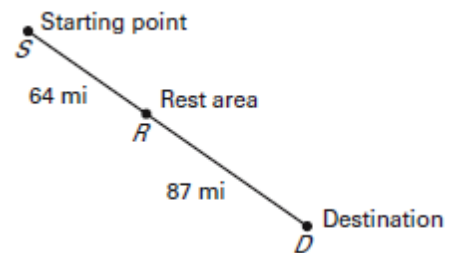
If $AB + BC = AC$, then B is between A and C .



Example 2 - On \overline{PR} , Q is between P and R . If $PQ = 9$, $QR = x$, and $PR = 16$, please find QR .

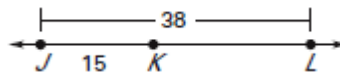
Example 3 – Apply the Segment Addition Postulate

The locations shown lie in a straight line. Find the distance from the starting point to the destination.

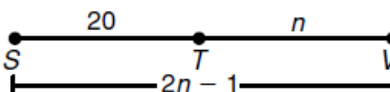


Example 4 – Find a length.

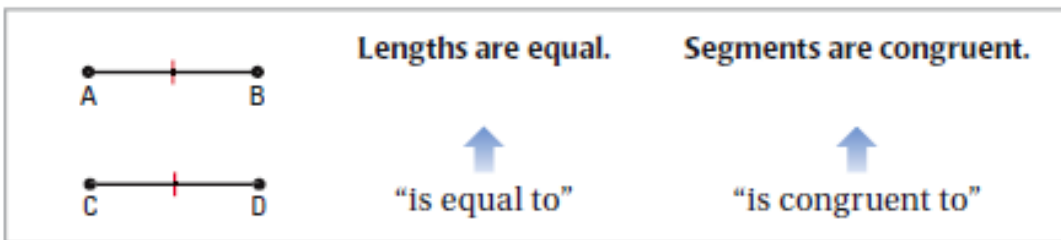
A) Use the diagram to find KL .



B) Use the diagram to find SV .



CONGRUENT SEGMENTS Line segments that have the same length are called **congruent segments**. In the diagram below, you can say “the length of \overline{AB} is equal to the length of \overline{CD} ,” or you can say “ \overline{AB} is congruent to \overline{CD} .” The symbol \cong means “is congruent to.”



Example 4 – Compare segments for congruence

Use the diagram to determine whether \overline{AB} and \overline{CD} are congruent.

- To find length of a horizontal segment, you can subtract the x-coordinates.
- To find the length of a vertical segment, you can subtract the y-coordinates.

