



- 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

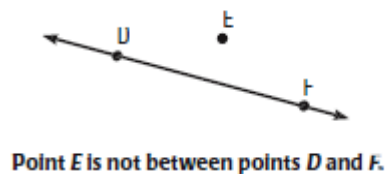
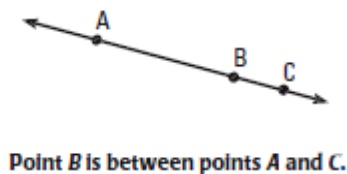
POSTULATE 1 Ruler Postulate

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.

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



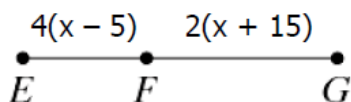
POSTULATE
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POSTULATE 2 Segment Addition Postulate

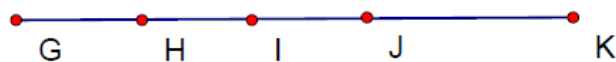
If B is between A and C , then

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

Example 1 - On \overline{EG} , F is between E and G. If $EG = 100$, we can find FG.



Example 2 – In the diagram of collinear points, $GK = 24$, $HJ = 10$, and $GH = HI = IJ$. Find each length :

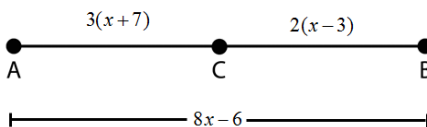


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|--------|--------|
| a.) HI | d.) IG |
| b.) JK | e.) GH |
| c.) IJ | f.) IK |

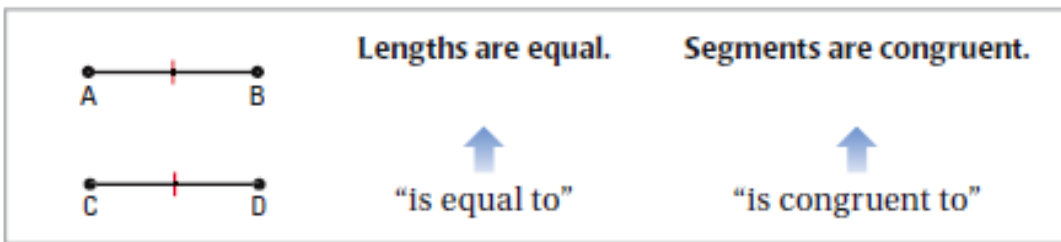
Example 3 – Find a length.

A) R is between Q and S. If $RS = 44.6$ and $SQ = 68.4$, find QR.

B) Use the diagram to find AB.



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.

