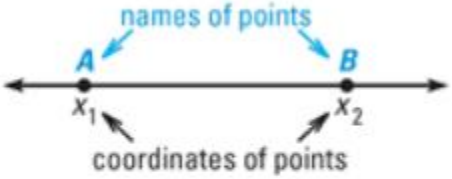
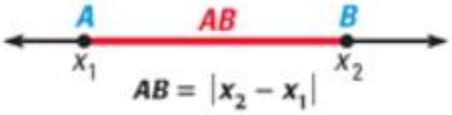
POSTULATE 1 Ruler Postulate

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.

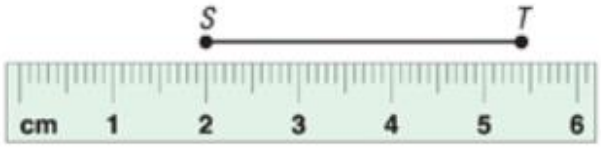


EXAMPLE 1 Apply the Ruler Postulate

Measure the length of $\overline{ST}$ to the nearest tenth of a centimeter.

Solution

Align one mark of a metric ruler with S. Then estimate the coordinate of T. For example, if you align S with 2, T appears to align with 5.4.

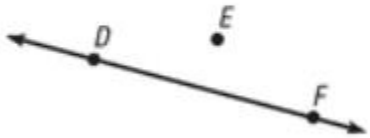


$ST = |5.4 - 2| = 3.4$ Use Ruler Postulate.

▸ The length of $\overline{ST}$ is about 3.4 centimeters.

ADDING SEGMENT LENGTHS When three points are collinear, you can say that one point is **between** the other two.

Point *B* is between points *A* and *C*.

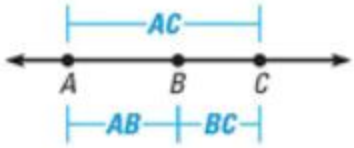


Point *E* is not between points *D* and *F*.

POSTULATE 2 Segment Addition Postulate

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

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



EXAMPLE 2 Apply the Segment Addition Postulate

MAPS The cities shown on the map lie approximately in a straight line. Use the given distances to find the distance from Lubbock, Texas, to St. Louis, Missouri.

Solution

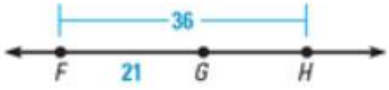
Because Tulsa, Oklahoma, lies between Lubbock and St. Louis, you can apply the Segment Addition Postulate.

$$LS = LT + TS = 380 + 360 = 740$$

▸ The distance from Lubbock to St. Louis is about 740 miles.

EXAMPLE 3 Find a length

Use the diagram to find *GH*.

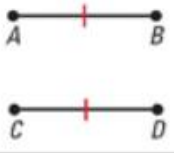


Solution

Use the Segment Addition Postulate to write an equation. Then solve the equation to find GH.

$FH = FG + GH$	Segment Addition Postulate
$36 = 21 + GH$	Substitute 36 for *FH* and 21 for *FG*.
$15 = GH$	Subtract 21 from each side.

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."



Lengths are equal.	Segments are congruent.
$AB = CD$	$\overline{AB} \cong \overline{CD}$
"is equal to"	"is congruent to"