1-3 Measuring Segments

Content Standard
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 around a circular arc.
Also G.GPE.6

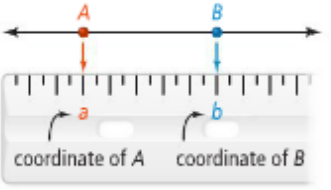
Objective To find and compare lengths of segments

Essential Understanding You can use number operations to find and compare the lengths of segments.

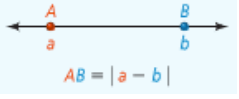
take note

Postulate 1-5 Ruler Postulate

Every point on a line can be paired with a real number. This makes a one-to-one correspondence between the points on the line and the real numbers. The real number that corresponds to a point is called the **coordinate** of the point.

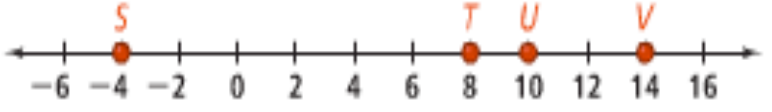


The Ruler Postulate allows you to measure lengths of segments using a given unit and to find distances between points on a number line. Consider $\overleftrightarrow{AB}$ at the right. The **distance** between points A and B is the absolute value of the difference of their coordinates, or $|a - b|$. This value is also AB, or the length of $\overline{AB}$.



Problem 1 Measuring Segment Lengths

What is ST?



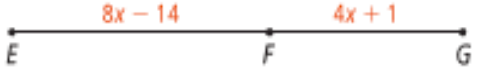
take note

Postulate 1-6 Segment Addition Postulate

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

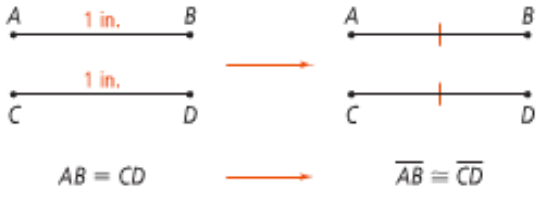
Problem 2 Using the Segment Addition Postulate

Algebra If $EG = 59$, what are EF and FG?



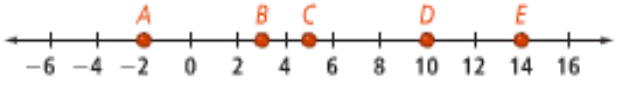
When numerical expressions have the same value, you say that they are equal (=). Similarly, if two segments have the same length, then the segments are **congruent (≅) segments.**

This means that if $AB = CD$, then $\overline{AB} \cong \overline{CD}$. You can also say that if $\overline{AB} \cong \overline{CD}$, then $AB = CD$.

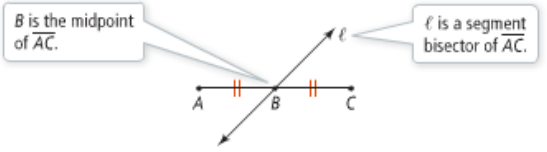


Problem 3 Comparing Segment Lengths

Are $\overline{AC}$ and $\overline{BD}$ congruent?

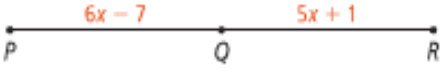


The **midpoint** of a segment is a point that divides the segment into two congruent segments. A point, line, ray, or other segment that intersects a segment at its midpoint is said to *bisect* the segment. That point, line, ray, or segment is called a **segment bisector.**



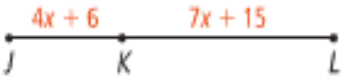
Problem 4 Using the Midpoint

Algebra Q **is the midpoint of** $\overline{PR}$. **What are** PQ, QR, **and** PR?



Lesson Review:

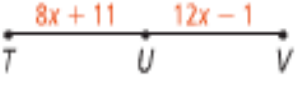
2. In the diagram, $JL = 120$. What are JK and KL?



3. a. Use the diagram above. Is $\overline{AB}$ congruent to $\overline{DE}$?

b. Reasoning To find AC in Problem 3, suppose you subtract -2 from 5. Do you get the same result? Why?

U is the midpoint of $\overline{TV}$. What are TU, UV, and TV?



August 25, 2014