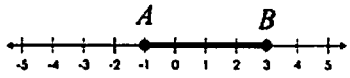
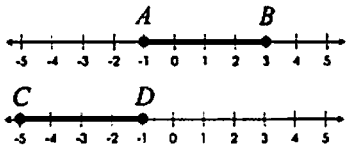
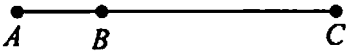
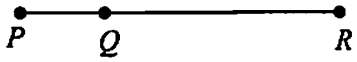
Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples	
MEASURING SEGMENTS	The distance between two points A and B be written as the length of $\overline{AB}$ or AB.	 $AB = 4$
CONGRUENT SEGMENTS	If $AB = CD$, then the segments are congruent. This is written as $\overline{AB} \cong \overline{CD}$.	
SEGMENT ADDITION *Postulate*	If A, B, and C, are collinear points and B is between A and C, then $AB + BC = AC$	

Examples

Use the diagram below for questions 1 and 2.



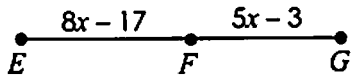
1. If $PQ = 9$ and $QR = 28$, find PR.

$9 + 28 = \boxed{37}$

2. If $QR = 17$ and $PR = 21$, find PQ.

$21 - 17 = \boxed{4}$

3. If $EG = 71$, find the value of x.



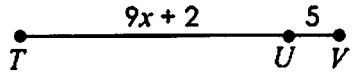
$8x - 17 + 5x - 3 = 71$

$13x - 20 = 71$

$13x = 91$

$x = 7$

4. If $TV = 14x - 8$, find TU.



$9x + 2 + 5 = 14x - 8$

$9x + 7 = 14x - 8$

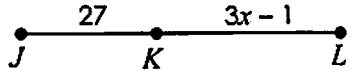
$7 = 5x - 8$

$15 = 5x$

$x = 3$

$TU: 9(3) + 2 = \boxed{29}$

5. If $JL = 5x + 2$, find JL.



$27 + 3x - 1 = 5x + 2$

$3x + 26 = 5x + 2$

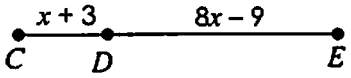
$26 = 2x + 2$

$24 = 2x$

$x = 12$

$JL: 5(12) + 2 = \boxed{62}$

6. If $CE = 7x + 4$, find the value of x.



$x + 3 + 8x - 9 = 7x + 4$

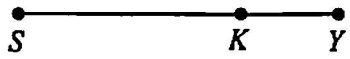
$9x - 6 = 7x + 4$

$2x - 6 = 4$

$2x = 10$

$\boxed{x = 5}$

7. If $SK = 13x - 5$, $KY = 2x + 9$, and $SY = 36 - x$, find each value.



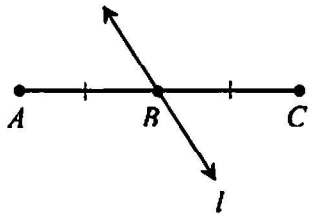
$13x - 5 + 2x + 9 = 36 - x$
$15x + 4 = 36 - x$
$16x = 32$
$x = 2$

SK: $13(2) - 5$
$= 21$

KY: $2(2) + 9$
$= 13$

$x =$ 2
$SK =$ 21
$KY =$ 13
$SY =$ 34

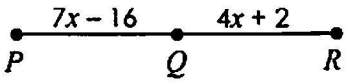
MIDPOINT of a Segment



- The midpoint of a segment is a point that divides the segment into two congruent segments.
- A line, ray, or segment that intersects a segment at its midpoint is said to bisect the segment and is called the segment bisector.
- In the diagram to the left, B is the midpoint of $\overline{AC}$ and line l is a segment bisector of $\overline{AC}$.

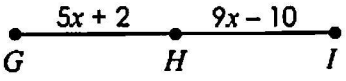
Examples

8. If Q is the midpoint of $\overline{PR}$, find the value of x.



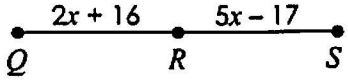
$7x - 16 = 4x + 2$
$3x - 16 = 2$
$3x = 18$
$\boxed{x = 6}$

9. If H is the midpoint of $\overline{GI}$, find GH.



$5x + 2 = 9x - 10$
$2 = 4x - 10$
$12 = 4x$
$x = 3$
GH: $5(3) + 2 = \boxed{17}$

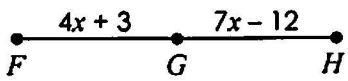
10. If R is the midpoint of $\overline{QS}$, find QS.



$2x + 16 = 5x - 17$
$16 = 3x - 17$
$33 = 3x$
$x = 11$

QR: $2(11) + 16 = 38$ QS: $2(38) = \boxed{76}$

11. If G is the midpoint of $\overline{FH}$ and $FH = 6y - 2$, find y.



$4x + 3 = 7x - 12$
$3 = 3x - 12$
$15 = 3x$
$x = 5$

FG: $4(5) + 3 = 23$ FH: $2(23) = 46$

$6y - 2 = 46$
$6y = 48$
$\boxed{y = 8}$