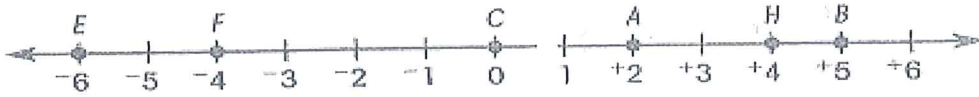


Key

Segments Review Day 2- In Class

Directions: Use the number line for questions 1-3 to determine lengths of segments.



1. $\overline{AB} = 3$

2. $\overline{EC} = 6$

3. $\overline{FH} = 8$

Find the value of x in each diagram.



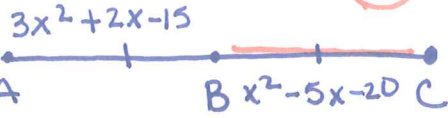
$MN \cong OP$
 $3x = 15$
 $x = 5$



$QR \cong ST$
 $3x + 1 = 10$
 $x = 3$

Midpoint and Congruence Examples:

6. Find the measure of \overline{BC} if B is the midpoint of \overline{AC} , $AB = 3x^2 + 2x - 15$, $BC = x^2 - 5x - 20$.



$AB \cong BC$ def of midpt

$3x^2 + 2x - 15 = x^2 - 5x - 20$

$2x^2 + 7x + 5 = 0$

$(x + \frac{5}{2})(x + 2) = 0$

$(x + 1)(2x + 5) = 0$

$a \cdot c = 10$
 $2 \cdot 5 = 10$
 $2 + 5 = 7$

$x + 1 = 0$
 $x = -1$

$2x + 5 = 0$
 $x = -\frac{5}{2}$

Check your work HERE:

Check $x = -1$

$BC = (-1)^2 - 5(-1) - 20 = -14$

$AB = 3(-1)^2 + 2(-1) - 15 = -14$
 $\text{can't have neg. distance}$

Check $x = -\frac{5}{2}$

$BC = (-\frac{5}{2})^2 - 5(-\frac{5}{2}) - 20 = -1.25$

$AB = 3(-\frac{5}{2})^2 + 2(-\frac{5}{2}) - 15 = -1.25$
 $\text{can't have neg. distance}$
 $\therefore \text{NO SOLUTION}$

7. If $QR = 2x^2 - 9x - 12$ and $ST = -2x^2 - 18x - 3$, find all possible value(s) for x.

Check your work HERE:



$QR = ST$

$2x^2 - 9x - 12 = -2x^2 - 18x - 3$
 $+2x^2 + 18x + 3$

$4x^2 + 9x - 9 = 0$

$(x - 3)(x + \frac{12}{4}) = 0$

$(4x - 3)(x + 3) = 0$

$a \cdot c = -36$

$-3 \cdot 12 = -36$

$-3 + 12 = 9$

$x = \frac{3}{4}$ or $x = -3$

check $x = \frac{3}{4}$

$QR = 2(\frac{3}{4})^2 - 9(\frac{3}{4}) - 12 = -17.625$

$ST = -2(\frac{3}{4})^2 - 18(\frac{3}{4}) - 3 = -17.625$
 $\text{can't have neg. distance}$

$x \neq \frac{3}{4}$

check $x = -3$

$QR = 2(-3)^2 - 9(-3) - 12 = 33$

$ST = -2(-3)^2 - 18(-3) - 3 = 33$

$x = -3$ is a solution

Use the diagram below to complete exercises 8-11.



8. $\overline{LM} \cong \overline{NO}$

9. $\overline{MN} \cong \overline{OP}$

10. $\overline{NO} \cong \overline{ML}$

11. $\overline{OP} \cong \overline{NM}$

Midpoints with Algebra: In each diagram, M is the midpoint of the segment. Find the indicated length.

10. Find MH .



$GM \cong MH$ def of midpoint

$4x - 9 = 2x + 5$

$2x = 14$

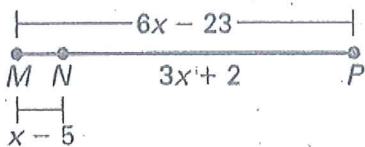
$x = 7$

$MH = 2(7) + 5$

$MH = 19$

Segment Addition with Algebra: Find x and the indicated lengths.

11. Find NP .



$MN + NP = MP$ Segment addition

$x - 5 + 3x + 2 = 6x - 23$

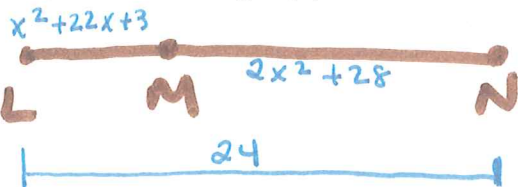
$4x - 3 = 6x - 23$

$20 = 2x$

$10 = x$

$NP = 32$

12. M is between L and N. If $LM = x^2 + 22x + 3$, $LN = 24$, and $MN = 2x^2 + 28$, find the value(s) of x , and the length(s) of LM and MN .



Check your work here:

Check $x = -7$
 $LM + MN \stackrel{?}{=} LN$

$(-7)^2 + 22(-7) + 3 + 2(-7)^2 + 28 \stackrel{?}{=} 24$

$-102 + 126 = 24$

$LM = -102$ which can't be neg.
 $x \neq -7$

Check $x = -1/3$

$LM + MN \stackrel{?}{=} LN$
 $(-1/3)^2 + 22(-1/3) + 3 + 2(-1/3)^2 + 28 \stackrel{?}{=} 24$

$-4.2 + 28.2 = 24$

$LM \neq \text{neg}$ so $x \neq -1/3$ no solutions

$LM + MN = LN$ seg. addition

$x^2 + 22x + 3 + 2x^2 + 28 = 24$

$3x^2 + 22x + 31 = 24$

$3x^2 + 22x + 7 = 0$

$(x + 7)(x + 1/3) = 0$

$(x + 7)(3x + 1) = 0$

$x = -7$

$x = -1/3$

a.c = 21
 21 · 1 = 21
 21 + 1 = 22