

Your name

Mrs. Theo

9/17/2021

Notes

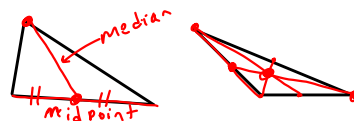
Different Ways to Create Segments

1.2

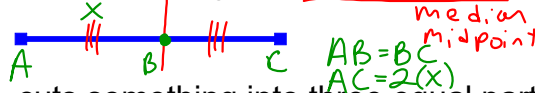
Midpoint - the point in the exact middle



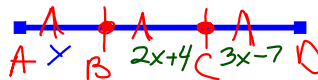
Median - A segment that extends from an angle to the Midpoint of the opposite side of a triangle



Bisect - cuts something into two equal parts



Trisect - cuts something into three equal parts



$$\begin{aligned}
 &AB = BC && \text{Whole} = \text{Part} + \text{Part} + \text{Part} \\
 &AB = CD && AD = AB + BC + CD \\
 &CD = BC && AD = x + x + x \\
 &AC = BD && AD = 3 \cdot x \\
 &AC = 2 \cdot AB && BC = CD \\
 &&& 2x + 4 = 3x - 7
 \end{aligned}$$



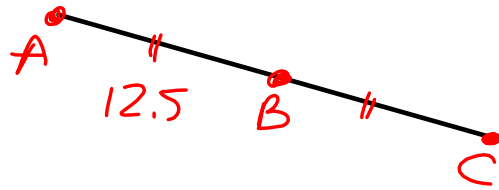
E is between D and F

DE = 10

DF = 22

EF =

1. Draw it
2. Write Formula Equation
Is it $=$ or is it Whole = part + part + ...
3. Substitute numbers/expressions
4. Solve



B is the midpoint of AC

AB = 12.5

$AB = BC$

BC =

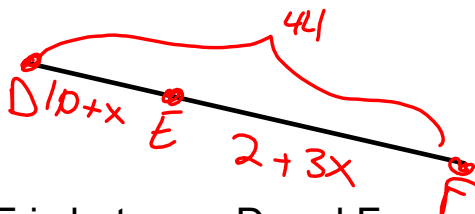
$12.5 = BC$

AC = 25

Whole = Part + Part

$AC = 12.5 + 12.5$

1. Draw it
2. Write Formula Equation
Is it $=$ or is it Whole = part + part + ...
3. Substitute numbers/expressions
4. Solve



E is between D and F

DE = 10 + 8

Whole = Part + Part

DF = 44

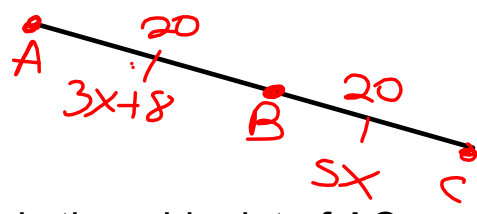
$44 = (2+3x) + (10+x)$

EF = 2 + 3(8)

$44 = 12 + 4x$

$x = 8$

1. Draw it
2. Write Formula Equation
Is it $=$ or is it Whole = part + part + ...
3. Substitute numbers/expressions
4. Solve



B is the midpoint of AC

AB = 3x + 8

$AB = BC$

BC = 5x

$3x + 8 = 5x$

AC = 40

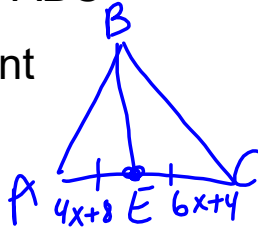
$-3x \quad -3x$

1. Draw it
2. Write Formula Equation
Is it $=$ or is it Whole = part + part + ...
3. Substitute numbers/expressions
4. Solve

$\frac{8}{2} = \frac{2x}{2}$

$4 = 4$

The median of a $\triangle ABC$ goes through point B to E of AC



$$AE = 4x + 8$$

$$4(2) + 8 = 16$$

$$EC = 6x + 4$$

$$6(2) + 4 = 16$$

$$AC = 32$$

$$4x + 8 = 6x + 4$$

$$4 = 2x$$

$$x = 2$$

$$AC = AE + EC$$

$$AC = 16 + 16$$

$$AC = 32$$

DF has been trisected, B is between D and C, and C is between B and F

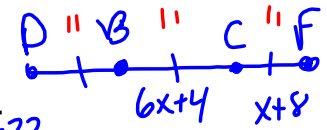
$$CF = x + 8$$

$$3 + 8 = 11$$

$$BC = 6x + 4$$

$$6(3) + 4 = 22$$

$$DF = 33$$



$$BF = 2 \cdot BC$$

$$6x + 4 = 2(x + 8)$$

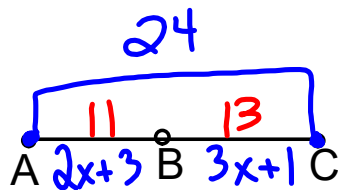
$$6x + 4 = 2x + 16$$

$$4x = 12$$

$$x = 3$$

Bellringer: If \overline{AC} measures 24 and \overline{AB} is $2x + 3$ and \overline{BC} is $3x + 1$, find the value of x.

Then find the length of \overline{AB} and \overline{BC} .



$$AB = 2x + 3$$

$$AB = 2(4) + 3$$

$$AB = 8 + 3 = 11$$

$$BC = 3x + 1$$

$$BC = 3(4) + 1$$

$$BC = 13$$

$$2x + 3 + 3x + 1 = 24$$

$$5x + 4 = 24$$

$$5x = 20$$

$$x = 4$$

Next are examples similar but not all exactly the same as your worksheet.

Hopefully seeing these will help.

On yours you will get fraction and decimal answers.

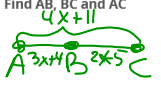
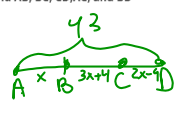
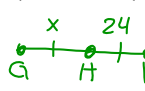
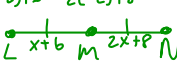
****Decimals answers are fine if they are not repeating decimals.

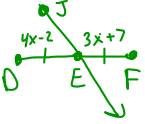
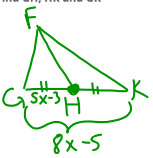
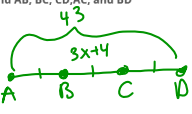
Geometry Segment Addition, Midpoint, Bisectors

Sorting it all out... Name _____ Period __

Make a sketch and solve for the lengths indicated.

1) Draw it

<p>1. Points A, B and C are collinear. B is between A and C. $AC = 4x + 11$, $AB = 3x + 4$, $BC = 2x - 5$ Find AB, BC and AC</p> 	<p>Whole = Part + Part $AC = AB + BC$ $4x + 11 = 3x + 4 + 2x - 5$ $4x + 11 = 5x - 1$ $12 = x$</p> <p>AB = 40 BC = 19 AC = 59</p>
<p>2. Points A, B, C and D collinear. B is between A and C, C is between B and D. $AB = x$, $BC = 3x + 4$, $CD = 2x - 9$ and $AD = 43$ Find AB, BC, CD, AC, and BD</p> 	<p>$AD = AB + BC + CD$ $43 = x + 3x + 4 + 2x - 9$ $43 = 6x - 5$ $x = 8$</p> <p>AB = 8 BC = 28 CD = 7 AC = 36 BD = 35</p>
<p>3. H is the midpoint of GK. $GH = x$, $HK = 24$ Find GH, HK and GK</p> 	<p>$x = 24$ $GK = GH + HK$ $GK = 24 + 24$</p> <p>GH = 24 HK = 24 GK = 48</p>
<p>4. M is the midpoint of LN. $LM = x + 6$, $MN = 2x - 8$ Find LM, MN and LN.</p> 	<p>$2x + 8 = x + 6$ $x = -2$</p> <p>LM = 4 MN = 4 LN = 8</p>

5.	<p>Ray \overline{JE} bisects the line segment \overline{DF} at point E $DE = 4x - 2$, $EF = 3x + 7$ Find DE, EF, and DF</p> 	$4x - 2 = 3x + 7$ $x = 9$ $4(9) - 2 = 3(9) + 7$ $DE = 34 \quad EF = 34 \quad DF = 68$						
6.	<p>In Triangle GFK, there is a Median from Angle F to side GK through point H. $GH = 5x - 3$ and $GK = 8x - 5$ Find GH, HK and GK</p> 	<p><i>Change</i></p> $GK = 2 \cdot GH$ $8x + 4 = 2(5x - 3)$ $8x + 4 = 10x - 6$ $10 = 2x \quad \text{if } x = \frac{1}{2}$ $x = 5$ $5(5) - 3 = 25 - 3 = 22$ $8(5) + 4 = 40 + 4 = 44$ $GH = 22 \quad HK = 22 \quad GK = 44$ <p>$GH = -05$ $HK = -05$ $GK = -1$</p>						
7.	<p>Line segment \overline{AD} is trisected at points B and C $BC = 3x + 4$ and $AD = 43$ Find AB, BC, CD, AC, and BD</p> 	$AD = AB + BC + CD$ $AD = 3 \cdot BC$ $43 = 3(3x + 4)$ $43 = 9x + 12$ $31 = 9x$ $x = 3.\overline{4}$ <p>$1 \cdot 3(\frac{31}{9}) + 4$ $\frac{31}{3} + \frac{12}{3}$ $\frac{43}{3}$ $14.\overline{3}$</p> <table border="1"> <tr> <td>$AB = 14.\overline{3}$</td> <td>$BC = 14.\overline{3}$</td> <td>$CD = 14.\overline{3}$</td> </tr> <tr> <td>$AC = 28.\overline{6}$</td> <td>$BD = 28.\overline{6}$</td> <td></td> </tr> </table>	$AB = 14.\overline{3}$	$BC = 14.\overline{3}$	$CD = 14.\overline{3}$	$AC = 28.\overline{6}$	$BD = 28.\overline{6}$	
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$AC = 28.\overline{6}$	$BD = 28.\overline{6}$							