

Your name

Mrs. Theo

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Notes

Different Ways to Create Segments

1.2

Midpoint - the point in the exact middle



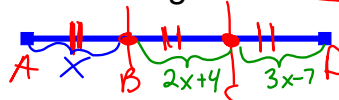
Median - A segment that extends from an angle to the Midpoint of the opposite side of a triangle



Bisect - cuts something into two equal parts



Trisect - cuts something into three equal parts



$$BC = CD$$

$$2x + 4 = 3x - 7$$

$$AB = BC$$

$$AB = CD$$

$$BC = CD$$

$$AC = BD$$

$$AC = 2 \cdot AB$$

$$\text{Whole} = \text{Part} + \text{Part} + \text{Part}$$

$$AD = AB + BC + CD$$

$$AD = x + x + x$$

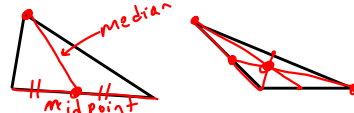
$$AD = 3x$$

1.2

Midpoint - the point in the exact middle



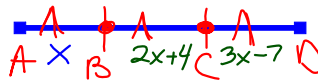
Median - A segment that extends from an angle to the Midpoint of the opposite side of a triangle



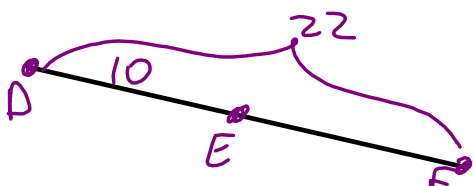
Bisect - cuts something into two equal parts



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

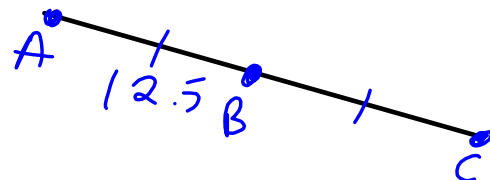
EF = 12

$DF = DE + EF$

$22 = 10 + EF$

$EF = 12$

- 1) Draw
- 2) Write Formula
- 3) substitute & solve



B is the midpoint of AC

AB = 12.5

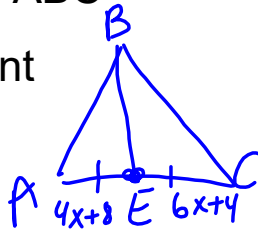
BC = 12.5

AC = 25

$AB = BC$

$AC = AB + BC$
 $= 12.5 + 12.5$

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

$CF = x + 8$

$3 + 8 = 11$

$BC = 6x + 4$

$6(3) + 4 = 22$

$DF = 33$

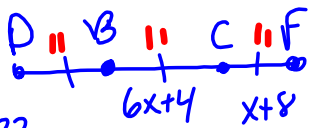
$BF = 2 \cdot BC$

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

$6x + 4 = 2x + 16$

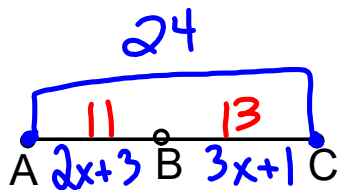
$4x = 12$

$x = 3$



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} .



$AB = 2x + 3$

$AB = 2(4) + 3$

$AB = 8 + 3 = 11$

$BC = 3x + 1$

$BC = 3(4) + 1$

$BC = 13$

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

$5x + 4 = 24$

$5x = 20$

$x = 4$

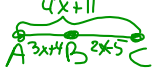
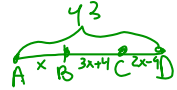
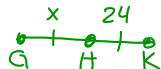
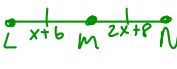
Geometry Segment Addition, Midpoint, Bisectors

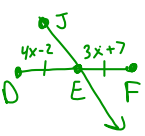
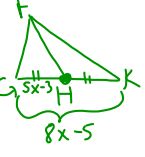
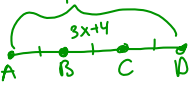
Sorting it all out...

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. $AC = 4x + 11$, $AB = 3x + 4$, $BC = 2x - 5$ $4(2) + 11 = 3(2) + 4 + 2(2) - 5$ 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>

<p>5. Ray JE bisects the line segment DF at point E. $DE = 4x - 2$, $EF = 3x + 7$ Find DE, EF, and DF</p> 	<p>$4x - 2 = 3x + 7$ $x = 9$ $4(9) - 2 = 3(9) + 7$ $DF = DE + EF$</p> <p>DE = 34 EF = 34 DF = 68</p>
<p>6. 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>$GK = 2 \cdot GH$ $8x - 5 = 2(5x - 3)$ $8x - 5 = 10x - 6$ $10 = 2x$ $x = 5$</p> <p>if $x = \frac{1}{2}$ $GH = -0.5$ $HK = -0.5$ $GK = -1$</p> <p>$5(5) - 3 = 8(5) - 5$ $25 - 3 = 40 - 5$ $22 = 35$</p> <p>GH = 22 HK = 22 GK = 44</p>
<p>7. Line segment AD is trisected at points B and C. $BC = 3x + 4$ and $AD = 43$ Find AB, BC, CD, AC, and BD</p> 	<p>$AD = AB + BC + CD$ $AD = 3 \cdot BC$ $43 = 3(3x + 4)$ $43 = 9x + 12$ $31 = 9x$ $x = 3.\bar{4}$</p> <p>$\frac{31}{3} = \frac{9x}{3} + \frac{12}{3}$ $10.\bar{3} = 3x + 4$ $6.\bar{3} = 3x$ $2.\bar{1} = x$</p> <p>AB = 14.3 BC = 14.3 CD = 14.3 AC = 28.6 BD = 28.6</p>

★ Change