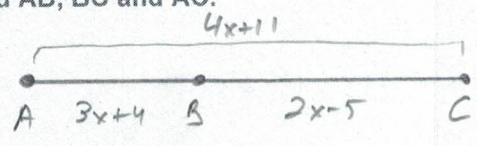
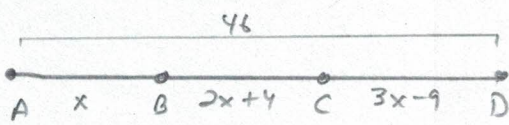
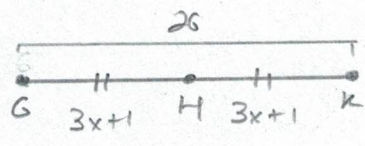
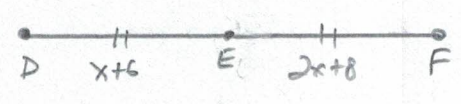
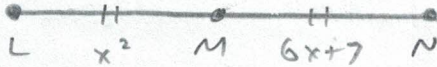


Geometry Segment Addition, Midpoint, Bisectors

Make a sketch and solve for the lengths indicated.

<p>1.</p>	<p>Points A, B and C are collinear, where B is between A and C.</p> <p>$AC = 4x+11$, $AB = 3x+4$, $BC = 2x-5$. Find AB, BC and AC.</p> 	$(3x+4) + (2x-5) = 4x+11$ $5x-1 = 4x+11$ $x = 12$ $AB = 3(12)+4$ $BC = 2(12)-5$ $AC = 4(12)+11$		
		<p>AB = 40</p>	<p>BC = 19</p>	<p>AC = 59</p>
<p>2.</p>	<p>Points A, B, C and D are collinear, where B is between A and C and C is between B and D.</p> <p>$AB = x$, $BC = 2x+4$, $CD = 3x-9$ and $AD = 46$. Find AB, BC, CD, AC, and BD.</p> 	$(x) + (2x+4) + (3x-9) = 46$ $6x-5 = 46$ $6x = 51$ $x = 8.5$ $BC = 2(8.5)+4$ $CD = 3(8.5)-9$		
		<p>AB = 8.5</p>	<p>BC = 21</p>	<p>CD = 16.5</p>
		<p>AC = 29.5</p>	<p>BD = 37.5</p>	
<p>3.</p>	<p>H is the midpoint of GK.</p> <p>$GH = 3x+1$, $GK = 26$. Find GH, HK and GK.</p> 	$(3x+1) + (3x+1) = 26 \text{ or } 2(3x+1) = 26$ $6x+2 = 26$ $6x = 24$ $x = 4$ $GH = 3(4)+1$		
		<p>GH = 13</p>	<p>HK = 13</p>	<p>GK = 26</p>
<p>4.</p>	<p>Point E <u>bisects</u> segment DF.</p> <p>$DE = x+6$, $EF = 2x+8$. Find DE, EF, and DF.</p> 	$x+6 = 2x+8$ $x = -2$ $DE = -2+6$ $EF = 2(-2)+8$		
		<p>DE = 4</p>	<p>EF = 4</p>	<p>DF = 8</p>

5. M is the midpoint of LN.
 LM = x^2 , MN = $6x+7$. Find the two possible lengths of LM, MN and LN.



$$x^2 = 6x + 7$$

$$x^2 - 6x - 7 = 0$$

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

$$x-7=0 \quad x+1=0$$

$$x=7 \quad x=-1$$

WHEN $x=7$

$$LM = (7)^2$$

$$MN = 6(7) + 7$$

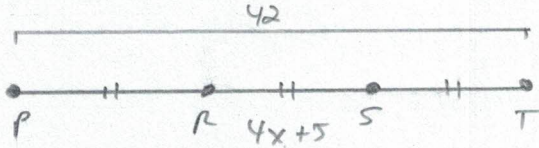
WHEN $x=-1$

$$LM = (-1)^2$$

$$MN = 6(-1) + 7$$

Possible Lengths #1 $x=7$		
LM = 49	MN = 49	LN = 98
Possible Lengths #2 $x=-1$		
LM = 1	MN = 1	LN = 2

6. Line segment PT is trisected at points R and S.
 RS = $4x+5$ and PT = 42.
 Find PR, RS, ST, PS, and RT.



$$3(4x+5) = 42$$

$$12x + 15 = 42$$

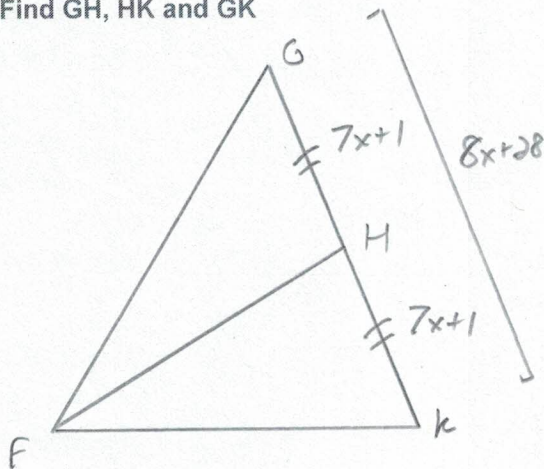
$$12x = 27$$

$$x = 2.25$$

$$4(2.25) + 5$$

PR = 14	RS = 14	ST = 14
PS = 28	RT = 28	

7. In Triangle GFK, a median is drawn from angle F and intersects side GK at point H.
 GH = $7x+1$ and GK = $8x+28$
 Find GH, HK and GK



$$(7x+1) + (7x+1) = 8x+28$$

$$14x+2 = 8x+28$$

$$6x = 26$$

$$x = 4\frac{1}{3}$$

$$7(4\frac{1}{3}) + 1 = 7(\frac{13}{3}) + 1 = \frac{91}{3} + 1 = 31\frac{1}{3}$$

$$8(4\frac{1}{3}) + 1 = 8(\frac{13}{3}) + 28 = \frac{104}{3} + 28 = 62\frac{2}{3}$$

GH = $31\frac{1}{3}$	HK = $31\frac{1}{3}$	GK = $62\frac{2}{3}$
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