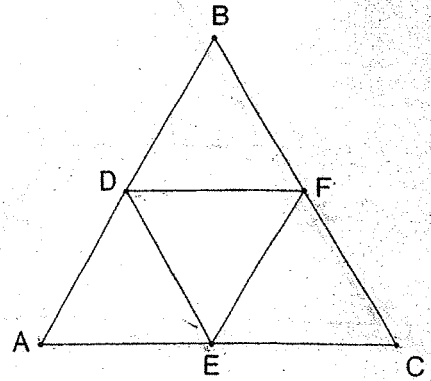


Midsegment Theorem Homework

Name: ANNA

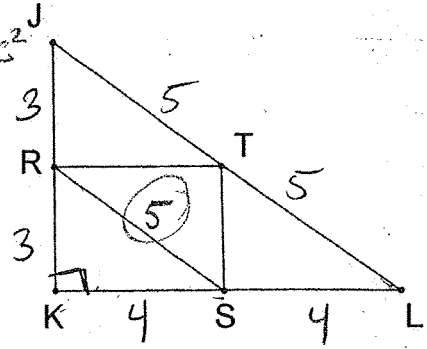
Use the diagram of $\triangle ABC$ where D, E, and F are the midpoints of the sides.

1. $\overline{DE} \parallel \overline{BC}$
2. $\overline{FE} \parallel \overline{BA}$
3. If $AB = 14$, then $EF = \underline{7}$
4. If $AE = 8$, then $DF = \underline{8}$
5. If $DE = 6$, then $BC = \underline{12}$



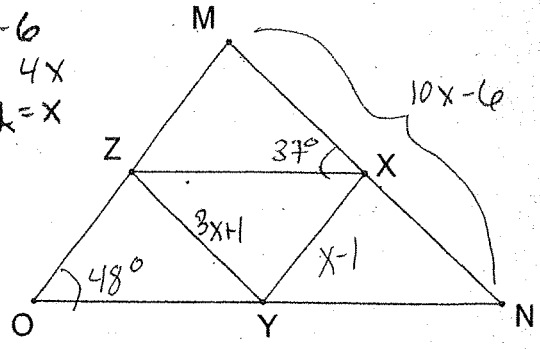
Use the diagram of $\triangle JKL$ where R, S, and T are midpoints of the sides, $RK = 3$, $KS = 4$, and $\overline{JK} \perp \overline{KL}$

6. Find the length of RS. $3^2 + 4^2 = c^2 \rightarrow 9 + 16 = c^2 \rightarrow 25 = c^2$
7. Find the length of JK. 6
8. Find the length of RT. 4
9. Find the perimeter of $\triangle JKL$. 24



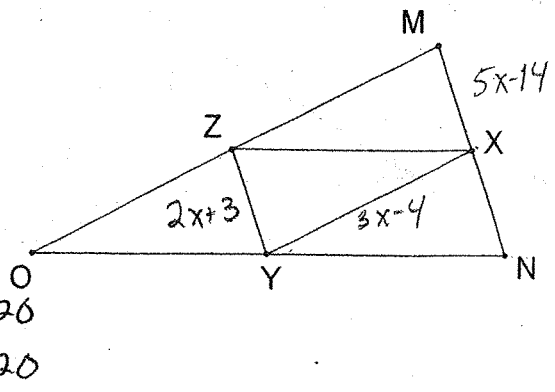
Use the diagram of $\triangle MNO$ where X, Y, and Z are midpoints of the sides.

10. If $YZ = 3x + 1$, and $MN = 10x - 6$ then $YZ = \underline{7}$
 $2(3x+1) = 10x-6 \rightarrow 6x+2 = 10x-6$
11. If $YX = x - 1$, and $MO = 3x - 7$, then $MO = \underline{8}$
 $2(x-1) = 3x-7 \rightarrow 2x-2 = 3x-7 \rightarrow 5 = x$
12. If $m\angle MON = 48^\circ$, then $m\angle MZX = \underline{48^\circ}$
13. If $m\angle MXZ = 37^\circ$, then $m\angle MNO = \underline{37^\circ}$



Use the diagram of $\triangle MNO$ where X, Y, and Z are the midpoints.

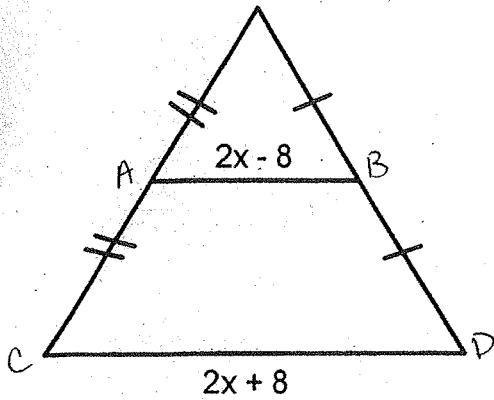
14. If $YZ = 2x + 3$, and $MN = 5x - 14$, then $YZ = \underline{43}$
 $2(2x+3) = 5x-14$
 $4x+6 = 5x-14$
 $20 = x$
15. If $YX = 3x - 4$, and $MO = 9x - 20$, then $MO = \underline{16}$
 $2(3x-4) = 9x-20$
 $6x-8 = 9x-20$
 $12 = 3x$
 $4 = x$



Assume the middle line is a midsegment in the problems below:

Find the length of each line

16)



$$2(2x-8) = 2x+8$$

$$4x-16 = 2x+8$$

$$2x = 24$$

$$x = 12$$

$$2(12)-8$$

$$24-8$$

$$2(12)+8$$

$$24+8$$

$$\overline{AB} = 16$$

$$\overline{CD} = 32$$

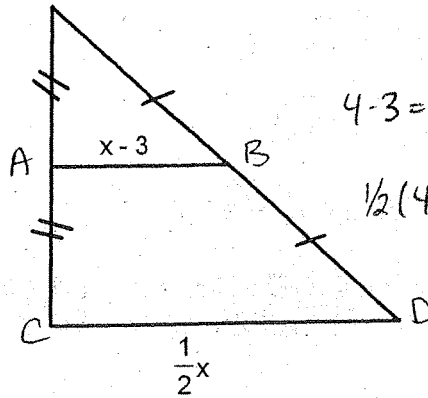
$$2(x-3) = \frac{1}{2}x$$

$$2x-6 = \frac{1}{2}x$$

$$-6 = -1.5x$$

$$4 = x$$

17)



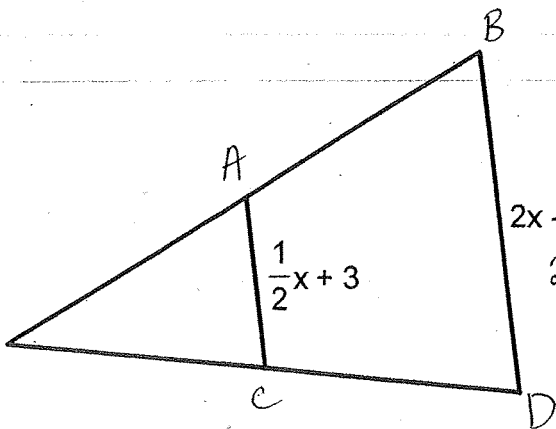
$$4-3=1$$

$$\frac{1}{2}(4)=2$$

$$\overline{AB} = 1$$

$$\overline{CD} = 2$$

18)



$$2(\frac{1}{2}x+3) = 2x-6$$

$$x+6 = 2x-6$$

$$12 = x$$

$$2(12)-6$$

$$24-6$$

$$=18$$

$$\overline{BD} = 18$$

$$\overline{AC} = 9$$

$$\frac{1}{2}(12)+3$$

$$6+3$$

$$=9$$