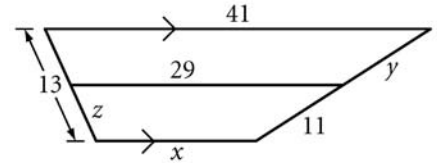
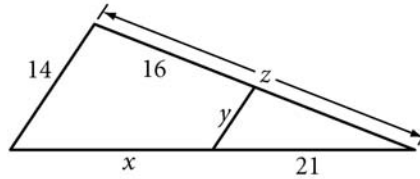
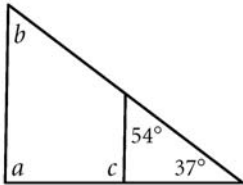


# 6.4 – Discovering Properties of Midsegments

In #1-3, each figure shows a midsegment

- 1)  $a = \underline{\hspace{2cm}}$ ,  $b = \underline{\hspace{2cm}}$ ,  $c = \underline{\hspace{2cm}}$   
 2)  $x = \underline{\hspace{2cm}}$ ,  $y = \underline{\hspace{2cm}}$ ,  $z = \underline{\hspace{2cm}}$

- 3)  $x = \underline{\hspace{2cm}}$ ,  $y = \underline{\hspace{2cm}}$ ,  $z = \underline{\hspace{2cm}}$



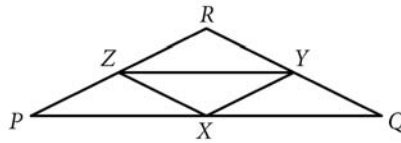
Complete the following.

- 4)  $x, y,$  and  $z$  are midpoints. Perimeter  $\triangle PQR = 132$ ,  $RQ = 55$ , and  $PZ = 20$ .

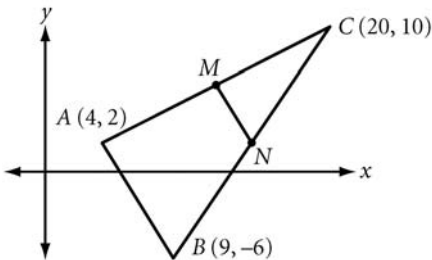
Perimeter  $\triangle XYZ = \underline{\hspace{2cm}}$

$PQ = \underline{\hspace{2cm}}$

$ZX = \underline{\hspace{2cm}}$



- 5)  $\overline{MN}$  is the midsegment. Find the coordinates of  $M$  and  $N$ . Find the slopes of  $\overline{AB}$  and  $\overline{MN}$ .



- 6) Find each measure, or write “cannot be determined.”  
 $DC = 68$ ,  $AB = 44$ ,  $BN = 15$ , and  $DM = 12$ .

$MN = \underline{\hspace{2cm}}$

Perimeter  $ABCD = \underline{\hspace{2cm}}$

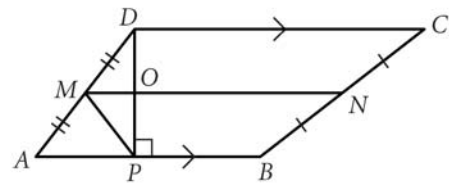
$MP = \underline{\hspace{2cm}}$

$m\angle DON = \underline{\hspace{2cm}}$

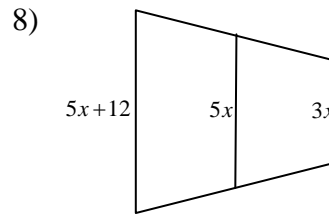
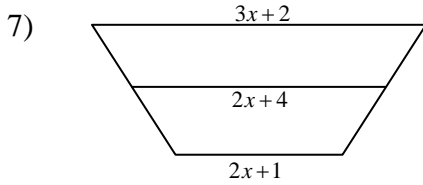
$DP = \underline{\hspace{2cm}}$

$m\angle A + m\angle B = \underline{\hspace{2cm}}$

$m\angle B + m\angle C = \underline{\hspace{2cm}}$



Each diagram shows a trapezoid and its midsegment. Solve for  $x$ . Show all work.



In #9-16,  $TA = AB = BC$  and  $TD = DE = EF$ .

9) Write an equation that relates  $AD$  and  $BE$ . \_\_\_\_\_

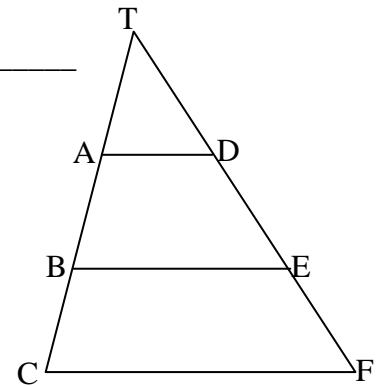
10) Write an equation that relates  $AD$  and  $BE$  and  $CF$ . \_\_\_\_\_

11) If  $AD = 7$ , then  $BE =$  \_\_\_\_\_ and  $CF =$  \_\_\_\_\_.

12) If  $BE = 26$ , then  $AD =$  \_\_\_\_\_ and  $CF =$  \_\_\_\_\_.

13) If  $AD = x$  and  $BE = x + 6$ , then  $x =$  \_\_\_\_\_ and  $CF =$  \_\_\_\_\_.

14) If  $AD = x + 3$  and  $BE = x + y$  and  $CF = 36$ , then  $x =$  \_\_\_\_\_ and  $y =$  \_\_\_\_\_.



15) If  $AD = x + y$  and  $BE = 20$  and  $CF = 4x - y$ , then  $CF =$  \_\_\_\_\_ (numerical value).

16) Tony makes up a problem for the figure. setting  $AD = 5$  and  $CF = 17$ . Katie says, "You can't do that." Explain Katie's reasoning.