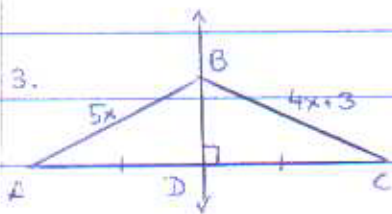Geometry Ch 5-2 Exer, pg 308 #3-5, 11-17

Algebra: Find the length of $\overline{AB}$.
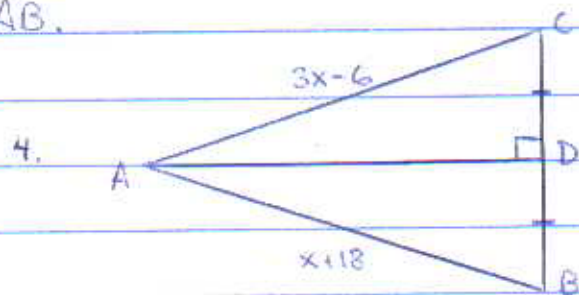
3.

$5x = 4x + 3$

$x = 3$

$AB = 5(3)$

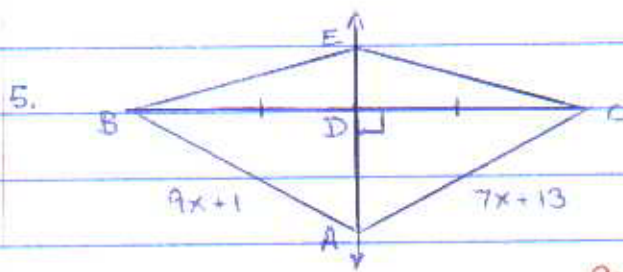$\boxed{AB = 15}$

4.

$3x - 6 = x + 18$

$2x = 24$

$x = 12$

$AB = (12) + 18$
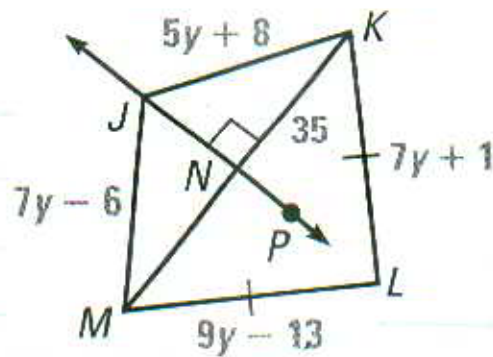
$\boxed{AB = 30}$

5.

$9x + 1 = 7x + 13$

$2x = 12$

$x = 6$

$AB = 9(6) + 1$

$\boxed{AB = 55}$

Use the information in the diagram. $\overleftrightarrow{JN}$ is perpendicular to the bisector of $\overline{MK}$.

Diagram labels:
- $5y + 8$ near J-K
- K
- 35 near N
- $7y + 1$ near L side
- $7y - 6$ near J-M
- N
- P
- $9y - 13$ near M-L bottom
- J, M, L

11. Find NM.

Since $\overline{JN}$ is a bisector of $\overline{MK}$, the point N must be a midpoint of $\overline{MK}$. Therefore, $\overline{NM} = \overline{NK}$. Since $\overline{NK} = 35$,

$$\overline{NM} = 35.$$

12. Find JK.

$7y - 6 = 5y + 8$

$2y = 14$

$\boxed{y = 7}$

$JK = 5(7) + 8$

$= 35 + 8$

$\boxed{JK = 43}$

13. Find KL.

$KL = 7(7) + 1$

$\boxed{KL = 50}$

14. Find ML.

$ML = 9(7) - 13$

$\boxed{ML = 50}$

15. Is L on $\overleftrightarrow{JP}$? Explain.
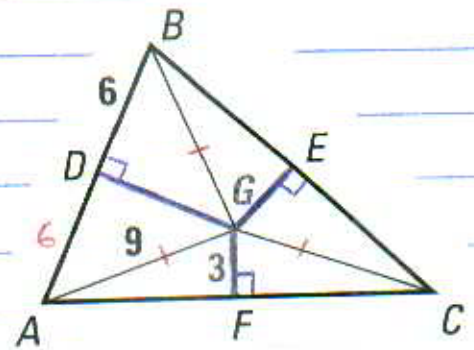
ML and KL are both equal to 50. If these segments were not equal, then L could not lie on the perpendicular line $\overleftrightarrow{JP}$.

In the diagram, the perpendicular bisectors of △ABC
meet at point G, and are drawn in blue.

16. Find measure of BG.

   Consider △ABG. Since G
   is on the ⊥ bisector of $\overline{AB}$,
   AG = BG.   Thus, BG = 9

17. Find measure of GA.

   Consider △AGC.
   Since G is on ⊥ bisector
   of $\overline{AC}$, AG = CG.
      Thus GA = 11