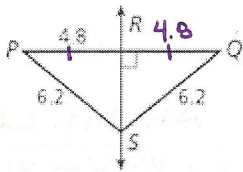


Find each measure:

1. PQ

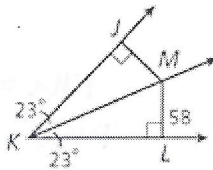
$$PQ = 4.8 + 4.8$$

$$PQ = 9.6$$



2. JM

$$JM = 58$$



3. AC

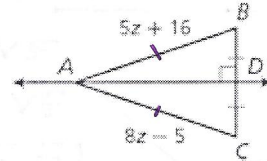
$$5z + 16 = 8z - 5$$

$$21 = 3z$$

$$7 = z$$

$$AC = 8(7) - 5$$

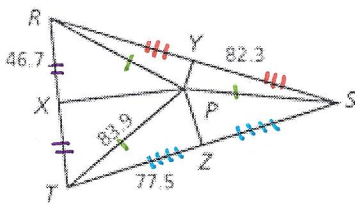
$$AC = 51$$



4. Write an equation in point-slope form, $y - y_1 = m(x - x_1)$, for the perpendicular bisector of the segment with endpoints M(-1, -3) and N(7, 1).

\rightarrow Slope $MN = \frac{1 - (-3)}{7 - (-1)} = \frac{4}{8} = \frac{1}{2}$
 \downarrow perpendicular Slope = -2
 Midpoint $\left(\frac{-1+7}{2}, \frac{-3+1}{2}\right)$
 Midpoint $(3, -1)$
 x_1, y_1
 $y - (-1) = -2(x - 3)$

5. PX, PY, and PZ are the perpendicular bisectors of $\triangle RST$. Find PS and XT.

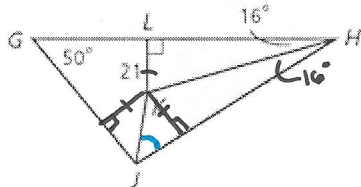


$$PS = 83.9$$

$$XT = 46.7$$

$$y + 1 = -2(x - 3)$$

6. JK and HK are angle bisectors of $\triangle GHJ$. Find $m\angle GJK$ and the distance from K to HJ and $m\angle HJK$



$$K \text{ to } HJ = 21$$

$$\angle J + \angle H + \angle G = 180$$

$$\angle J + 32 + 50 = 180$$

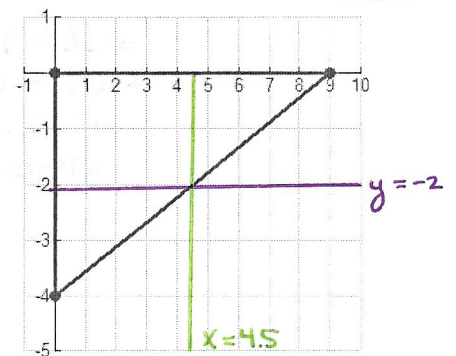
$$\angle J = 98 \rightarrow \angle HJK = \frac{98}{2}$$

$$= 49^\circ$$

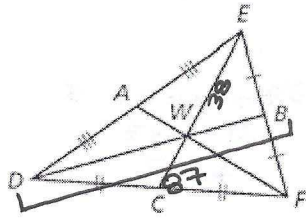
7. Find the circumcenter of $\triangle TVO$ with vertices T(9, 0), V(0, -4), and O(0, 0).

where perpendicular bisectors meet.

$$(4.5, -2)$$



8. In $\triangle DEF$, $BD = 87$, and $WE = 38$. Find BW , CW , and CE .



$$BW = \frac{1}{3} BD$$

$$BW = \frac{1}{3} (87)$$

$$BW = 29$$

$$WE = \frac{2}{3} CE$$

$$38 = \frac{2}{3} CE$$

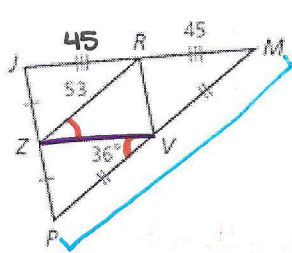
$$57 = CE$$

$$CW = \frac{1}{3} CE$$

$$CW = \frac{1}{3} (57)$$

$$CW = 19$$

9. Find ZV , PM , and $m\angle RZV$ in $\triangle JMP$.



$$ZV = \frac{1}{2} JM$$

$$ZV = \frac{1}{2} (90)$$

$$ZV = 45$$

$$PM = 2 RV$$

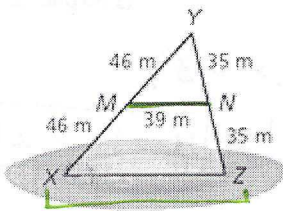
$$PM = 2 (53)$$

$$PM = 106$$

$$\text{Alt. Int. } \angle s$$

$$\angle RZV = 36^\circ$$

10. What is the distance XZ across the pond?



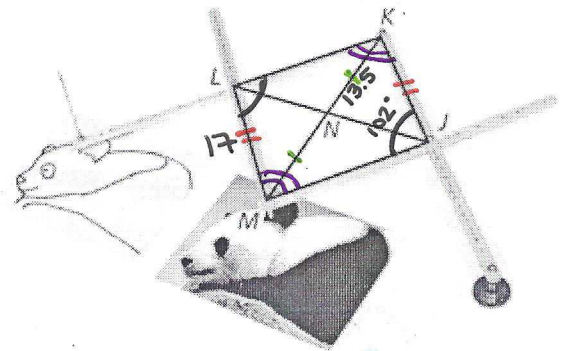
$$MN = \frac{1}{2} XZ$$

$$39 = \frac{1}{2} XZ$$

$$78m = XZ$$

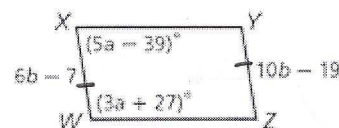
11. A pantograph is used to copy drawings. Its legs form a parallelogram. In $\square JKLM$, $LM = 17$ cm, $KN = 13.5$ cm, and $m\angle KJM = 102^\circ$. Find each measure:

- $KM = 13.5 + 13.5 = 27$ cm
- $KJ = 17$ cm
- $MN = 13.5$ cm
- $m\angle JKL = 180 - 102 = 78^\circ$
- $m\angle JML = 78^\circ$
- $m\angle KLM = 102^\circ$



12. $WXYZ$ is a parallelogram. Find each measure:

- $WX = 6(3) - 7 = 11$
- $YZ = WX = 11$
- $m\angle X = 5(24) - 39 = 81^\circ$
- $m\angle W = 180 - 81 = 99^\circ$



$$6b - 7 = 10b - 19$$

$$12 = 4b$$

$$3 = b$$

$$\angle X + \angle W = 180$$

$$5a - 39 + 3a + 27 = 180$$

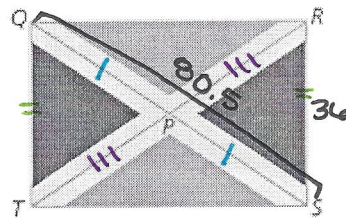
$$8a - 12 = 180$$

$$8a = 192$$

$$a = 24$$

13. The flag of Jamaica is a rectangle with stripes along the diagonals. In rectangle QRST, $QS = 80.5$, and $RS = 36$. Find each length.

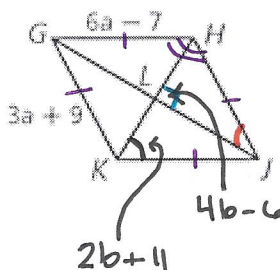
- a) $SP = 80.5 \div 2 = 40.25$
- b) $QT = 36$
- c) $TR = SP = 80.5$
- d) $TP = 40.25$



GHJK is a rhombus. Find each measure:

14. $HJ = 6(16/3) - 7 = 3(16/3) + 9$
 $25 = 25$

$HJ = 25$



$6a - 7 = 3a + 9$
 $3a = 16$
 $a = 16/3$

15. $m\angle HJG$ and $m\angle GHJ$ if $m\angle JLH = (4b - 6)^\circ$ and $m\angle JKH = (2b + 11)^\circ$

$\angle JLH = 90$

$4b - 6 = 90$
 $4b = 96$
 $b = 24$

$\angle JKH = 59^\circ$

$\angle HJG + 59 + 90 = 180$

$\angle HJG = 31^\circ$

$\angle H = \angle K$
 $\angle H = 2(59)$

$\angle H = 118^\circ$

[Faint handwritten notes]

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$$P + (100 - P) \cdot 0.5 = 100 \cdot 0.5$$

$$P + 50 - 0.5P = 50$$

$$0.5P = 0$$

$$P = 0$$

$$P = 100$$

$$0.5P = 50$$

$$0.5P = 50$$

$$P = 100$$

$$P = 100$$

$$0.5P = 50$$

$$0.5P = 50$$

$$P = 100$$

