

Answer on Question#40148 – Math - Geometry

Isosceles trapezoid YXWZ has a perimeter of 55.9, line segment AB bisects trapezoid YXWZ with the length of 19.35, line segment YX has is 3 times the length of YZ. YX is the larger base and WZ is the smaller base. Find the lengths of WZ, WX, YX, and ZY.

Solution.

$$\text{Perimeter } P = YX + WZ + 2YX = YX + WZ + \frac{2}{3}YX = \frac{5}{3}YX + WZ.$$

$$AB = \frac{YX+WZ}{2}.$$

So, we have two equations with two unknowns:

$$\begin{cases} \frac{5}{3}YX + WZ = 55.9 \\ \frac{YX + WZ}{2} = 19.35 \end{cases} \rightarrow \begin{cases} YX = 25.8 \\ WZ = 12.9 \end{cases} \rightarrow YZ = \frac{YX}{3} = 8.6.$$

Answer: WZ=12.9, YX=25.8, YX=WX=8.6.