10. If $AB = 6$, $BC = 4$, and $AE = 9$, find $ED$.

12. If $AC = 14$, $BC = 8$, and $AD = 21$, find $ED$.

Determine whether $\overline{VY} \parallel \overline{ZW}$. Justify your answer.

14. $ZX = 18$, $ZV = 6$, $WX = 24$, and $YX = 16$.

16. $ZV = 8$, $VX = 2$, and $YX = \frac{1}{2} WY$.

$\overline{JH}$, $\overline{JP}$, and $\overline{PH}$ are midsegments of $\triangle KLM$. Find the value of $x$.

18. $K$ $J$ $L$ $P$ $M$ $H$ $X$

20. $K$ $P$ $L$ $J$ $M$ $H$ $778$ ft

22. **MAPS** In Charleston, South Carolina, Logan Street is parallel to both King Street and Smith Street between Beaufain St. and King St.
22. **MAPS** In Charleston, South Carolina, Logan Street is parallel to both King Street and Smith Street between Beaufain Street and Queen Street. What is the distance from Smith to Logan along Beaufain? Round to the nearest foot.

\[ \text{Distance} = 890.5 \text{ ft} \]
7-5 Parts of Similar Triangles

Draw the special segments in each of the triangles below.

- Angle bisector
- Altitude
- Median

If you have any of these special segments drawn in two similar triangles, you can create proportions using any of these corresponding segments and any other set of corr. sides.

**EXAMPLE 1** Use Special Segments in Similar Triangles

In the figure, \( \triangle LJK \sim \triangle SQR \). Find the value of \( x \).
corresponding segments and any other set of corr. sides.

**EXAMPLE 1**

Use Special Segments in Similar Triangles

In the figure, \( \triangle LJK \sim \triangle SQR \). Find the value of \( x \).

\[
\frac{x}{12} = \frac{5}{8}
\]

\( x = 7.5 \)

\[
8x = \frac{5}{12} \times x
\]

\( 8x = 60 \)

\( x = 12 \)

\( x = 4.5 \)
**Triangle Angle Bisector Theorem**

An angle bisector in a triangle separates the opposite side into two segments that are proportional to the lengths of the other two sides.

Our proportion: \[
\frac{JK}{KM} = \frac{JL}{LM}
\]

*note- You have a bisected angle in ONE triangle. This allows you to write a proportion using the side that has been cut, and the sides which have not been cut.

**EXAMPLE 3** Use the Triangle Angle Bisector Theorem

Find x.

\[
\frac{15}{x} = \frac{9}{6}
\]

**Check Your Progress**
EXAMPLE 3

Use the Triangle Angle Bisector Theorem

Find $x$.

$x = 10$

Check Your Progress

3A.

$13$

$4$

$6$

$x = 8.7$

3B.

$14$

$x$

$11$

$11x = 280 - 14x$

$25x = 280$

$x = 11.2$