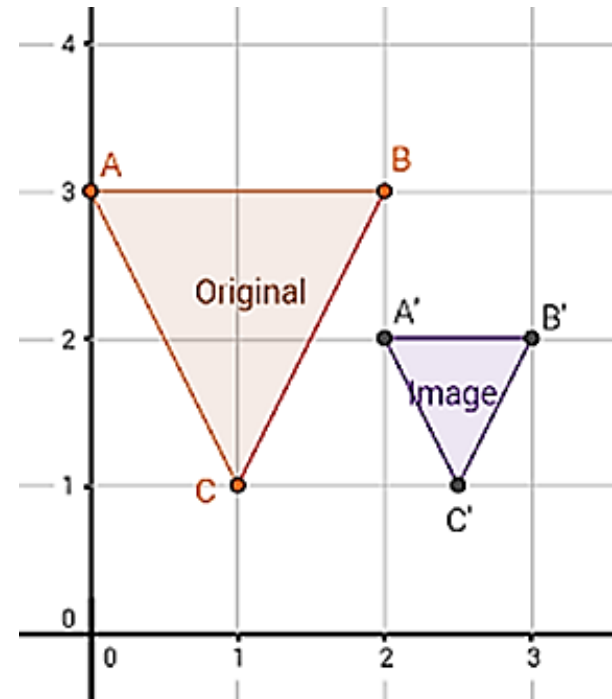
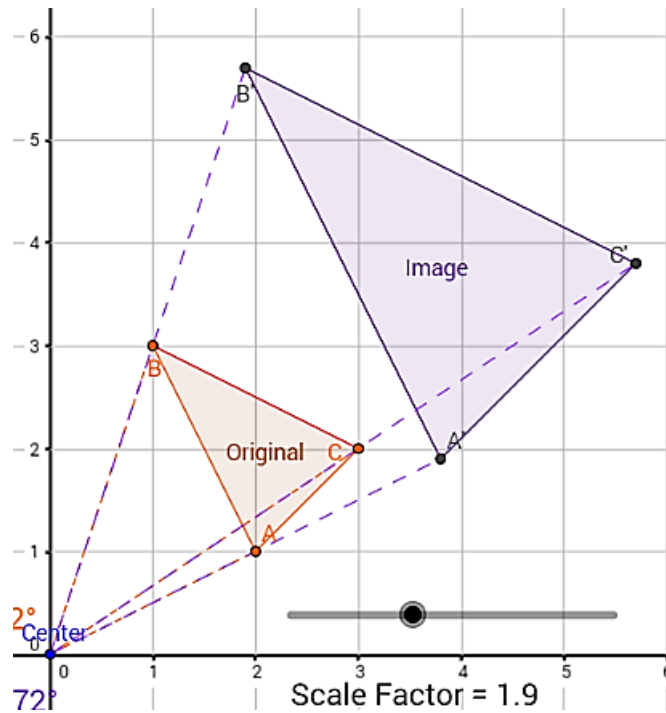


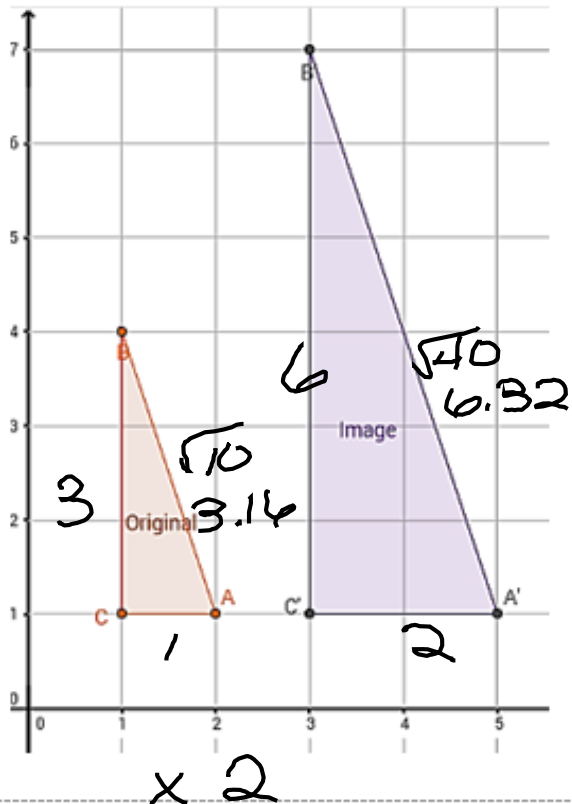
Similar Polygons

Lesson 8.1

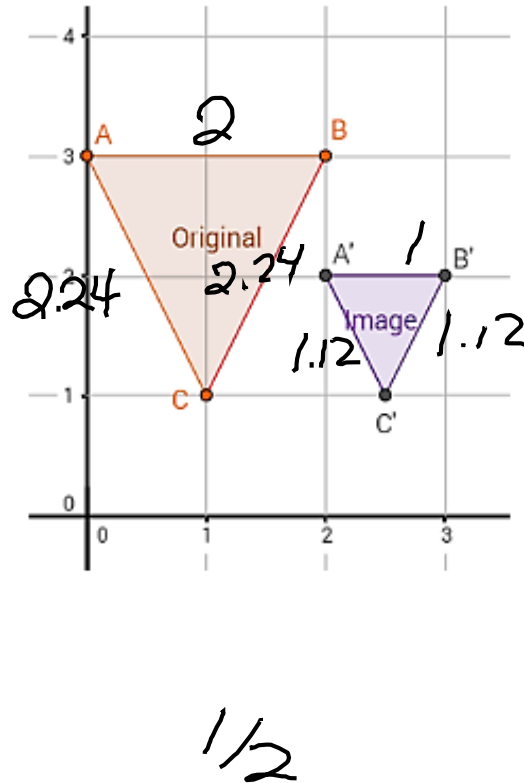


Are the sides of the triangles proportional? Round your answers to 2 decimal places. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

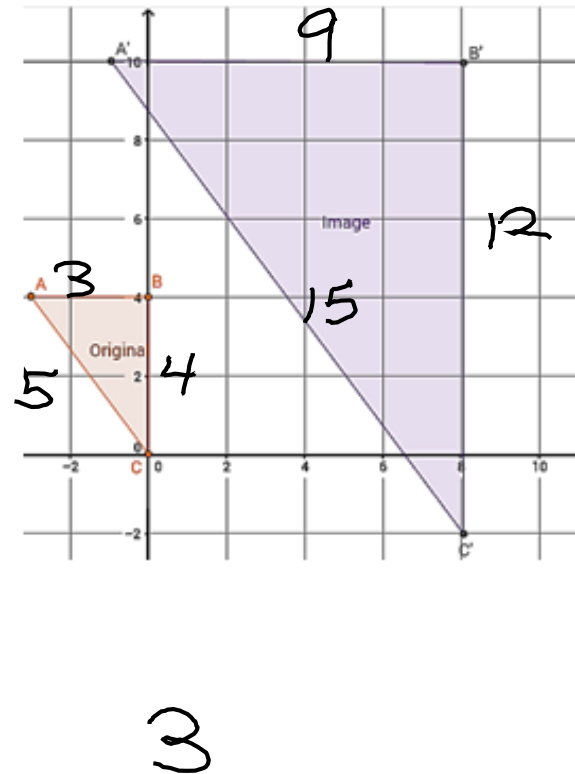
9.



10.



11.



$$\frac{1.3}{2.6} = 1.5$$

$$\frac{2.6}{2} = 6$$

Find the perimeters of the triangles in exercises 9 – 11.

12. Perimeter of $\triangle ABC = 7.16$
Perimeter of $\triangle A'B'C' = 14.32$

13. Perimeter of $\triangle ABC = 6.48$
Perimeter of $\triangle A'B'C' = 3.24$

14. Perimeter of $\triangle ABC = 12$
Perimeter of $\triangle A'B'C' = 36$

Find the areas of the triangles in exercises 9 – 11. $A = \frac{1}{2}bh$ or $A = \frac{bh}{2}$

15. Area of $\triangle ABC = 1.5$
Area of $\triangle A'B'C' = 6$ $\frac{4 \times 3}{2}$

16. Area of $\triangle ABC = 2$
Area of $\triangle A'B'C' = .5$ $\frac{1 \times 1}{2}$

17. Area of $\triangle ABC = 6$
Area of $\triangle A'B'C' = 54$ $\frac{12 \times 9}{2}$

AB =	AC =	BC =	Perimeter of $\triangle ABC =$	Area of $\triangle ABC =$	Scale Factor =
A'B' =	A'C' =	B'C' =	Perimeter of $\triangle A'B'C' =$	Area of $\triangle A'B'C' =$	
Ratios:					

5. Change the scale factor. Move the vertices of the original triangle. Repeat the calculations in question 4.

AB =	AC =	BC =	Perimeter of $\triangle ABC =$	Area of $\triangle ABC =$	Scale Factor =
A'B' =	A'C' =	B'C' =	Perimeter of $\triangle A'B'C' =$	Area of $\triangle A'B'C' =$	
Ratios:					

6. Change the scale factor. Move the center and vertices of the original triangle. Repeat the calculations in question 4.

AB =	AC =	BC =	Perimeter of $\triangle ABC =$	Area of $\triangle ABC =$	Scale Factor =
A'B' =	A'C' =	B'C' =	Perimeter of $\triangle A'B'C' =$	Area of $\triangle A'B'C' =$	
Ratios:					

7. Change the scale factor. Move the center and vertices of the original triangle. Repeat the calculations in question 4.

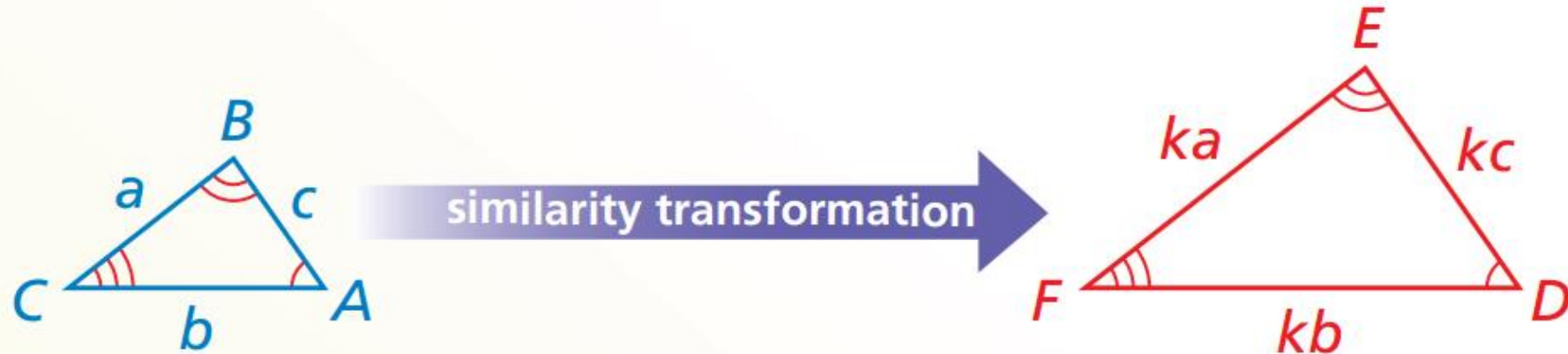
AB =	AC =	BC =	Perimeter of $\triangle ABC =$	Area of $\triangle ABC =$	Scale Factor =
A'B' =	A'C' =	B'C' =	Perimeter of $\triangle A'B'C' =$	Area of $\triangle A'B'C' =$	
Ratios:					

Corresponding Parts of Similar Polygons

\cong Congruent

\sim Similar

$\triangle ABC$ is similar to $\triangle DEF$. New symbol. $\triangle ABC \sim \triangle DEF$



Corresponding angles

$$\angle A \cong \angle D, \angle B \cong \angle E, \angle C \cong \angle F$$

Ratios of corresponding side lengths

$$\frac{DE}{AB} = \frac{EF}{BC} = \frac{FD}{CA} = k$$

In the diagram, $\triangle ABC \sim \triangle JKL$.

- a. Find the scale factor from $\triangle ABC$ to $\triangle JKL$.

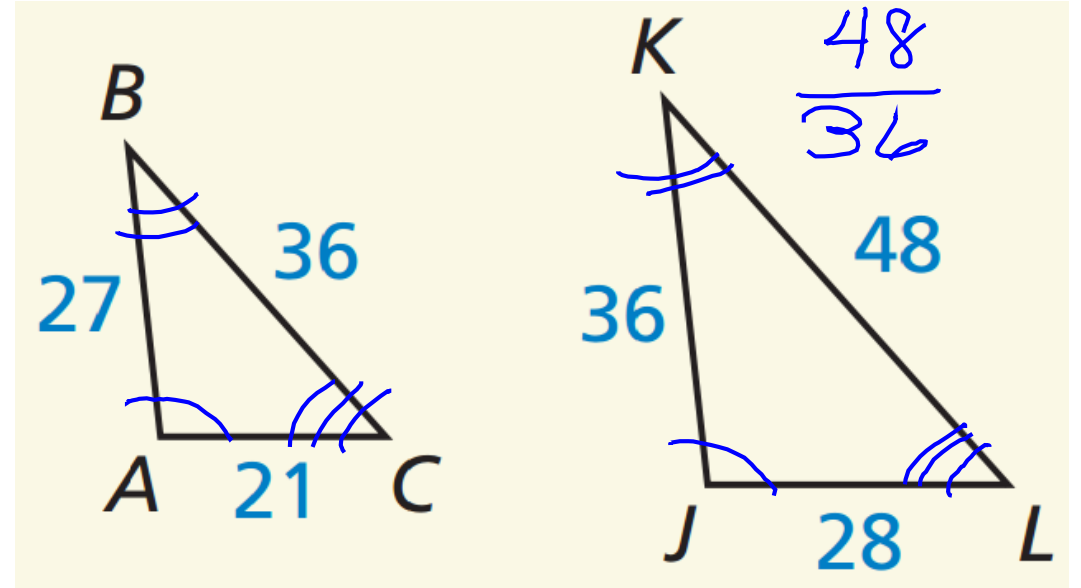
$$\frac{48}{36} = \frac{4}{3}$$

- b. List all pairs of congruent angles.

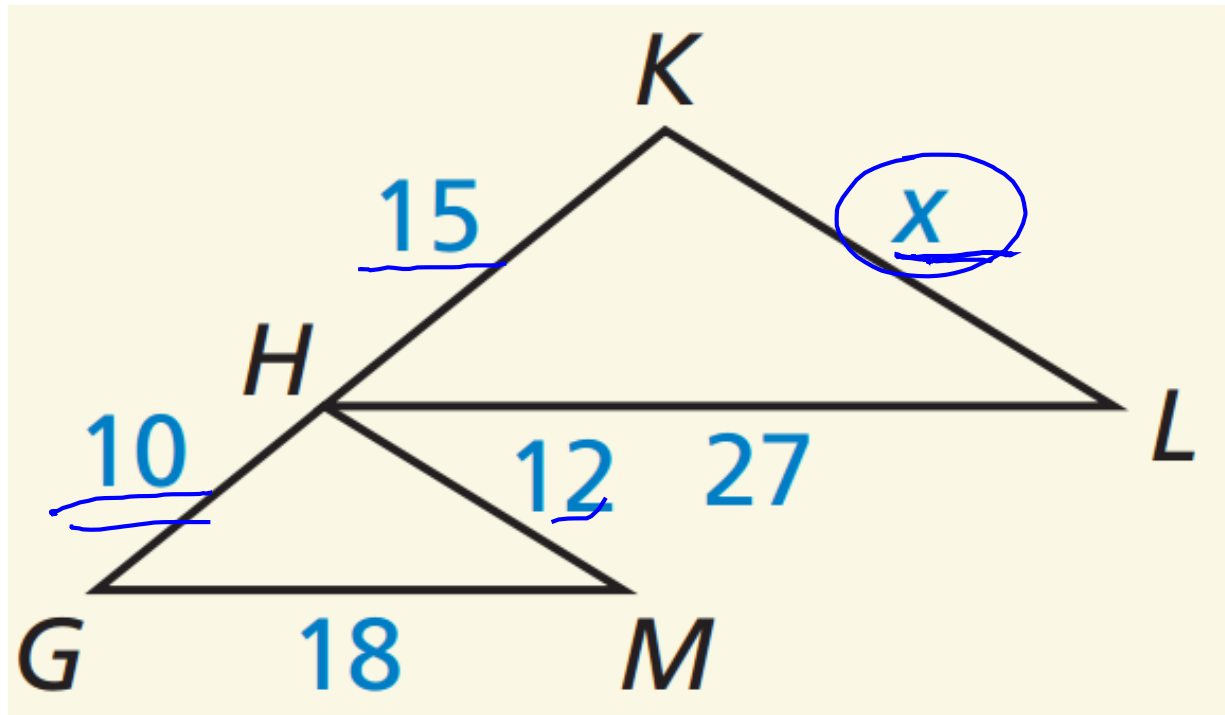
$$\angle A \cong \angle J, \angle B \cong \angle K, \angle C \cong \angle L$$

- c. Write the ratios of the corresponding side lengths in a statement of proportionality.

$$\frac{JK}{AB} = \frac{KL}{BC} = \frac{JL}{AC} = \frac{36}{27} = \frac{4}{3}$$



In the diagram, $\triangle GHM \sim \triangle HKL$. Find the value of x .



$$\frac{KL}{HM} = \frac{x}{12} = \frac{15}{10}$$

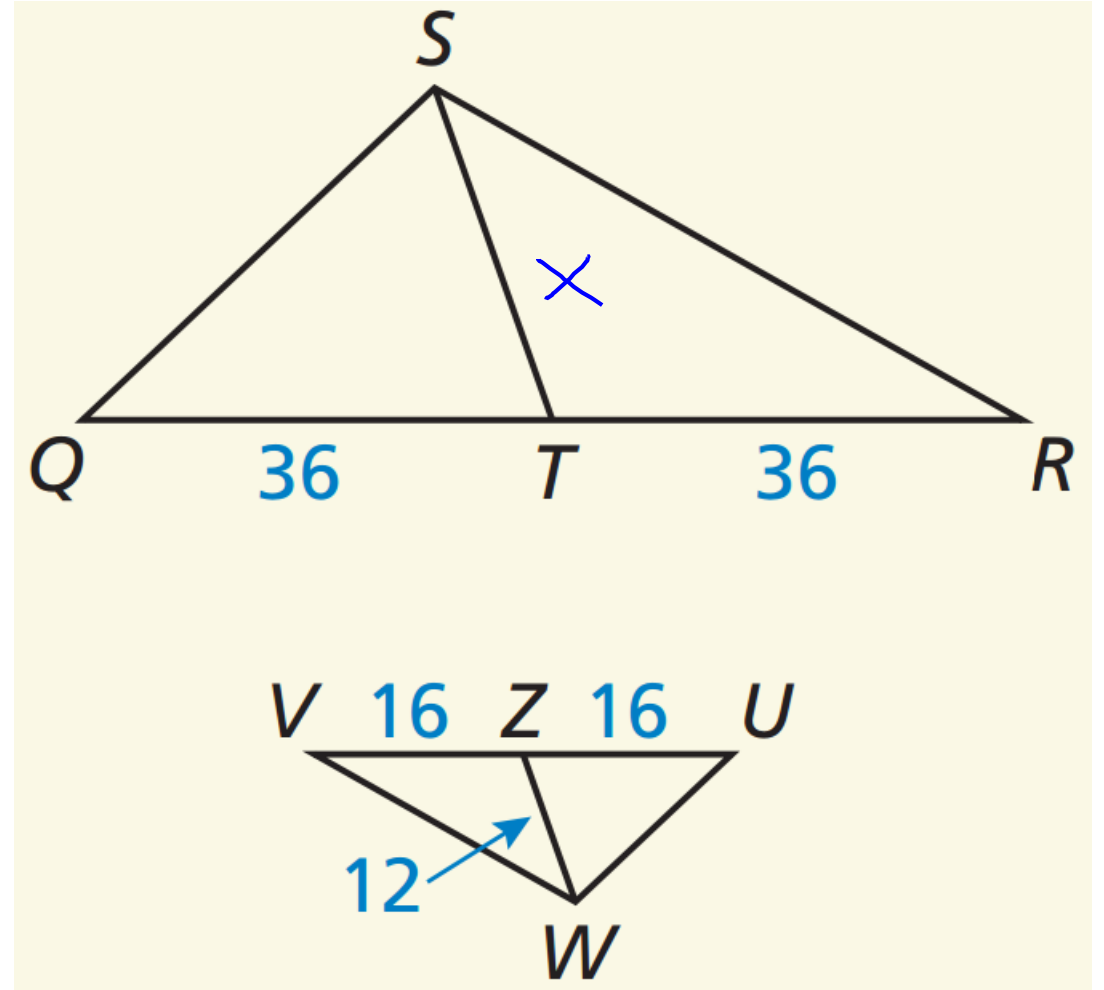
$$10x = 12(15)$$

$$10x = 180$$

$$x = 18$$

In the diagram, $\triangle UVW \sim \triangle QRS$. Find the length of the median \overline{ST} .

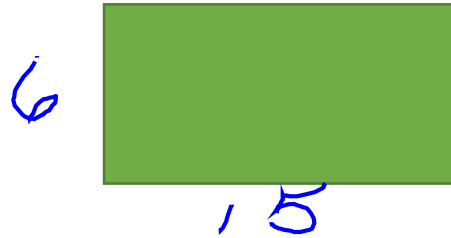
$$\frac{x}{12} = \frac{36}{16}$$
$$\frac{16x}{16} = \frac{432}{16}$$
$$x = 27$$



Your neighbor has decided to enlarge his garden. The garden is rectangular with width 6 feet and length 15 feet. The new garden will be similar to the original one, but will have a length of 35 feet. Find the perimeter of the original garden and the enlarged garden.

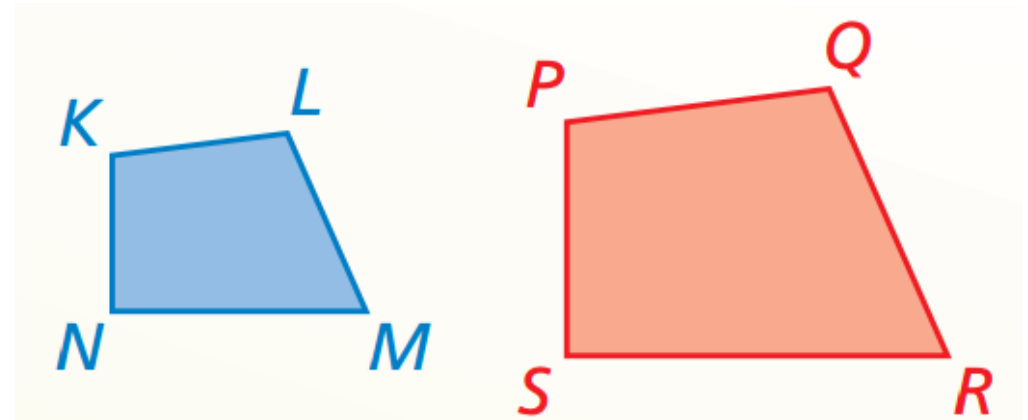
$$\frac{6}{x} = \frac{15}{35}$$

$$\frac{6}{15} = \frac{x}{35}$$



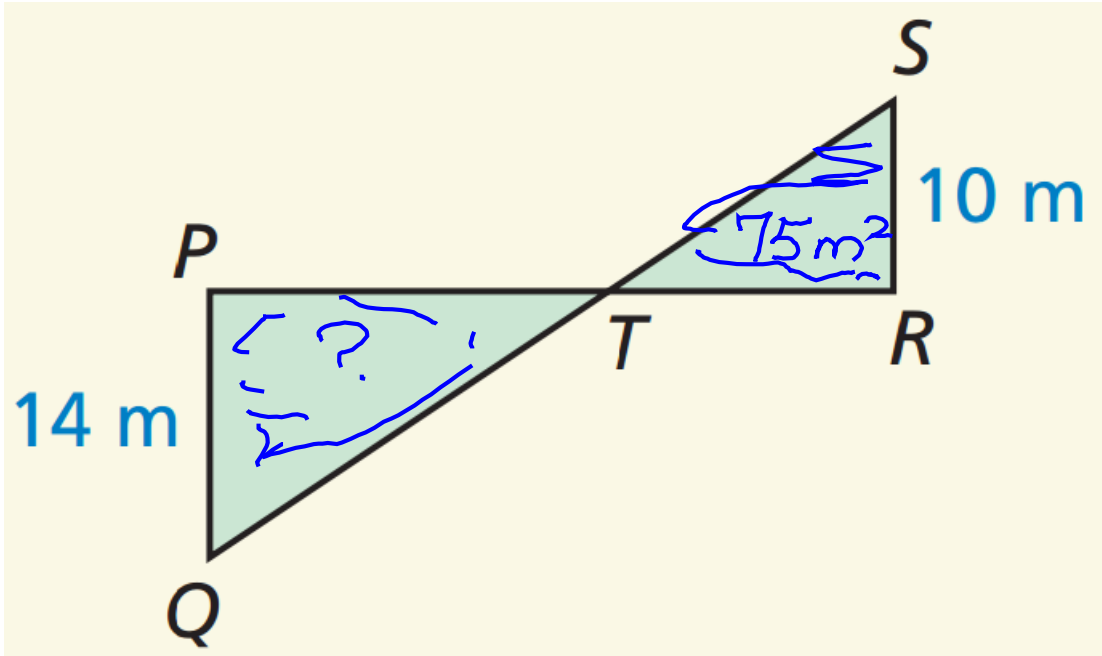
Areas of Similar Polygons

When polygons are similar the ratio of their areas is equal to the squares of the ratios of their corresponding side lengths.



$$\text{If } KLMN \sim PQRS, \text{ then } \frac{\text{Area of } PQRS}{\text{Area of } KLMN} = \left(\frac{PQ}{KL}\right)^2 = \left(\frac{QR}{LM}\right)^2 = \left(\frac{RS}{MN}\right)^2 = \left(\frac{SP}{NK}\right)^2.$$

In the diagram, $\triangle PQT \sim \triangle RST$, and the area of $\triangle RST$ is 75 square meters. Find the area of $\triangle PQT$.



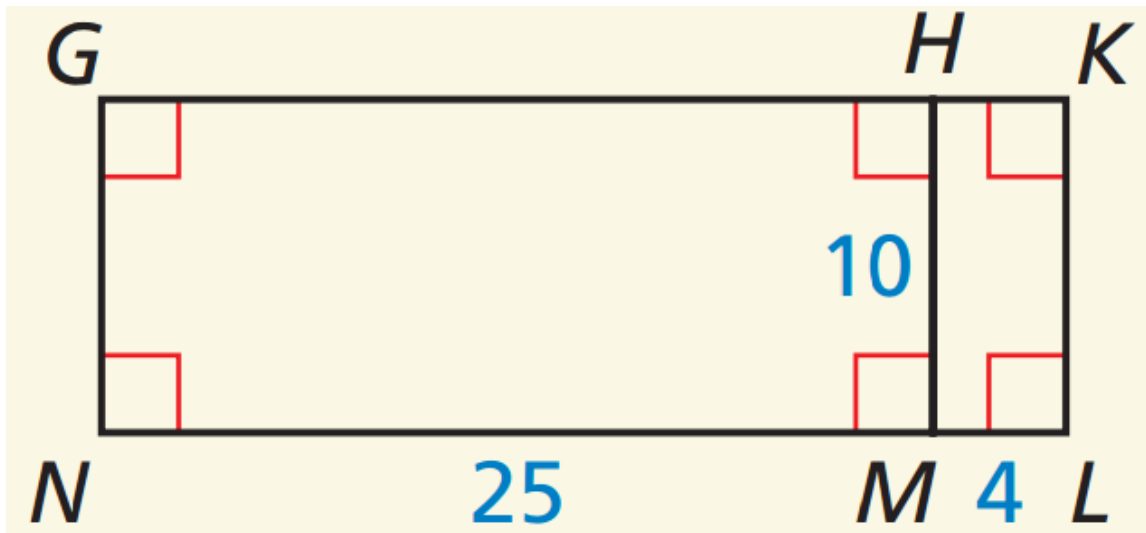
$\frac{14}{10}$

$$\frac{14}{10} = \frac{7}{5}$$

$$\left(\frac{7}{5}\right)^2$$

$$\frac{49}{25} = \frac{x}{75}$$

Decide whether $\triangle GNMH$ and $\triangle MLKH$ are similar.
Explain your reasoning.



Section 8.1 p 423; 4-38 even