



# Geometry

Exploring Similar Polygons

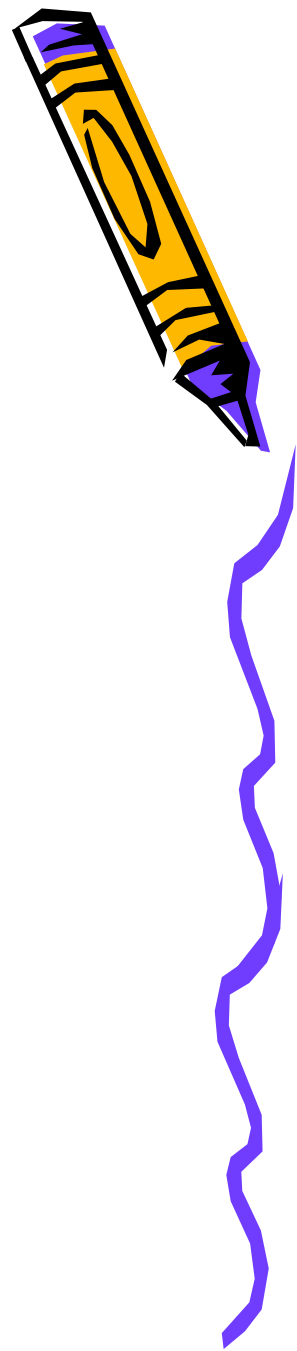


# Vocabulary

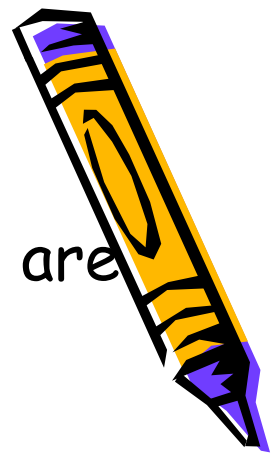
- Similar Polygons ( $\sim$ ):

Two polygons are similar if their corresponding angles are congruent and their corresponding sides are proportional.

Similar polygons:  
Same shape, proportional size.



# Vocabulary



- Two polygons are similar if corresponding angles are congruent and corresponding side lengths are proportional.
- A similarity statement is written to show the corresponding sides and angles.

$PQRS \sim ABCD$  means these two polygons are similar; P corresponds to A, Q corresponds to B, and so on.

- Scale Factor (recall from dilations):

The ratio of the lengths of corresponding sides of similar polygons.

$$S.F. = \frac{\text{new (2nd) side}}{\text{old (1st) side}}$$

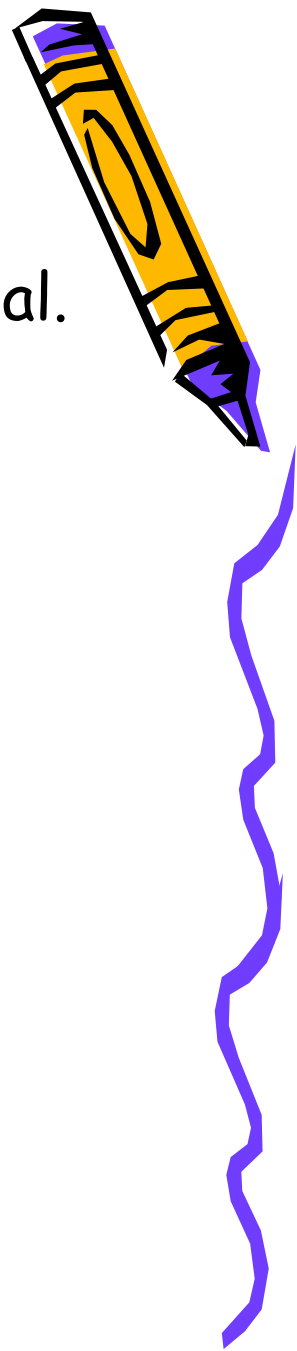


# Vocabulary

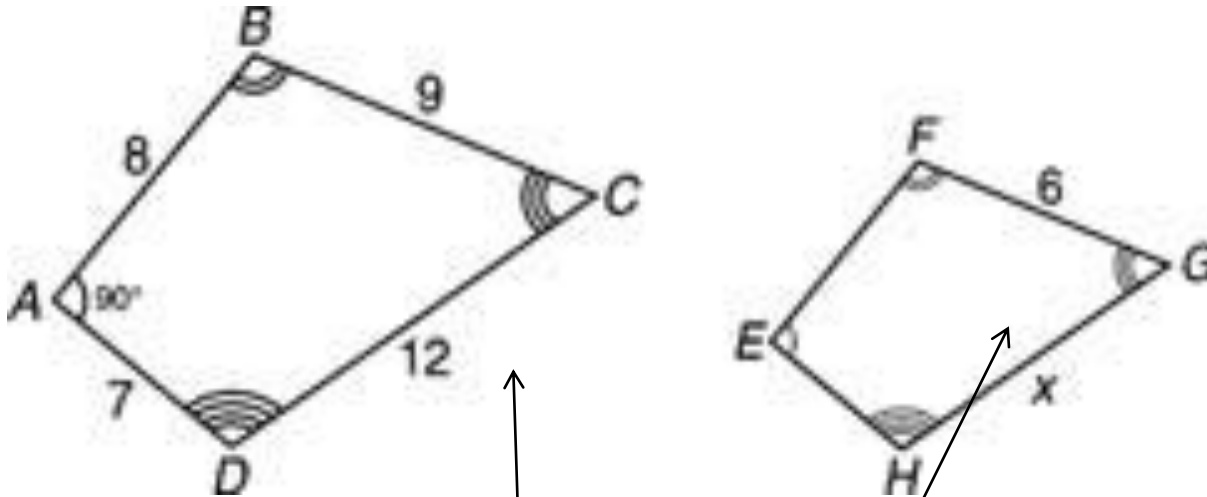
All segments of similar polygons are proportional.

If two triangles are similar,  
then all of the following are proportional.

1. Midsegments
2. Angle Bisectors
3. Medians
4. Altitudes
5. Perimeters



# Exploring Similar Polygons



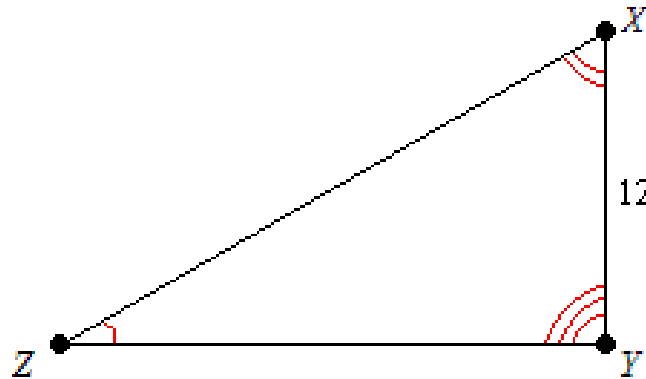
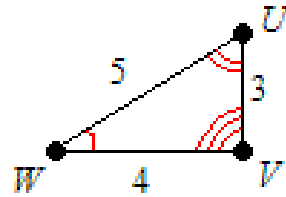
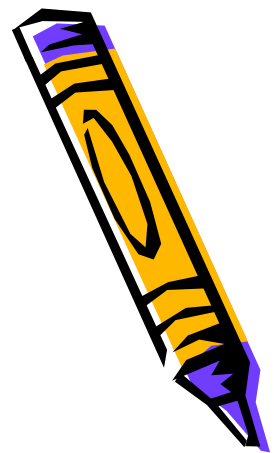
Establish a proportion using the pair of known sides and their corresponding sides.

$$\frac{9}{12} = \frac{6}{x}$$

$$x = 8$$



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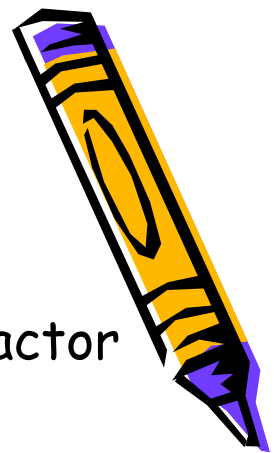


Find  $XZ$  and  $YZ$ .

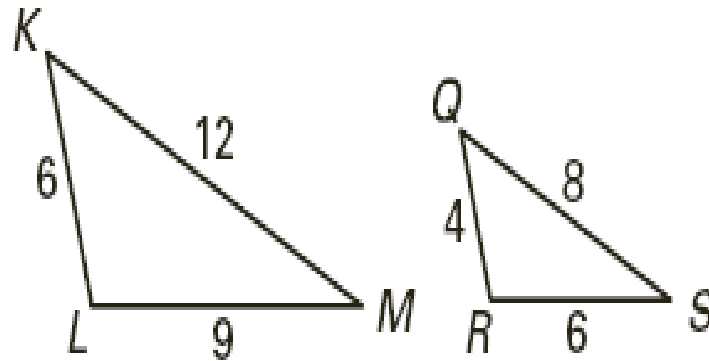
Then write a similarity statement for the triangles.



# Exploring Similar Polygons



Complete the similarity statement and determine the scale factor (order of statement indicates direction of the dilation).

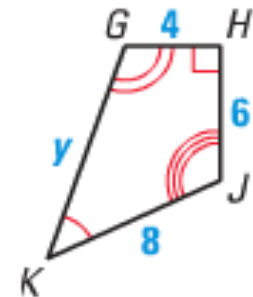
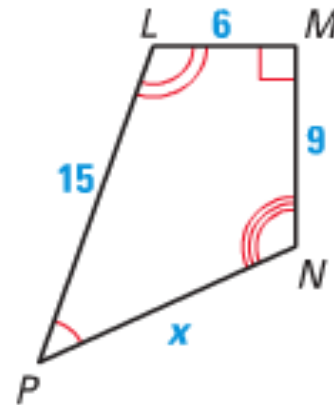
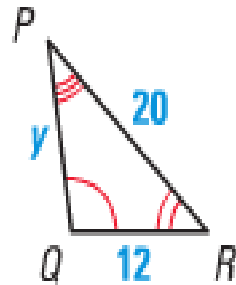
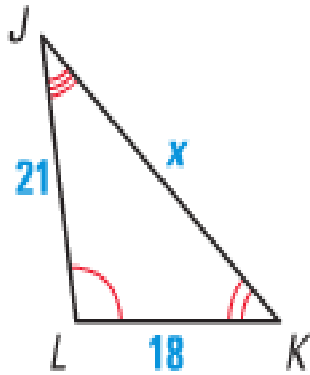


$$\triangle LKM \sim \triangle \underline{\hspace{2cm}}$$



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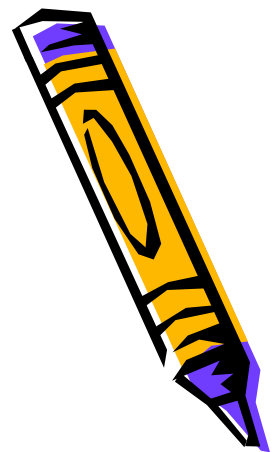
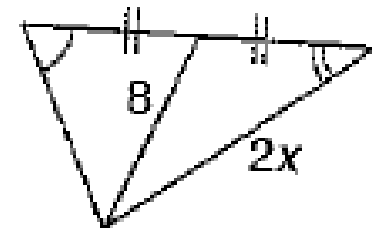
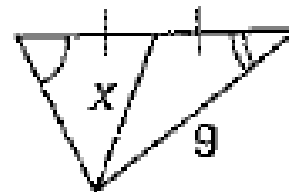
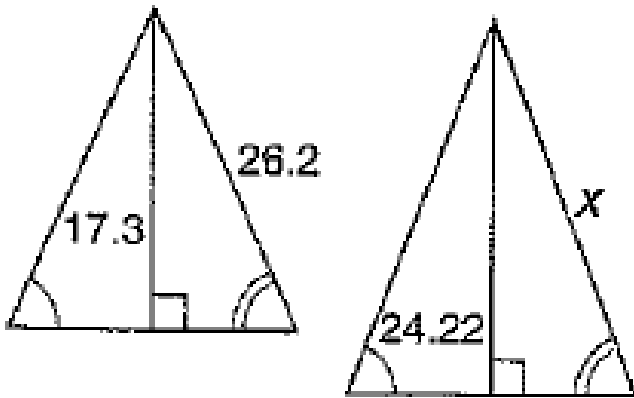
Find the missing sides in each pair of figures.



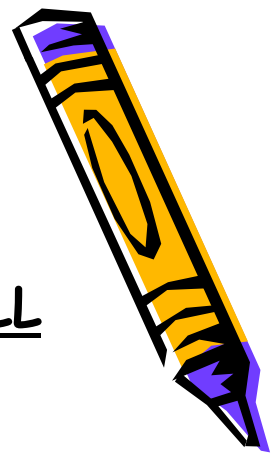


# Exploring Similar Polygons

Find the missing sides in each pair of figures.



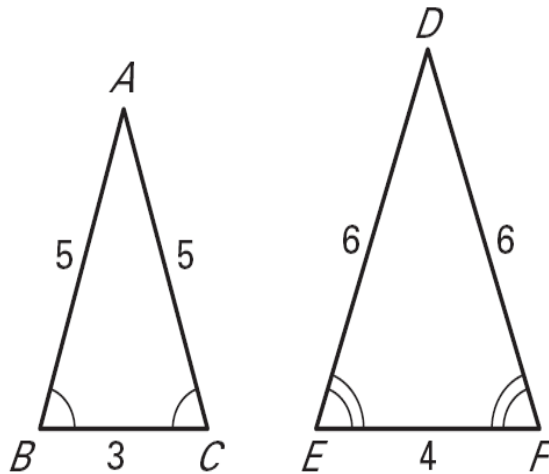
# Exploring Similar Polygons



Determine if two polygons are similar by verifying ALL pairs of corresponding sides are proportional.

Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor.

4.



5.

