Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

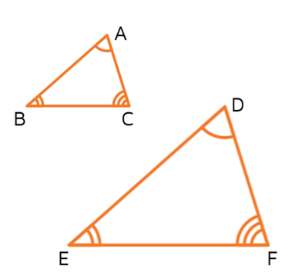
Ratios in Similar Polygons

Fill in the blanks to complete each definition.

* A similarity ratio is the ratio of the lengths of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sides of two similar polygons.
* Two polygons are similar if and only if they meet the following criteria:

1. Corresponding angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Corresponding sides are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

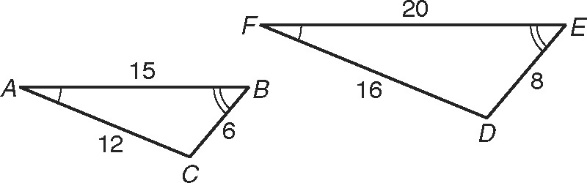
**ΔABC ΔDEF**

* Similar polygons have the same shape but not necessarily the same

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* Similarity statement:

Use the figure for Exercises 1 and 2. ∆ABC ~ ∆FED

 1. Name the pairs of congruent angles.

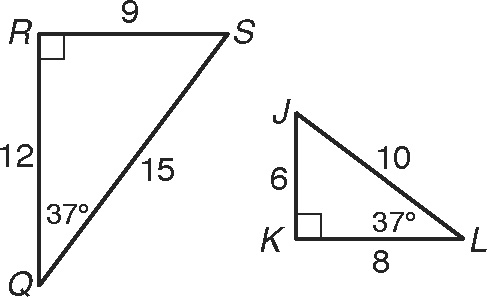
∠A ≅

∠B ≅

∠C ≅

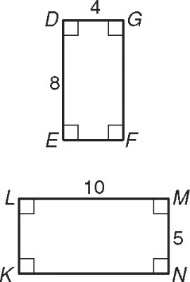
2. Write the corresponding side lengths in the proportion.

Use the figure to the right for Exercises 3 and 4. The triangles are similar.

 3. Circle the correct similarity statement.

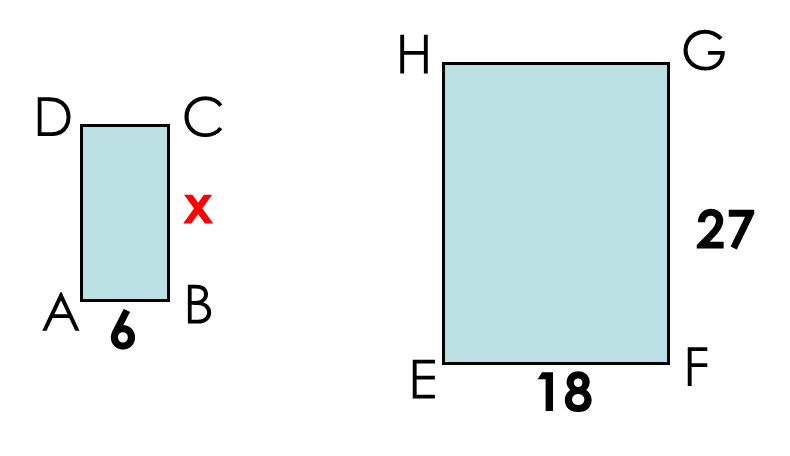
ΔQRS ~ ΔKJL ΔRSQ ~ ΔKJL ΔQSR ~ ΔLKJ

4. Write the corresponding side lengths in the proportion.

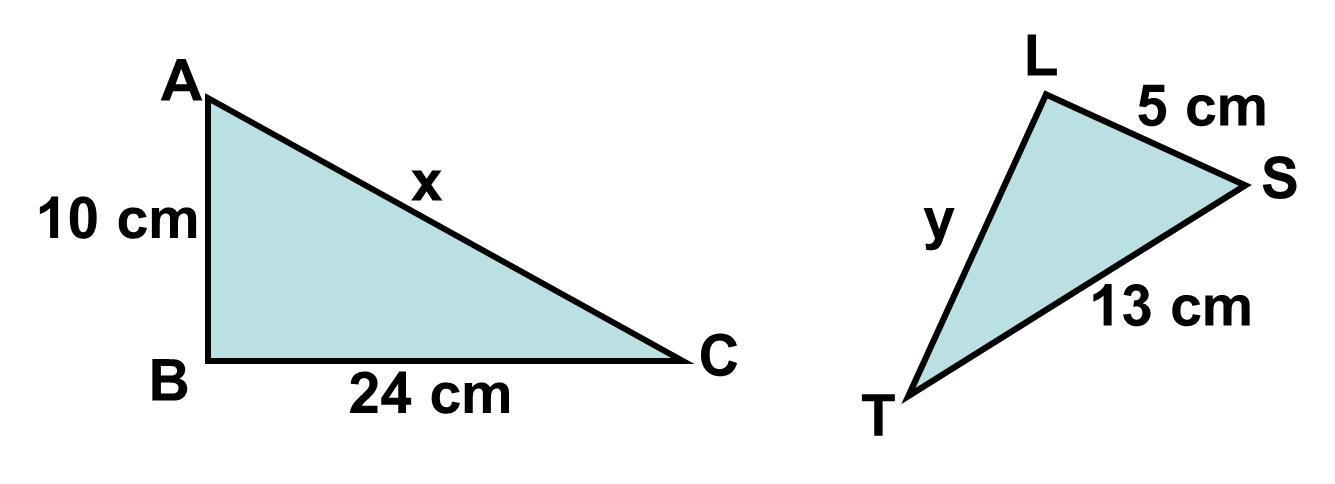
Use the figure to the right for Exercise 5.

5. Substitute numbers for the side lengths and reduce each ratio to simplest form.

= \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_

Use the figure to the right for Exercise 6.

6. ABCD ~ EFGH. Solve for x.

Use the figure to the right for Exercise 7.

7. Solve for x and y.

Word Problem: A tree cast a shadow 18 feet long. At the same time a person who is 6 feet tall cast a shadow 4 feet long. How tall is the tree?

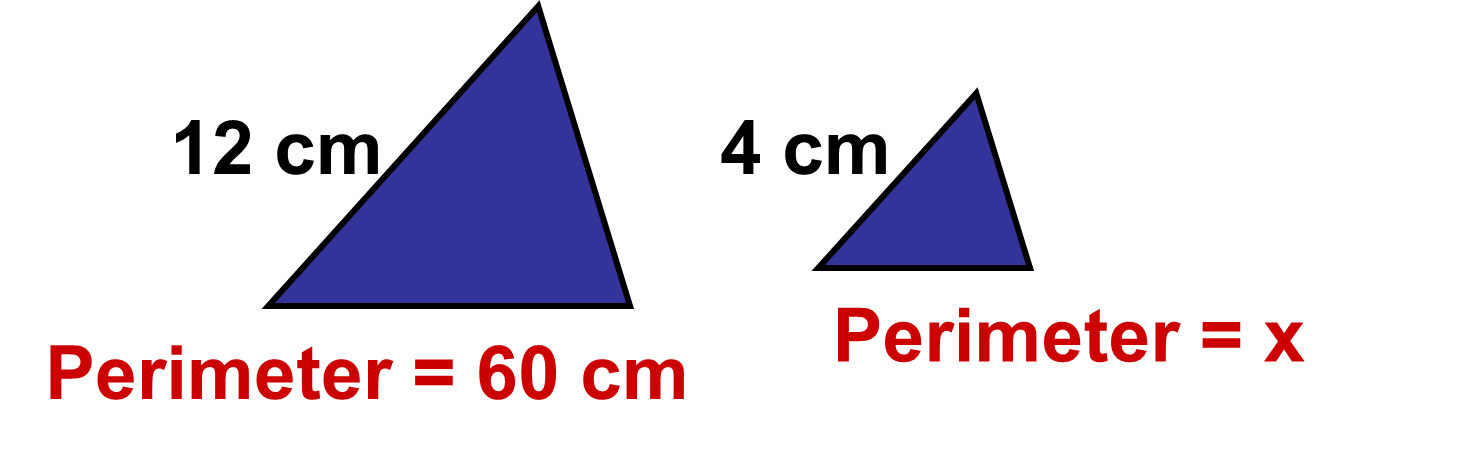
Ratios of similar polygons — Corresponding side: Corresponding side

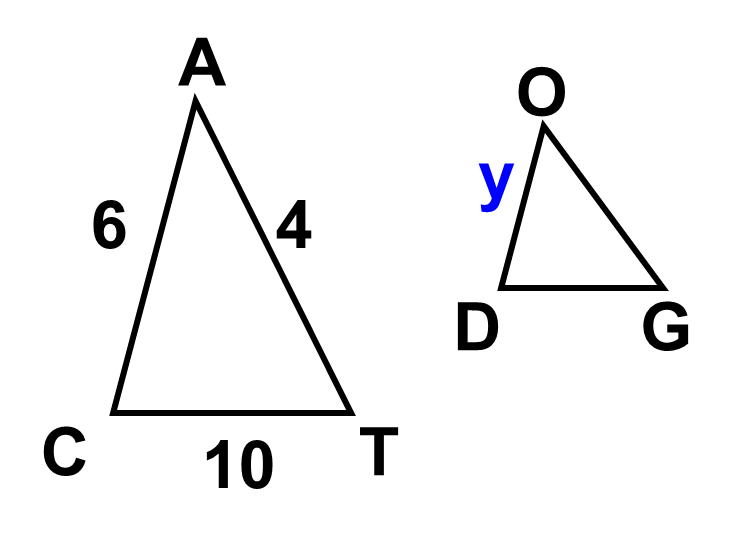
OR

**Perimeter: Perimeter Area: Area Volume: Volume**

**\_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_**

Example: *Find the perimeter of the smaller triangle.*



**Example: *The ratio of the perimeters of two similar polygons equals the ratio of any pair of corresponding sides.*

*The ratio of the perimeters of CAT to DOG is 3:2. Find the value of y.*

**Scale Factor**

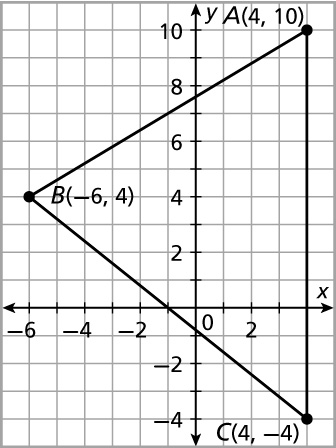
Scale Factor – the ratio of corresponding sides

* **When scale factor is greater than 1, the shape gets *bigger and* this is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* **When scale factor is less than 1, but greater than 0, the shape gets *smaller* and this is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
* **Formula: \_\_\_\_\_\_\_\_\_\_**

**Dilations**

Apply the dilation *D* to the polygon with the given vertices. Name the coordinates of the image points. Identify and describe the transformation as an enlargement or reduction.

8. *D* (*x*, y) →   
*A*(4, 10), *B*(–6, 4), and *C*(4, –4)

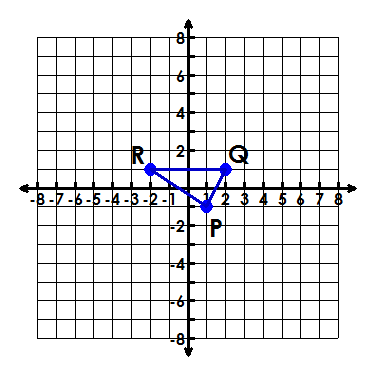


A’ \_\_\_\_\_\_\_\_\_, B’ \_\_\_\_\_\_\_\_\_, and C’ \_\_\_\_\_\_\_\_\_

This shape is a/n \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The scale factor is \_\_\_\_\_\_\_\_\_.

9. *D* (*x*, y) → (3*x*, 3*y*)

 *P*(1, –1), *Q*(2, 1), *R*(–2, 1)

**P’ \_\_\_\_\_\_\_\_\_, Q’ \_\_\_\_\_\_\_\_\_, and R’\_\_\_\_\_\_\_\_\_**

This shape is a/n \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The scale factor is \_\_\_\_\_\_\_\_\_.