

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

### Geometry: Similarity Ratio Exploration

Purpose:

At the end of this lesson you would have created your own rules for explaining how the lengths/perimeters, and areas are related.

Directions:

1. Go to [www.wolframpha.com](http://www.wolframpha.com) and search "similarity in math" and define it below.

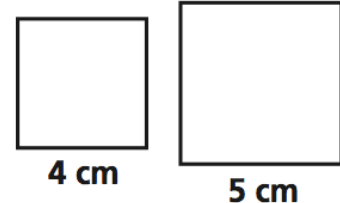
similarity-

2. Use the images and information below to create a similarity ratio for length/perimeter, and area. Keep in mind that similarity should be consistent for all sides. See the example below.

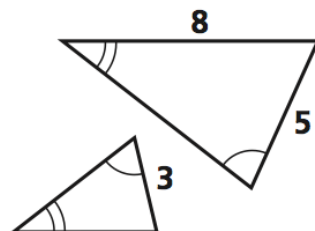
*Ex: Write a similarity ratio for the shapes below.*

*The similarity ratio is 4:5 (It can also be written as  $\frac{4}{5}$  or 4 to 5)  
The areas of the squares to the right are 16 and 25.*

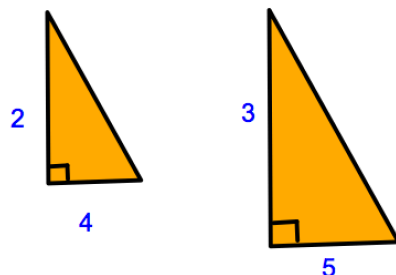
*How is the length or perimeter related to the areas?*



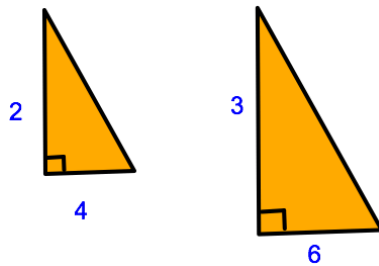
- a. What is the similarity ratio?



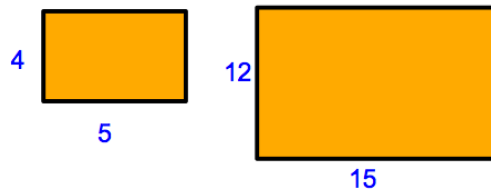
- b. Is the following similar? Why or why not? Explain your answer.



c. Is the following similar? Why or why not? If it is write the similarity ratio and find the areas. Is there a relation between lengths, and area ratios.



d. Is the following similar? Why or why not? If it is write the similarity ratio and find the areas. Is there a relation between lengths, and area ratios.

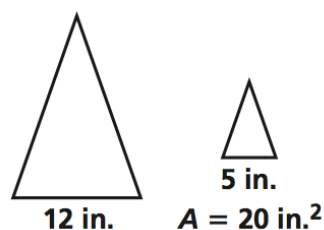


3. What can you summarize about how the length/perimeter ratios are related to the area similarity ratios?

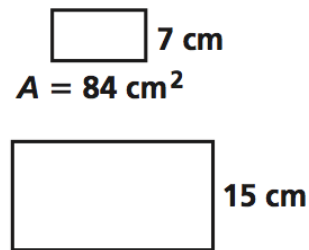
4. If two polygons have a similarity ratios  $a:b$ , what would the similarity ratios for the area be?

5. Given the images below, and the rule you created in question 4, Find the area for the given problems.

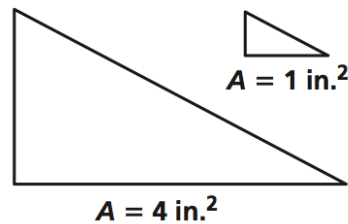
a. Write the similarity ratios for the lengths. Find the area of the figure below.



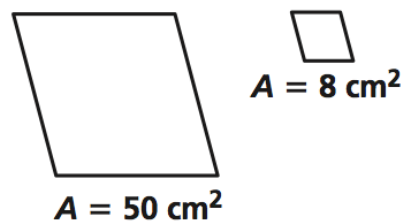
b. Write the similarity ratios for the lengths. Find the area of the figure below.



c. Write the similarity ratios for the area. Find the similarity ratios for the length.



d. Write the similarity ratios for the area. Find the similarity ratios for the length.



6. Do you think there is a relation between the ratios of the lengths, areas, AND volumes?

7. Make a conjecture about what the ratio might be for the volume.

8. Create an Educreation explaining the rules that you have create complete with examples, then create three new “You Try” problems to include in your Educreation.