Discovering Similarity

A

B

O

C

X

Y

Z

1. Using the grid, calculate the lengths of the following segments: 

2. Express the ratios  as decimals. What do you notice about the ratios?

3. Using a ruler, draw the lines that connect: O, A, and X O, C, and Z O, B, and Y

If we imagine our flashlight at point O, these segments represent the path of the light coming from the flashlight. What do these lines connect in the triangles?

4. Find the lengths of the segments: 

5. Express the ratios  as decimals. What do you notice about these ratios?

6. Measure the corresponding angles in the triangles. What can you conclude?

7. Triangle  is a dilation of . The center of dilation is the origin.

L’

K

L

J’

K’

J

List the coordinates of the vertices for each triangle:

How do the coordinates of the vertices compare?

What is the scale factor of the dilation? Explain.

How do you think you can use the scale factor to determine the

coordinates of the vertices of an image?

8. Is the scale factor greater or less than 1 for the problem on page 1? How does the preimage ( ) compare to

the image ( )?

9. If the scale factor is less than 1, how would the preimage and image compare?

10. What can you conclude, using the scale factor, about an image and preimage?

**Vocabulary and Notation:**

Image

Preimage

Dilation

Center of dilation

Scale factor

Similar

11. Draw the image for rectangle ABCD with a scale factor of 3 and the center of dilation at the origin:

A

B

D

C

Explain the method you choose to use.

12. 

Draw a diagram that illustrates this similarity statement and list all of the pairs of

congruent angles and all of the proportional sides.

13. Write a similarity statement for the geometric figures found in problems 7 and 11.

14. Suppose. Describe a sequence of transformations that maps one triangle to the other triangle.

A

B

C

D

E