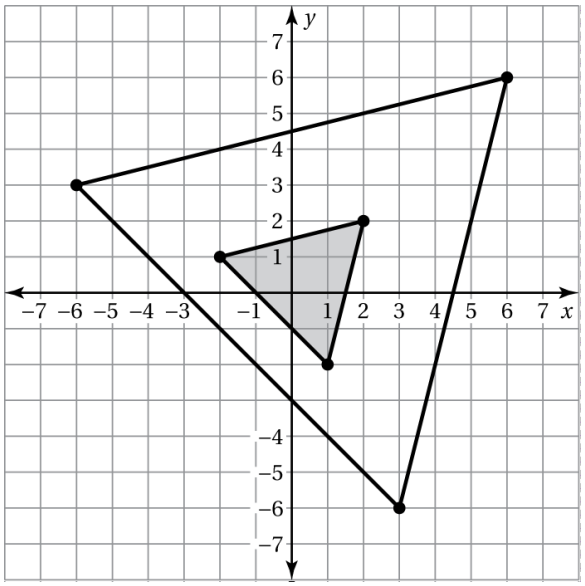
Name_____ Date_____

2.7 – Dilations (Part 1)

Essential Questions - How can you enlarge or reduce a figure in the coordinate plane?

ACTIVITY 1: Comparing Triangles in a Coordinate Plane

1) Work with a partner. Write the coordinates of the vertices of the shaded triangle. Then write the coordinates of the vertices of the nonshaded triangle.



2) How are the two sets of coordinates related?

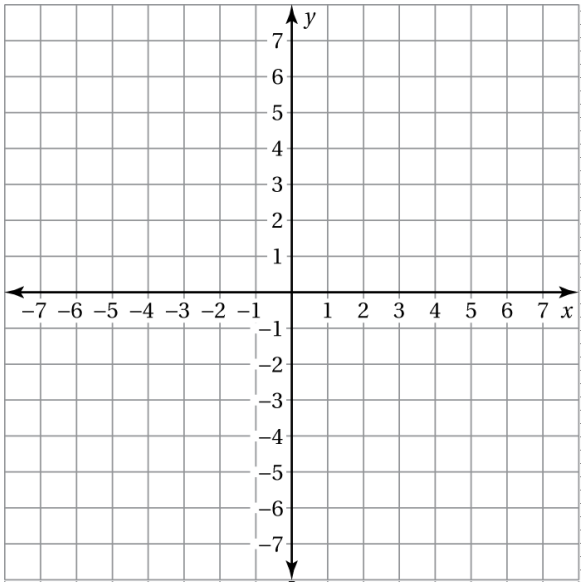
3) How are the two triangles related? **Explain** your reasoning.

4) Draw a dashed triangle whose coordinates are twice the values of the corresponding coordinates of the shaded triangle. How are the dashed and shaded triangles related?. **Explain** your reasoning.

5) How are the coordinates of the nonshaded and dashed triangles related? How are the two triangles related? **Explain** your reasoning.

ACTIVITY 2: Drawing Triangles in a Coordinate Plane

6) Draw the triangle whose vertices are $(0, 2)$, $(-2, 2)$, and $(1, -2)$. Label the vertices on the graph.



7) Multiply each coordinate of the vertices by 2 to obtain three new vertices. Draw the triangle given by the three new vertices in a different color and label the new coordinates. How are the two triangles related?

8) Repeat #7 by multiplying by 3 instead of 2. Again, use a different color for this and label the coordinates.

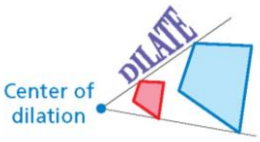
ACTIVITY 3: Summarizing Transformations

9) Work with a partner. Make a table that summarizes the relationships between the original figure and its image for the four types of transformations (translations, etc.) you studied in this chapter.

10) **IN YOUR OWN WORDS**, how can you enlarge or reduce a figure in the coordinate plane if you know the coordinates of the original figure.

Complete the following by looking it up in your book.

11) A _____ is a transformation in which a figure is made **larger** or **smaller** with respect to a point called the _____ _____ _____.

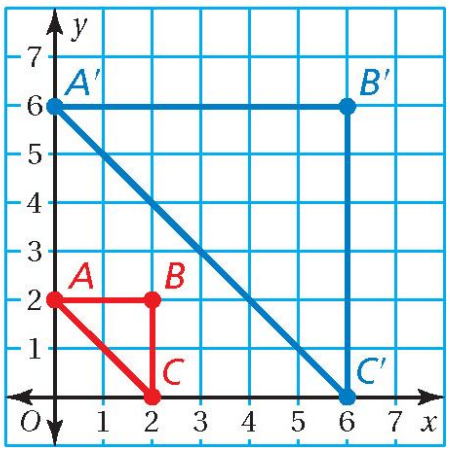


12) The ratio of the side lengths of the image to the corresponding side lengths of the original figure is the _____ _____ of the dilation.

13) In other words, the _____ _____ is the number you multiply to the original coordinates to get the new coordinates.

Complete the following using the image below.

14)



a) What are the coordinates of the original?

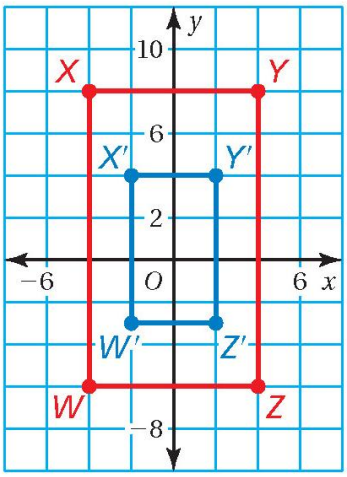
b) What are the coordinates of the image?

15) a) Observe the relationship between the coordinates of the original vertices and the image vertices. What do you believe is the scale factor of the image?

b) Is this an enlargement or a reduction?

Complete the following using the image below.

16)



a) What are the coordinates of the original?

b) What are the coordinates of the image?

17) a) Observe the relationship between the coordinates of the original vertices and the image vertices. What do you believe is the scale factor of the image?

b) Is this an enlargement or a reduction?

Summary

18) From you have observed in the last couple of problems, what happens to the original if the scale factor is **greater than 1**.

19) From you have observed in the last couple of problems, what happens to the original if the scale factor is **less than 1**.

20) In your own words, what is a dilation?