Title: Geometric Dilations on 2-Dimensional Figures – 7th Grade

Objectives:

After reviewing dilations, students will complete the dilation activity worksheet.

Students will explore patterns in the change in area and perimeter of dilated figures and propose their own formulas.

Directions

1. Draw your quadrilateral on the graph paper in blue colored pencil. Record the area and perimeter of the figure you drew on the data sheet.

2. Dilate the blue quadrilateral with a scalar of 2. Use a red colored pencil.
3. Dilate the blue quadrilateral with a scalar of 3. Use a green colored pencil.

4. Dilate the blue quadrilateral with a scalar of ½. Use a purple colored pencil.
5. On the data sheet, record the area and perimeter of the red, green, and purple figures.
6. Try to see if you notice any patterns in your results. Then, compare results with the other members of your group. See if you can find any patterns with all of your results.

Data Sheet **SHAPE:** _____

COLOR	SCALAR	PERIMETER	AREA
Blue			
Red			
Green			
Purple			

Identify the Perimeter Pattern: _____

Identify the Area Pattern: _____

Name:_____ ***Dilations Homework***

What is the **area formula** of a dilated figure?

What is the **perimeter formula** of a dilated figure?

For questions 1-5, do not use graph paper. Use the methods discovered in class.

1. Given a rectangle whose area is 12 and perimeter 14, dilate it by a scalar of 2. What is the perimeter and area of the dilated rectangle?

   P=_____ A=_____

2. If a square with side length 4 was dilated with scalar 2.5, what would the area and perimeter of the image be?

   P= _____ A= _____

3. If a parallelogram with side lengths 8 and 5 was dilated with scalar 0.4, what would the area and perimeter of the image be?

   P= _____ A= _____

4. If a rectangle's image under dilation with scalar 5 had perimeter 40 and area 75, what was the original perimeter and area?

   P= _____ A= _____

5. If a regular trapezoid had b_1= 3, b_2= 9, a height of 4, and was dilated with scalar 6, what would the area and perimeter of the image be?

   P= _____ A= _____