Dilate Your Name

Objective: Students will create a dilation for each letter of their name by plotting points on a coordinate plane. The students will dilate the letter by a scale factor of three.

Background Knowledge: Students need to have experience dilating figures. Students should be able to plot points on a coordinate plane. They should be familiar with the terms: dilation (change in size of a figure, not a change in shape) and scale factor (number multiplied to a figure to change the size of a figure).

Materials: Dilate Your Name Student Handouts, graphs, pencils, colored pencils, construction paper, glue sticks, and scissors.

Directions:

1. Before the lesson, cut large construction paper into 5" x 18" strips for the students to glue their graphs to. (You may want to create your own dilation as a model for the students.)
2. Read over the instructions on the Student Handout with your students.
3. Encourage the students to use nicknames, challenge them to pick the longest word, and prompt them be creative in the way they design their final product. [Students get enthusiastic about this activity when they are given some options – groups to team up on a tremendously long word or phrase.]
4. Students list the ordered pairs of Original Letter and Image of each letter (using a scale factor of 3) in the table.
5. Students plot the points of the original letters (in a dark color) and connect them in the precise order to display the letter.
6. On the same graphs, the students plot the dilation of each letter using a different color.
7. Students cut out and paste the graphs to a strip of colored construction paper.

Activity:

1. Distribute Student Handouts and materials to the students (colored pencils, scissors, glue sticks, and construction paper).
2. Read the instructions from the Student Handout with the students.
3. Ask the students if they have any questions before they begin.
4. Monitor the students as they work independently on the project.
5. Have the students show you the graphs of their letters before they glue.

Name: _____

Dilate Your Name

For this activity, you will graph the letters of your name and then dilate them by a scale factor of 3 and graph their images on the same graph.

Please follow the steps below to complete project.

Step 1

List the letters of your name and the ordered pairs that correspond to graphing each letter. Then determine the coordinates of the image of each letter under a dilation with a scale factor of 3 and list them in the second column.

If your first name is less than 5 letters, do the first letter of your last name as well.

Letter	Ordered Pairs of Original Letter	Ordered Pairs of Image Under a Dilation with a Scale Factor of 3.

Step 2

Graph each letter of your name and its image on the same coordinate plane. Use a separate graph for each letter of your name.

*Note – you may not connect the points in the order they are written. To graph the letters and their images, plot the points then determine how to connect them to form the letter they are supposed to represent.

Make each original letter black. Make the image of each letter a color of your choice.

Step 3

Cut out the graphs for each of the letters of your name glue them onto a piece of construction paper. You may arrange them however you would like, as long as it is easy to read your name.

Dilate Your Name – The Coordinates of the Alphabet

The original coordinates of each letter of the alphabet is provided below. Plot all the ordered pairs for a letter and then connect the points to correctly form the letter.

Letter	Coordinates
A	(-2,-1), (-1,1), (0,3), (1,1), (2,-1)
B	(-1,3), (1,3), (1,1), (1,-1), (-1,-1), (-1,1)
C	(1,3), (-1,3), (-1,-1), (1,-1)
D	(-1,3), (1,2), (1,0), (-1,-1)
E	(1,3), (-1,3), (-1,1), (-1,-1), (1,-1), (1,1)
F	(1,3), (-1,3), (-1,1), (-1,-1), (1,1)
G	(1,3), (-1,3), (-1,-1), (1,-1), (1,1), (0,1)
H	(-1,3), (-1,1), (-1,-1), (1,-1), (1,1), (1,3)
I	(-1,3), (0,3), (1,3), (-1,-1), (0,-1), (1,-1)
J	(-1,0), (-1,-1), (1,-1), (1,3)
K	(-1,3), (-1,1), (-1,-1), (1,-1), (1,3)
L	(-1,3), (-1,-1), (1,-1)
M	(-1,-1), (-1,3), (0,1), (1,3), (1,-1)
N	(-1,-1), (-1,3), (1,-1), (1,3)
O	(-1,3), (-1,-1), (1,-1), (1,3)
P	(-1,-1), (-1,1), (-1,3), (1,3),(1,1)
Q	(-1,3),(-1,-1),(1,-1),(1,3),(0,0),(2,-2)
R	(-1,-1), (-1,1), (-1,3), (1,3), (1,1), (1,-1)
S	(1,3), (-1,3), (-1,1), (1,1), (1,-1), (-1,-1)
T	(-1,3), (0,3), (1,3), (0,-1)
U	(-1,3), (-1,-1), (1,-1), (1,3)
V	(-1,3), (0,-1), (1,3)
W	(-1,3), (-1,-1), (0,1), (1,-1), (1,3)
X	(-1,3), (0,1), (1,-1), (1,3), (-1,-1)
Y	(-1,3), (0,1), (0,-1), (1,3)
Z	(-1,3), (1,3), (-1,-1), (1,-1)

Dilate Your Name – The Graphs

Plot the original letter and its dilated image on the same graph. Then cut out the graphs.