Name_____   Date_____

Transformations on the Coordinate Plane

Translations on Points

Step 1: In the Navigator Activity Center, input your x-values in L1 and your y-values in L2. (once everyone puts their data in there should be a picture on the screen)

Step 2: Predict what will happen to the picture if everyone were to add 10 to their y-values.

Step 3: In L3 input the y-values plus 10.

Evaluate your prediction.

Step 4: Predict what will happen to the original picture if everyone subtracts 10 from their x-values.

Step 5: In L4 input the x-values minus 12

Evaluate you prediction.

Step 6: Predict what the picture will do if you add 10 to the x-values and subtract 12 from the y-values.

Step 7: In the activity center, in L3 input the original x-values plus 10 and in L4 input the original y-values minus 12.

Evaluate your prediction.

Reflecting Points and Graphs

Translations move points and graphs around the coordinate plane. Have you noticed that the image of the translation always looks like the original figure. Although the image of a translation moves, it doesn't flip, turn, or, change size. To get these changes, you need other types of transformations.

Flipping Graphs

In the first part of this investigation you will explore the relationship between a picture and its image when it has been flipped two different ways.

Step 1: Input the x-values into L1 and the y-values into L2. (the class will create a picture)

Step 2: Predict what will happen to the picture when you multiply the x-values by a -1.

Step 3: In L3 enter your x-value multiplied by a -1.

Evaluate your prediction.

Step 4: Predict what will happen to the picture when you multiply the y-values by a -1.

Step 5: In L4 enter your y-value multiplied by a -1.

Evaluate your prediction.

Step 6: Summarize your discoveries from this activity.

A transformation that flips a figure to create a mirror image is called a _____. A point is reflected across the _____ when you change the sign of its _____. A point is reflected across the _____ when you change the sign of its _____. You saw both types of reflections in the investigation.

What do you think would happen if you multiplied the x-value by -1 and the y-value by -1?

Stretching and Shrinking Graphs

So far we have translated and flipped pictures, but these shapes have stayed the same. Now we will investigate how to change the shape of a picture.

Changing the Shape of a Graph

In this part if the investigation you learn how to stretch or shrink a picture.

Step 1: In L1 enter your x-values and in L2 enter your y-values.

Step 2: Predict what will happen to the graph when you multiply your y-values by 2.

Step 3: In L3 enter your y-values multiplied by 2.

Evaluate your prediction.

Step 4: Predict what will happen to the graph when you multiply your y-values by .5.
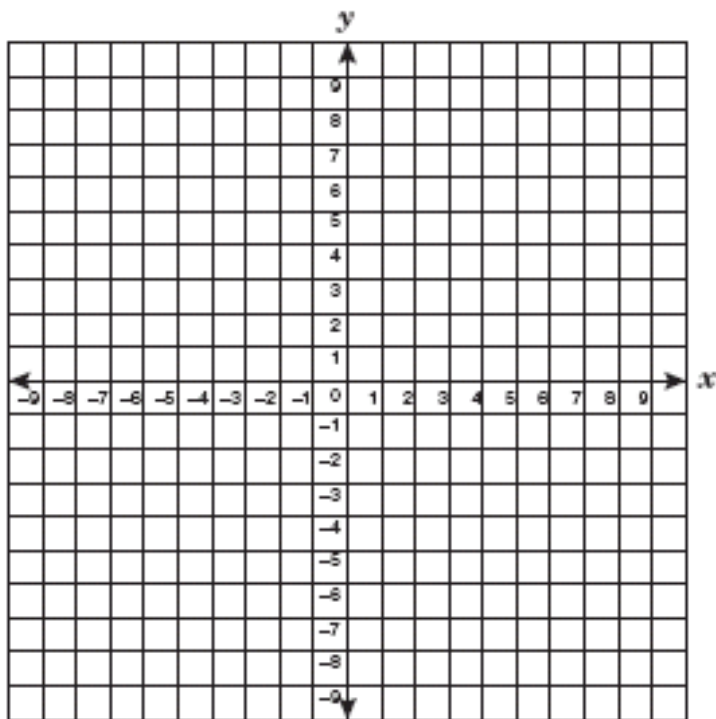
Step 5:   In L4 enter your y-values multiplied by .5.

Evaluate your prediction.

Step 6: Summarize your discoveries from this lesson.

Check for Understanding:

1.

Beatrice translated trapezoid $RSTU$ to trapezoid $R'S'T'U'$. Vertex S was at $(4, 1)$.

If vertex S' is at $(-3, 4)$, which best describes this translation?

A   Move 7 units left and 3 units up

B   Move 1 unit left and 3 units up

C   Move 3 units down and 7 units right

D   Move 8 units left and 4 units up

2. Δ*PRY* is reflected across the y-axis. Which of the following shows this transformation?

A

C

B

D