

Dilation Notes

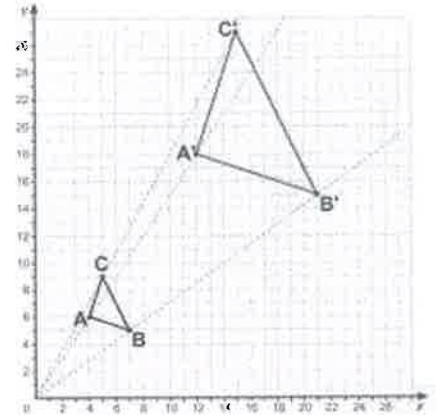
Name: _____

Dilation- the stretching or shrinking of a shape through the use of a scale factor, or multiplier.

The resulting image is similar compared to the original, and is oriented in the same way.

Scale factor > 1 results in a stretch

Scale factor $0 < s < 1$ results in a shrink



Each part of an ordered pair will get multiplied by the same scale factor to create a new ordered pair. For example, the ordered pair $(-1, 4)$ stretched by a scale factor of 3 will become $(-3, 12)$

Complete the dilation for the following ordered pairs given the scale factor.

$(5, 2)$ stretched by a scale factor of 2: $(10, 4)$

$(8, -4)$ shrunk by a scale factor of $\frac{1}{2}$: $(4, -2)$

$(6, 10)$ stretched by a scale factor of 1.5: $(9, 15)$

$(-2, -2)$ stretched by a scale factor of -3: $(6, 6)$

You can also work backward from two ordered pairs to figure out what scale factor was used to dilate the pre-image.

For example, if $A(-4, 6) \rightarrow A'(-6, 9)$ I could divide the y values to get a scale factor of $\frac{9}{6}$ or 1.5

Find the scale factor for each pair of dilated points given below

A $(3, 4)$ became $A'(12, 16)$: SF of 4

A $(10, 12)$ became $A'(2.5, 3)$: SF of $\frac{1}{4}$

A $(2, -4)$ became $A'(-6, 12)$: SF of -3

A $(-24, -8)$ became $A'(3, 1)$: SF of $-\frac{1}{8}$

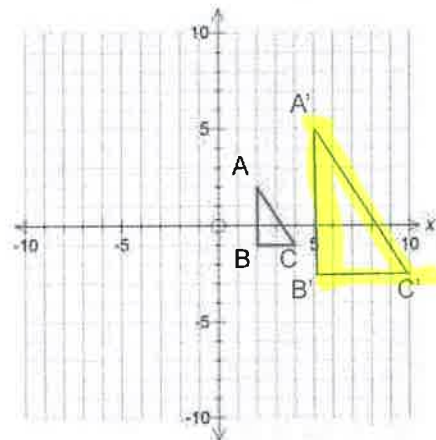
For the triangle to the right, record the ordered pairs of the pre-image vertices

A: $(2, 2)$ B: $(2, -1)$ C: $(4, -1)$

Next, record the new ordered pairs if dilated by a scale factor of 2.5

A': $(5, 5)$ B': $(5, -2.5)$ C': $(10, -2.5)$

Record the ordered pairs on the graph and draw the sides of the image to create your new, dilated, triangle.



Dilation Exploration

Plot the following triangle on the graph to the right:

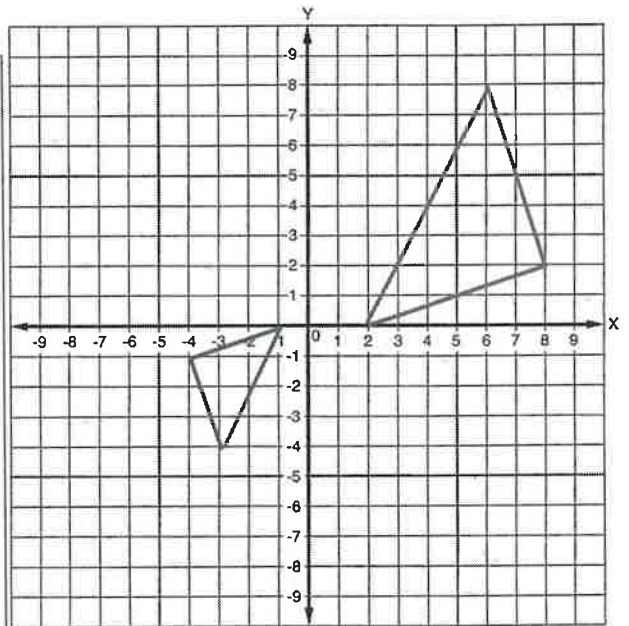
A (8, 2), B (6, 8), C (2, 0)

Now, dilate the triangle by a factor of $-\frac{1}{2}$ and record the new ordered pairs.

A' (-4, -1) B' (-3, -4) C' (-1, 0)

What observations can you make about the new triangle?

The new triangle (in blue) is half the size and rotated 180 degrees from the original



Plot the following triangle on the graph to the right:

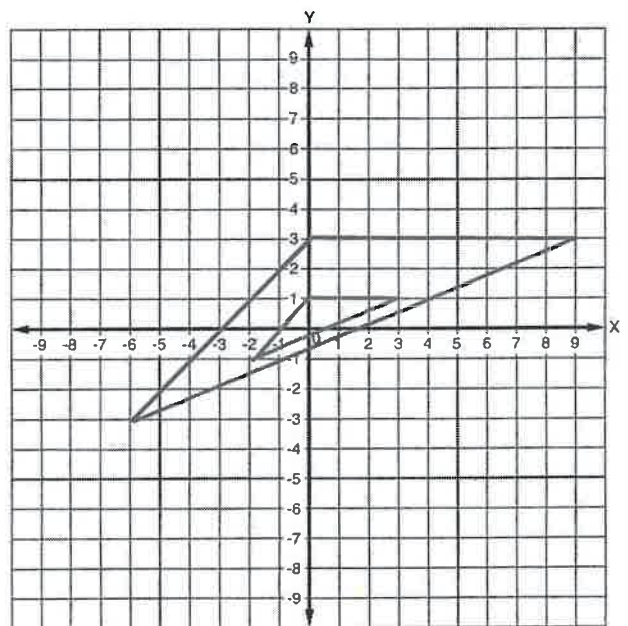
A (-2, -1), B (3, 1), C (0, 1)

Now, dilate the triangle by a factor of 3 and record the new ordered pairs.

A' (-6, -3) B' (9, 3) C' (0, 3)

What observations can you make about the new triangle?

The new triangle (in blue) is three times as big but oriented in the same way as the original triangle



Making connections...

What is similar between dilation and the other static transformations?

Where can you see dilation in real life?

