Name _____ Period ____ Date _____

Dilations - Notes

Dilation - transformation that produces an image that is the same

_____ as the original but **_____**.

- A dilation is _____ to the original figure.
- Dilations are centered around the origin (0, 0), unless otherwise stated.

Scale factor – is $\frac{\text{image length}}{\text{pre-image length}}$, which is a _____.

- If the scale factor is <u>greater than 1</u>, the figure becomes _____.
- If the scale factor is <u>between 0 and 1</u>, the figure becomes _____.

Rule: $(x, y) \rightarrow (fx, fy)$ where *f* represents the scale factor.

Example 1: If the scale factor is 3, how would you write the rule?

Example 2:

Triangle *ABC* has vertices *A* (0, 2), *B* (4, 4), and *C* (-1, 4).

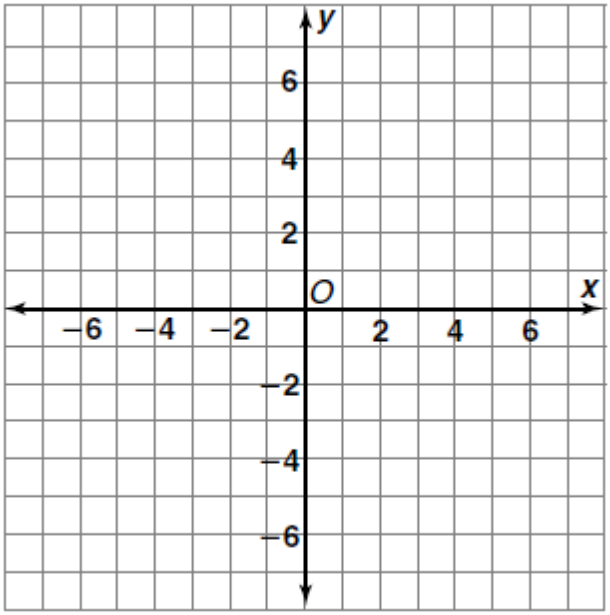
What are the vertices of its *image* with a scale factor of 4?

Example 3:

Quadrilateral *PQRS* has vertices *P* (-2, 4), *Q* (4, 4), *R* (4, -2), and *S* (- 4, - 4). It is dilated by a scale factor of ½.

a) Graph quadrilateral *PQRS.*

b) What are the coordinates of the image (after dilation)? Graph them.



c) Demonstrate these quadrilaterals are similar by comparing the ratios of the lengths.

d) What do you notice about the angle measurements of the two figures?

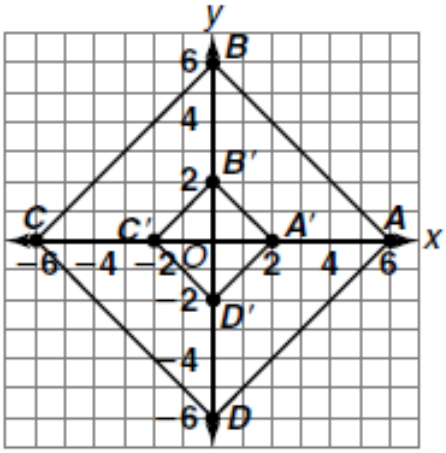
Example 4:

If the scale factor is $\frac{5}{2}$, how would you write the general rule?

Is this an enlargement or a reduction?

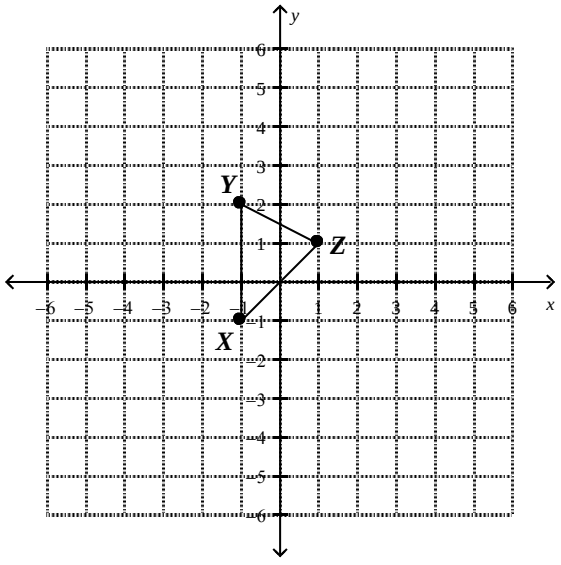
Example 5:

Quadrilateral *A′B′C′D′* is a dilation of quadrilateral *ABCD.* Find the scale factor. Classify the dilation as an enlargement or a reduction.



Example 6:

Triangle *XYZ* is graphed below. Draw and label Triangle *X′Y′Z′* after a dilation using a scale factor of two.



What will be the coordinates of point *Y″* after a reflection of polygon *X′Y′Z′* over the *x*-axis?