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Dilation - transformation that produces an image that is the _____ 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 greater than 1, the figure becomes _____.
- If the scale factor is between 0 and 1, 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?

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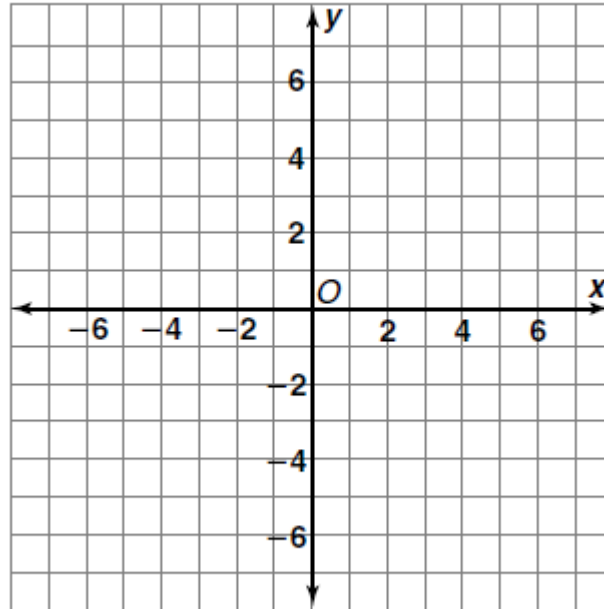
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Example 3:

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 $\frac{1}{2}$.

- a) What are the coordinates of the image? Graph them.



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

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

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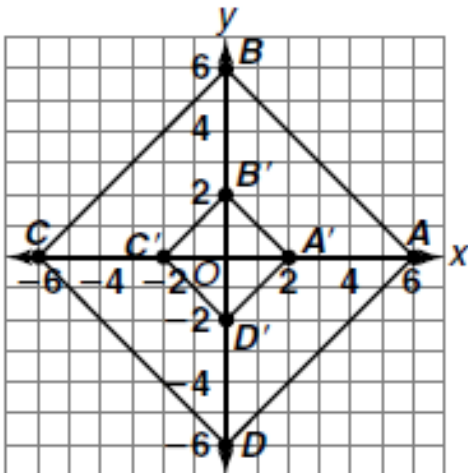
Example 4:

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.



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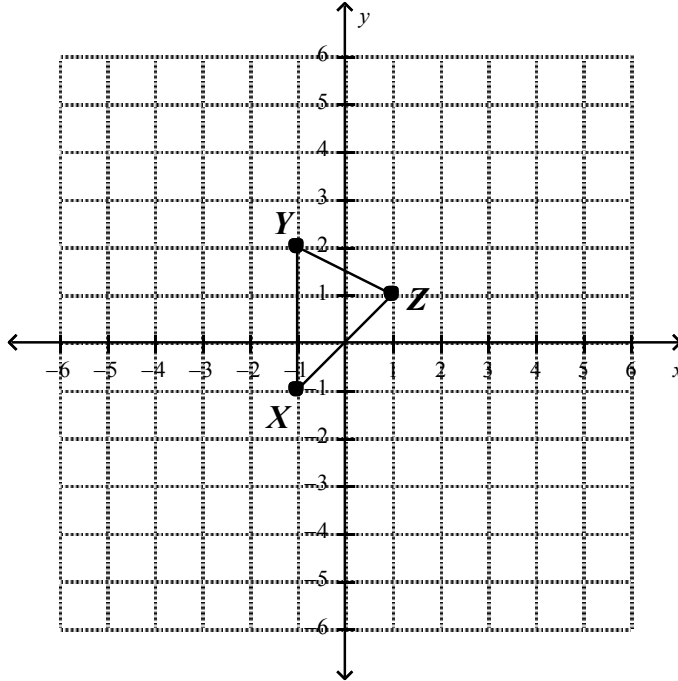
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Example 6:

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?

Answer _____