Name: _____
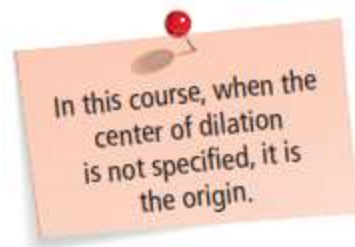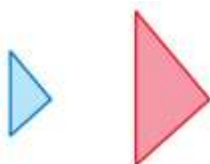
A _____ is a transformation in which a figure is made larger or smaller with respect to a

point called the _____ _____ _____.

Center of dilation

In this course, when the center of dilation is not specified, it is the origin.
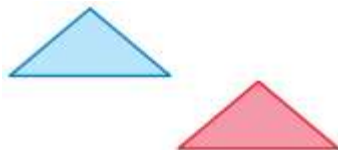
Ex:) Determine whether the blue figure is a dilation of the red figure.   Notes:
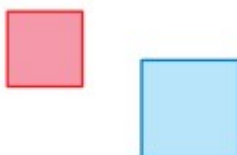
a.

b.

OYO:) Determine whether the blue figure is a dilation of the red figure.   Notes:
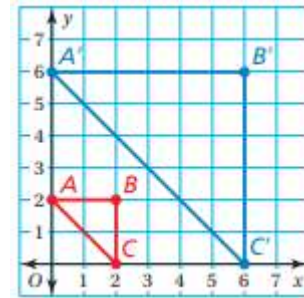
a.

b.

Ex:) In a dilation, the value of the ratio of the side lengths of the image to the corresponding side lengths of the pre-

image is the _____ _____ of the dilation.

To dilate a figure with respect to the origin, multiply the coordinates of each vertex by the scale factor k.

    Algebra $(x, y) \rightarrow (kx, ky)$

- When k > 1, the dilation is an enlargement
- When 0 < k < 1, the dilation is a reduction
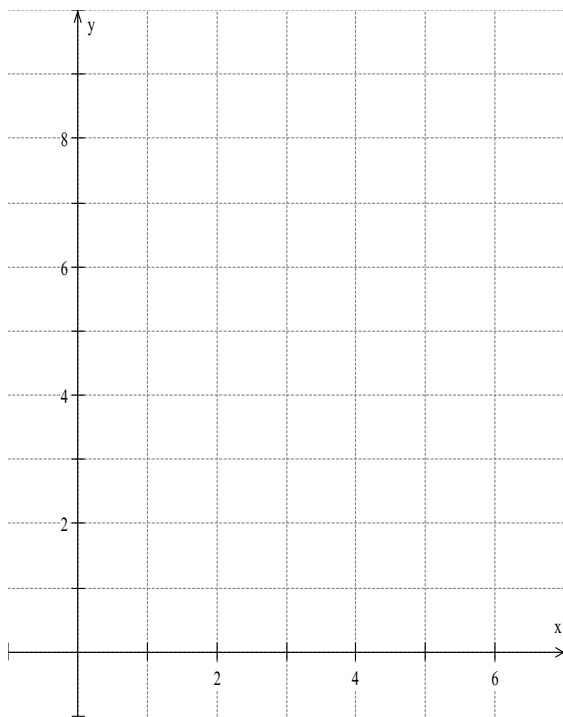
Ex:) The vertices of a triangle are A(1, 3), B(2, 3), and C(2, 1).   Notes:
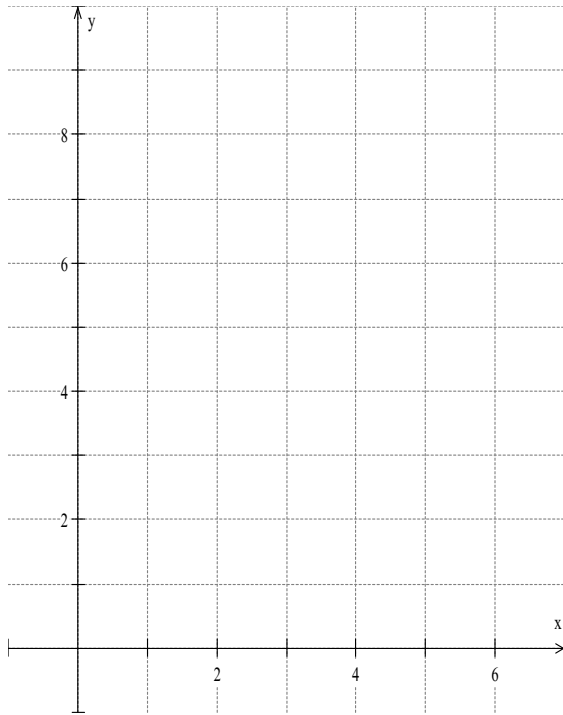Draw the image after a dilation with a scale factor of 3.
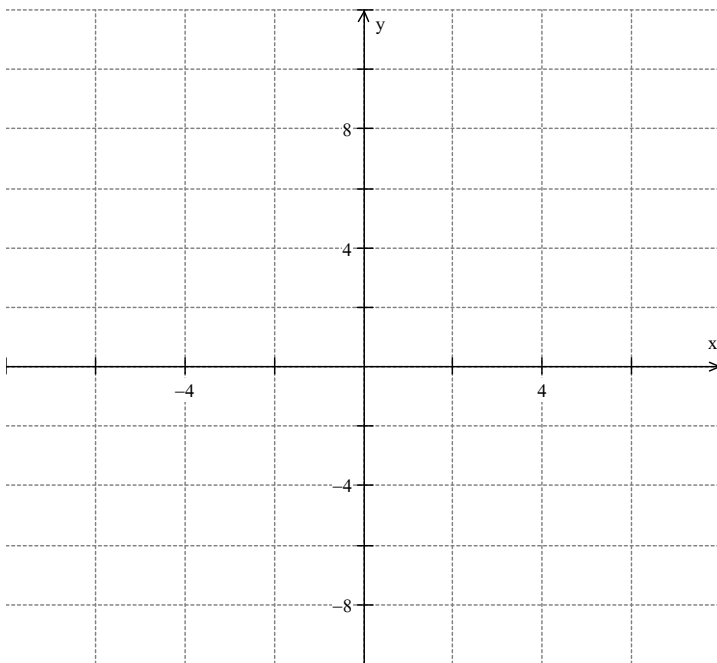Identify the type of dilation.

OYO:) The vertices of a triangle are A(1, 3), B(2, 3), and C(2, 1).　　　　　　　　
Draw the image after a dilation with a scale factor of 2.
Identify the type of dilation.

Ex:) The vertices of a rectangle are W(-4, -6), X(-4, 8), Y(4, 8), and Z(4, -6).　　　　　
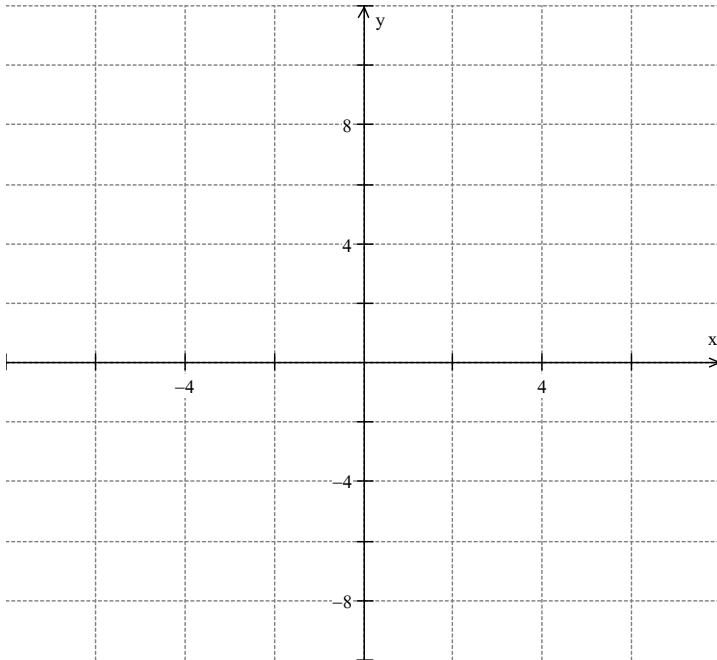Draw the image after a dilation with a scale factor of 0.5.
Identify the type of dilation.

OYO:) The vertices of a rectangle are W(-4, -6), X(-4, 8), Y(4, 8), and Z(4, -6).

Draw the image after a dilation with a scale factor of $\dfrac{1}{4}$.
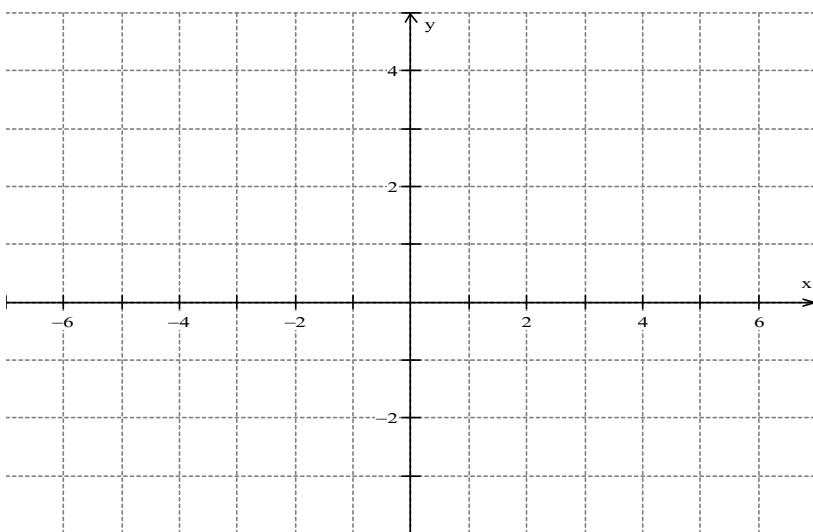
Identify the type of dilation.

Ex:) The vertices of a trapezoid are A(-2, -1), B(-1, 1), C(0, 1), and D(0, -1).

Dilate the trapezoid using a scale factor of 2.

Then translate it 6 units right and 2 units up.
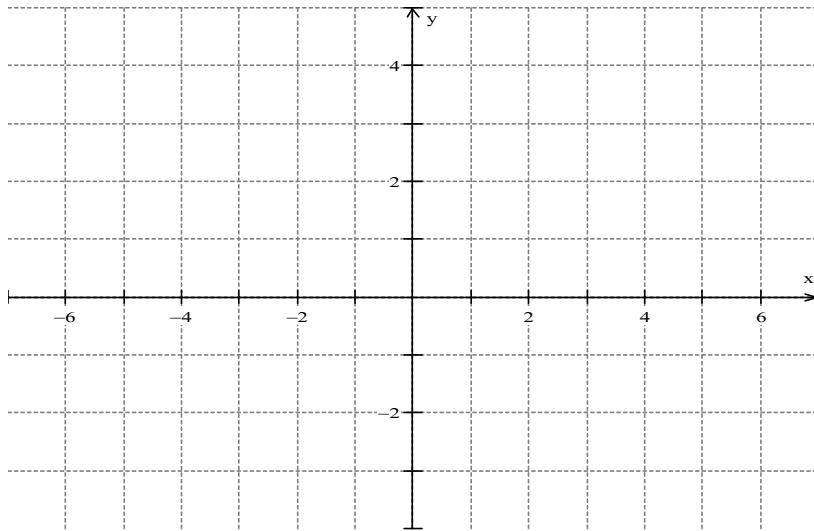
What are the coordinates of the image?

OYO:) The vertices of a trapezoid are A(-2, -1), B(-1, 1), C(0, 1), and D(0, -1).
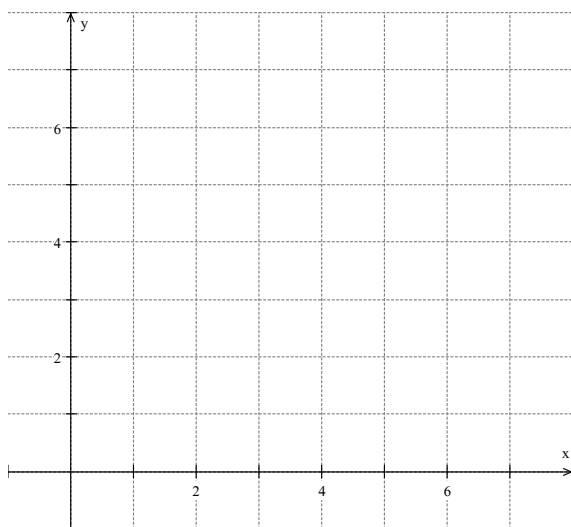Dilate the trapezoid using a scale factor of 3.

Then rotate it $180°$ about the origin.
What are the coordinates of the image?

Ex:) A wildlife refuge is mapped on a coordinate plane, where each grid line
represents 1 mile. The refuge has vertices J(0, 0), K(1, 3), and L(4, 0). An
expansion of the refuge can be represented by a diagram with a scale factor
of 1.5. How much does the area of the wildlife refuge increase?

Ex:) A photograph is dilated to fit a frame, so that its area after the dilation   Notes:
is 9 times greater than the area of the original photograph.
What is the scale factor of the dilation? Explain.