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DILATIONS

Guided Notes

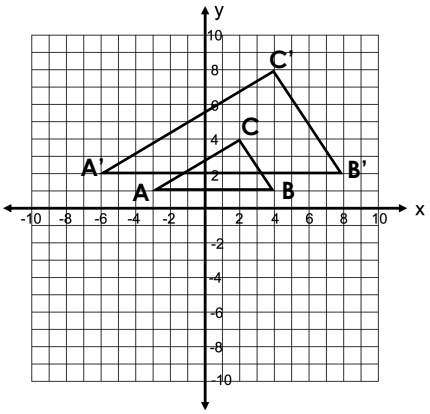
Name: _____

Date: _____

BASIC INFORMATION:

A **dilation** is a transformation that produces and image that is the same _____ as the original but is a different _____.

Unlike other transformations a dilation is not a _____ _____ because size and shape are not preserved.



A **center of dilation** is the point about which a figure is dilated. (We will only use the origin as our center of dilation.)

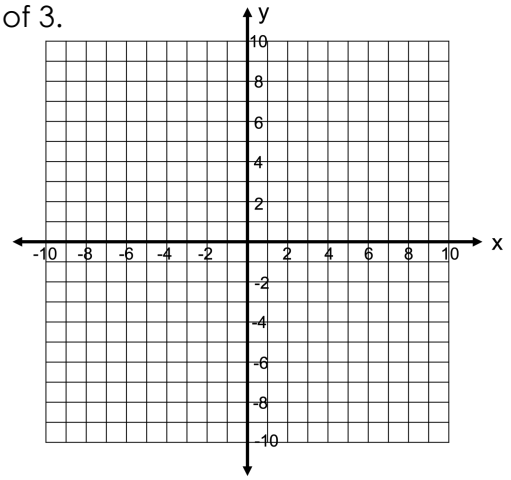
A figure that has been dilated has just been multiplied by a **scale factor (k)**.

The dilation is a reduction if k _____ and an enlargement if k _____.

PERFORMING DILATIONS:

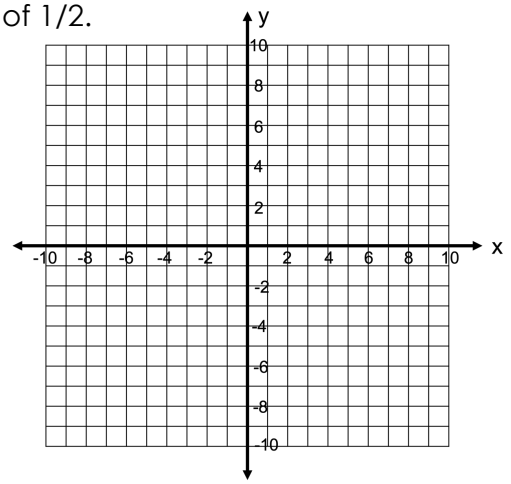
1. Graph the figure and its image after a dilation with a scale factor of 3.

J (-2, 3)
K (0, 1)
L (3, 3)
× _____ →
J' _____
K' _____
L' _____



2. Graph the figure and its image after a dilation with a scale factor of 1/2.

A (-8, 6)
B (4, 6)
C (4, -4)
D (-8, -4)
→
A' _____
B' _____
C' _____
D' _____



DILATIONS
Guided Notes

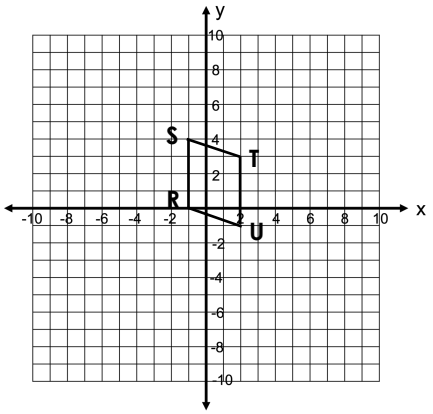
Name: _____

Date: _____

Check:

Determine the coordinates of the image after it has been dilated by k = 2.

R' _____ S' _____ T' _____ U' _____



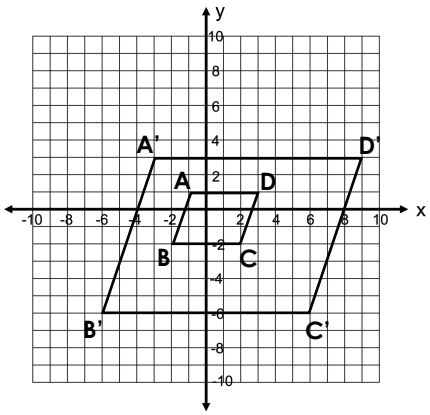
FINDING SCALE FACTOR:

On each graph the figures have been dilated. Find the scale factor of each dilation and determine whether it is a reduction or enlargement.

1. Scale Factor: _____

   Circle One:

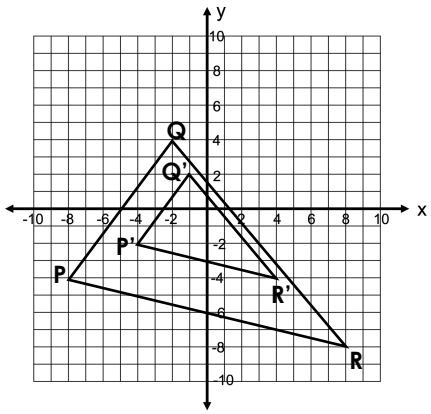
   Reduction or Enlargement



2. Scale Factor: _____

   Circle One:

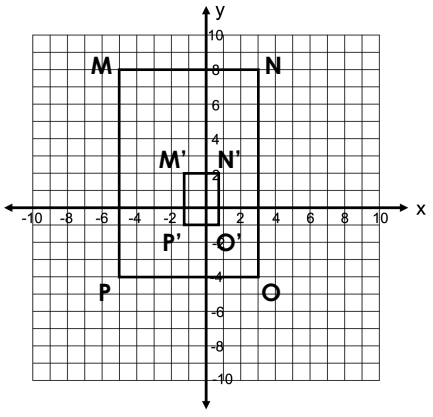
   Reduction or Enlargement



Check:

Determine the scale factor for the given dilation.

a. 2
b. 1/2
c. 4
d. 1/4



DILATIONS
Guided Notes

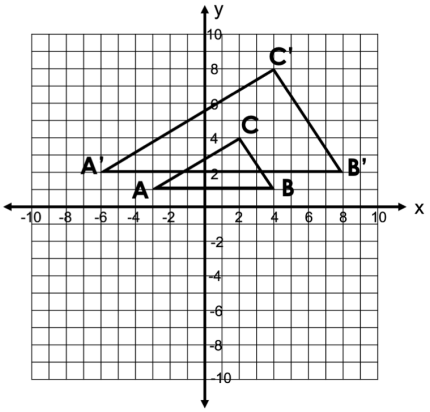
Name: ANSWER KEY

Date: _____

BASIC INFORMATION:

A **dilation** is a transformation that produces and image that is the same _shape_ as the original but is a different _size_.

Unlike other transformations a dilation is not a _rigid motion_ because size and shape are not preserved.



A **center of dilation** is the point about which a figure is dilated. (We will only use the origin as our center of dilation.)

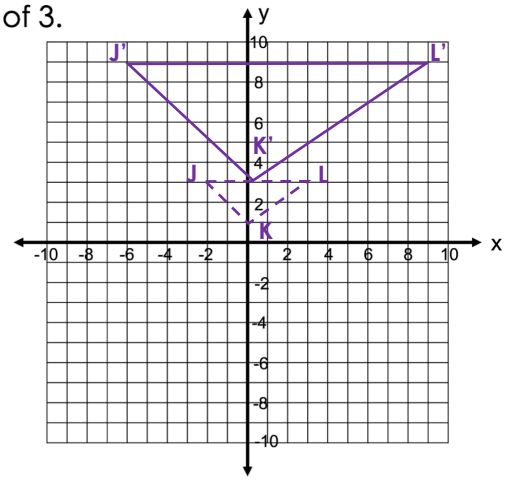
A figure that has been dilated has just been multiplied by a **scale factor (k)**.

The dilation is a reduction if k _< 1_ and an enlargement if k _> 1_.

PERFORMING DILATIONS:

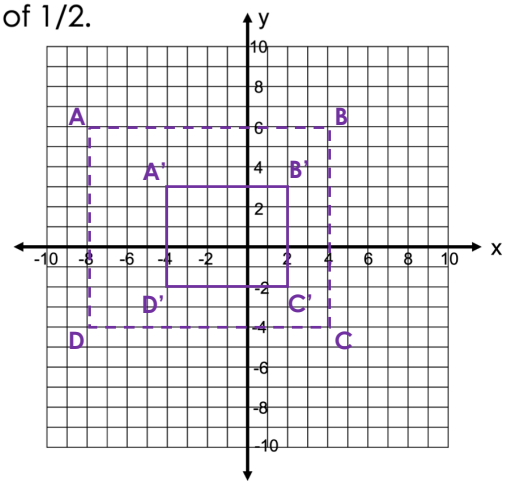
1. Graph the figure and its image after a dilation with a scale factor of 3.

J (-2, 3)
K (0, 1)
L (3, 3)
× **3** →
J' **(-6, 9)**
K' **(0, 3)**
L' **(9, 9)**



2. Graph the figure and its image after a dilation with a scale factor of 1/2.

A (-8, 6)
B (4, 6)
C (4, -4)
D (-8, -4)
→
A' **(-4, 3)**
B' **(2, 3)**
C' **(2, -2)**
D' **(-4, -2)**



DILATIONS
Guided Notes

Name: ANSWER KEY

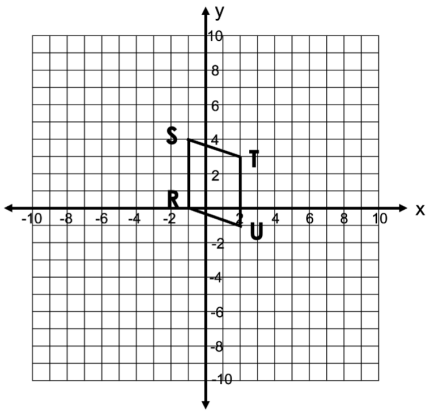
Date: _____

Check:

Determine the coordinates of the image after it has been dilated by k = 2.

R (-1, 0) S (-1, 4) T (2, 3) U (2, -1)

R' (-2, 0) S' (-2, 8) T' (4, 6) U' (4, -2)



FINDING SCALE FACTOR:

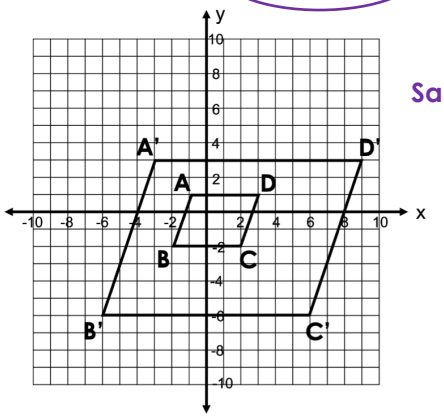
On each graph the figures have been dilated. Find the scale factor of each dilation and determine whether it is a reduction or enlargement.

Note: To determine scale factor take any coordinate from a point or spot in the image and divide by the corresponding value in the pre-image. (Ex. y value of B'/y value of B or height of A'D'/height of AD)

1. Scale Factor: 3

Circle One:

Reduction or (Enlargement)



Sample Work:

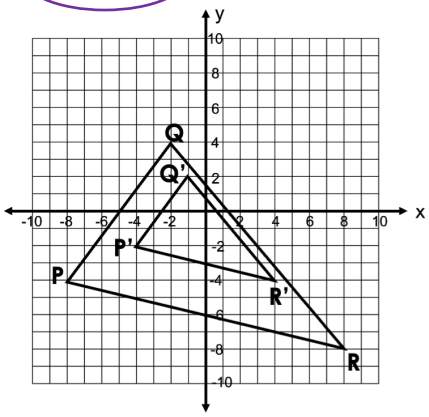
$$\frac{\text{Y-value of A'}}{\text{Y-value of A}}$$

$$\frac{3}{1} = 3$$

2. Scale Factor: 1/2

Circle One:

(Reduction) or Enlargement



Sample Work:

$$\frac{\text{x-value of P'}}{\text{x-value of P}}$$

$$\frac{-4}{-8} = 1/2$$

Note: I have my students determine whether it is a reduction or an enlargement first and then compare their scale factor answer with the fact that it is a reduction/enlargement. This helps to double check that they divided correctly and used image/pre-image as opposed to just quickly dividing.

Check:

On ex. 2 students will rush and just tell me the scale factor is 2 but if I have them compare that to the fact that they told me it is a reduction they realize for themselves that they need to go back and check their work.

Determine the scale factor for the given dilation.

a. 2
b. 1/2
c. 4
(d.) 1/4

Sample Work:

$$\frac{2}{8} = 1/4$$

or

$$\frac{0.75}{3} = 0.25 = 1/4$$