

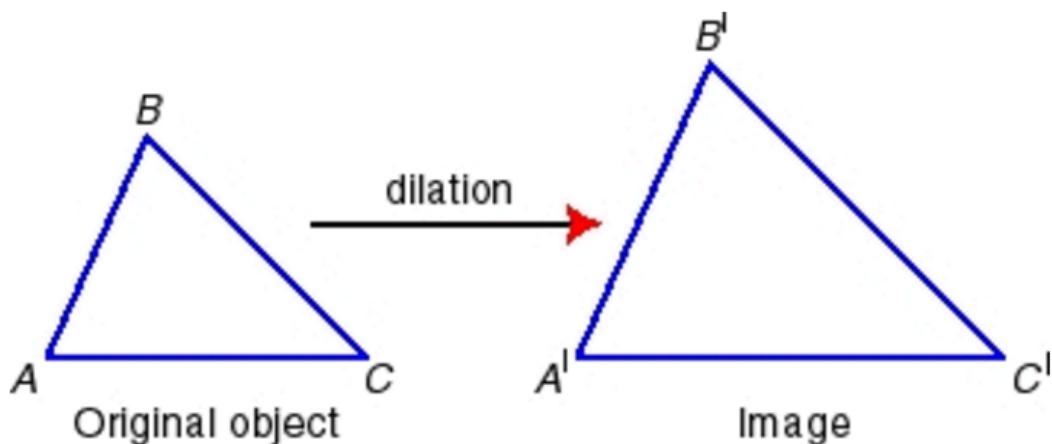
Agenda:

- 1) bell ringer: pick up new book and word search
(p. 1)
- 2) Review: Dilations
 - Dilations Lab
 - how is a dilation different from the other 3 transformations?
- 3) Homework: p. 8-9



Sep 10-9:19 AM

Dilations



Dec 1-11:28 AM

Dilation Lab

What does it mean to dilate?

change the size

1) Enlargement

2) Reduction

Where have you heard the word "dilate" used?

- eye exam

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Complete the steps below to dilate a pentagon on the coordinate plane.

1. On a coordinate plane, graph pentagon ABCDE with vertices A (-4, -4), B (-3, 6), C (4, 4), D (6, -2), and E (0, -6)

2. Multiply the coordinates of the vertices by one of the following numbers: $\frac{1}{2}$, 2, or 3. $\frac{1}{2}$

$A'(-2, -2) \quad B'(-\frac{3}{2}, 3) \quad C'(\ , \) \quad D'(\ , \) \quad E'(\ , \)$

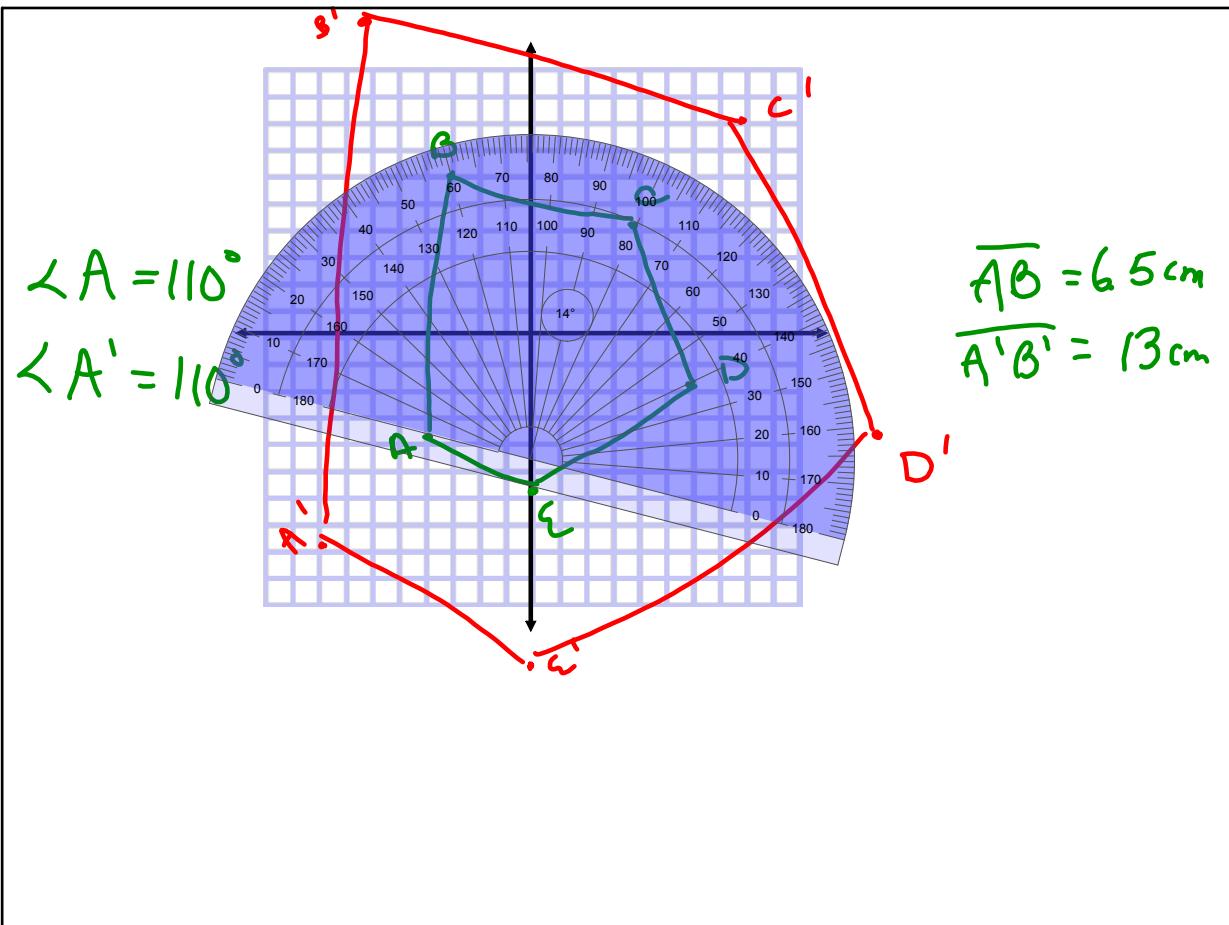
2

$A'(-8, -8) \quad B'(\ , \)$

3

$A'(-12, -12) \quad B'(\ , \)$

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Dec 1-12:15 PM

3. Graph your new coordinates on the same graph paper.

4. Use your protractor to measure the corresponding angles of the two pentagons.

Are they congruent? *yes*

$$\begin{aligned} A &= 110^\circ \\ A' &= 110^\circ \end{aligned} \quad \begin{aligned} B &= 80^\circ \\ B' &= 80^\circ \end{aligned}$$

5. Compare the sides of the two pentagons.

Are the side lengths the same? *no*

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RESULTS:

Angles same
Side lengths \rightarrow change based on scale factor
 \times Similar figures \times

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Objectives: SWBAT draw the image of a figure under a dilation.

Dilation: Enlargement | Reduction

In all of our dilations, the origin $(0,0)$ will be our center. It is possible to not use the origin, but more confusing and not necessary for us.

A scale factor must always be specified.

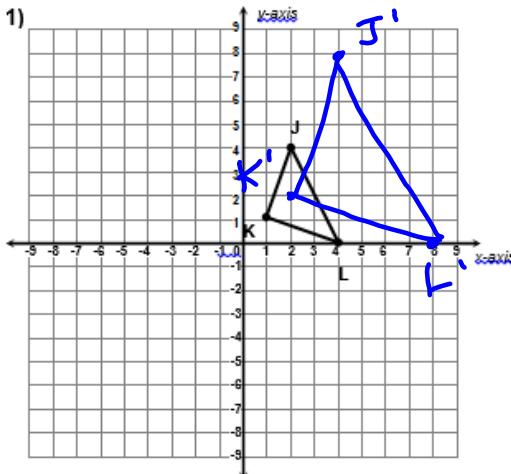
Scale factors greater than 1: Enlargement

Scale factors less than 1: Reduction

1. Find coordinates for all old and new vertices.

2. Plot new points, connect the dots, and check.

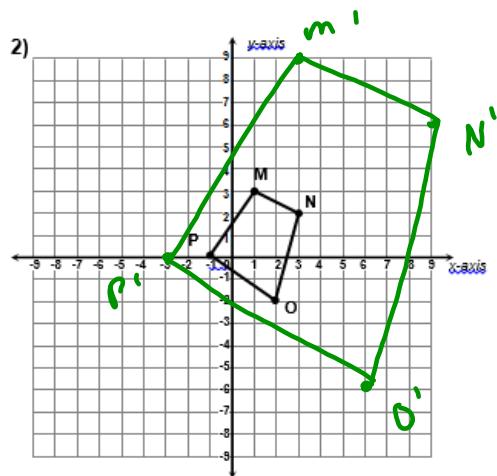
Dec 1-11:30 AM



Graph the dilated image of triangle JKL using a scale factor of 2 and (0,0) as the center of dilation.

$$\begin{array}{ll} \text{J: } & (2, 4) \\ \text{K: } & (1, 1) \\ \text{L: } & (4, 0) \end{array} \times 2 \quad \begin{array}{ll} \text{J': } & (4, 8) \\ \text{K': } & (2, 2) \\ \text{L': } & (8, 0) \end{array}$$

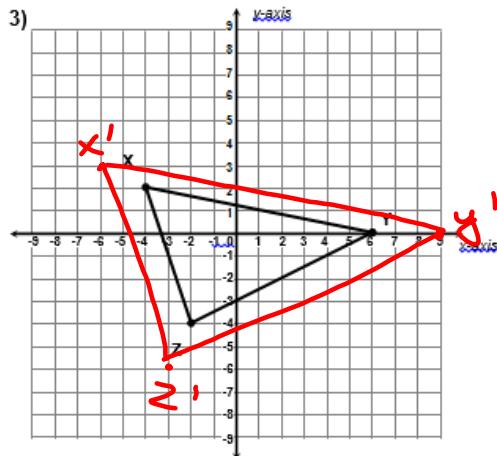
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Graph the dilated image of quadrilateral MNOP using a scale factor of 3 and the origin as the center of dilation.

$$\begin{array}{ll} \text{M: } & (-1, 3) \\ \text{N: } & (2, 2) \\ \text{O: } & (1, -2) \\ \text{P: } & (-2, -1) \end{array} \times 3 \quad \begin{array}{ll} \text{M': } & (-3, 9) \\ \text{N': } & (6, 6) \\ \text{O': } & (-6, -6) \\ \text{P': } & (-3, 0) \end{array}$$

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Graph the dilated image of triangle XYZ using a scale factor of 1.5 and (0,0) as the center of dilation.

$$X: (-4, 2)$$

$$X': (-6, 3)$$

$$Y: (6, 0)$$

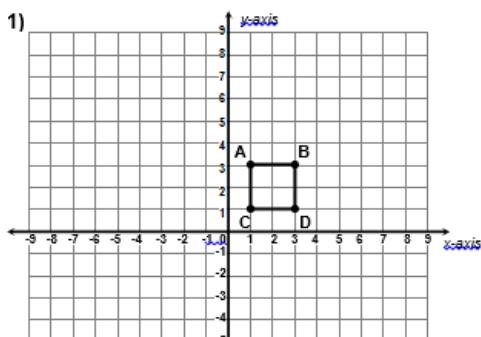
$$Y': (9, 0)$$

$$Z: (-2, -4)$$

$$Z': (-3, -6)$$

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Objectives: SWBAT draw the image of a figure under a dilation.



Graph the dilated image of quadrilateral ABCD using a scale factor of 2 and the origin as the center of dilation.

$$A: \underline{\hspace{2cm}}$$

$$A': \underline{\hspace{2cm}}$$

$$B: \underline{\hspace{2cm}}$$

$$B': \underline{\hspace{2cm}}$$

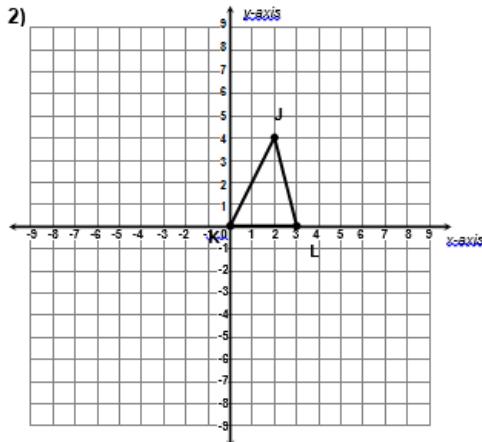
$$C: \underline{\hspace{2cm}}$$

$$C': \underline{\hspace{2cm}}$$

$$D: \underline{\hspace{2cm}}$$

$$D': \underline{\hspace{2cm}}$$

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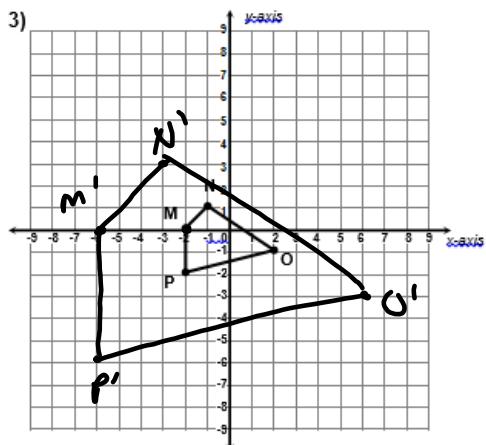
Graph the dilated image of triangle JKL using a scale factor of 2 and $(0,0)$ as the center of dilation.

$$J: \underline{\hspace{2cm}} \quad J': \underline{\hspace{2cm}}$$

$$K: \underline{\hspace{2cm}} \quad K': \underline{\hspace{2cm}}$$

$$L: \underline{\hspace{2cm}} \quad L': \underline{\hspace{2cm}}$$

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Graph the dilated image of quadrilateral MNOP using a scale factor of 3 and the origin as the center of dilation.

$$M: \underline{\hspace{2cm}} \quad M': \underline{\hspace{2cm}}$$

$$N: \underline{\hspace{2cm}} \quad N': \underline{\hspace{2cm}}$$

$$O: \underline{\hspace{2cm}} \quad O': \underline{\hspace{2cm}}$$

$$P: \underline{\hspace{2cm}} \quad P': \underline{\hspace{2cm}}$$

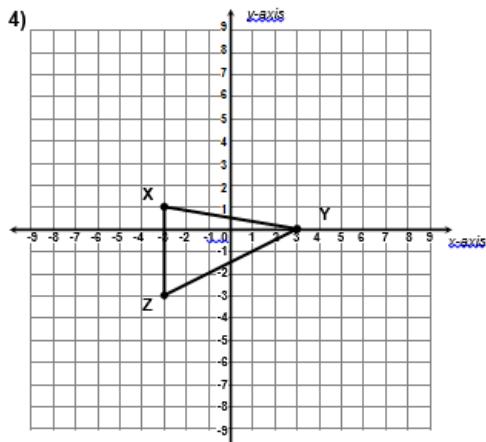
$$M': \underline{\hspace{2cm}} \quad M: \underline{\hspace{2cm}}$$

$$N': \underline{\hspace{2cm}} \quad N: \underline{\hspace{2cm}}$$

$$O': \underline{\hspace{2cm}} \quad O: \underline{\hspace{2cm}}$$

$$P': \underline{\hspace{2cm}} \quad P: \underline{\hspace{2cm}}$$

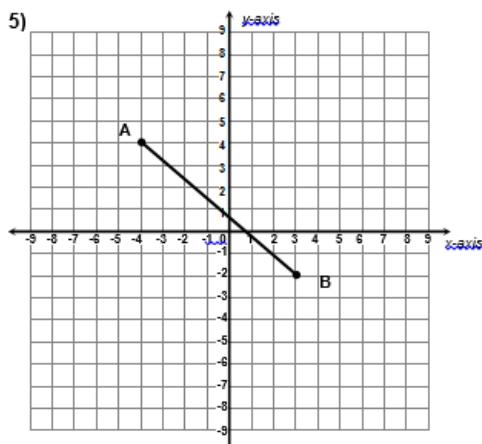
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Graph the dilated image of triangle XYZ using a scale factor of 3 and (0,0) as the center of dilation.

X: _____ X': _____
 Y: _____ Y': _____
 Z: _____ Z': _____

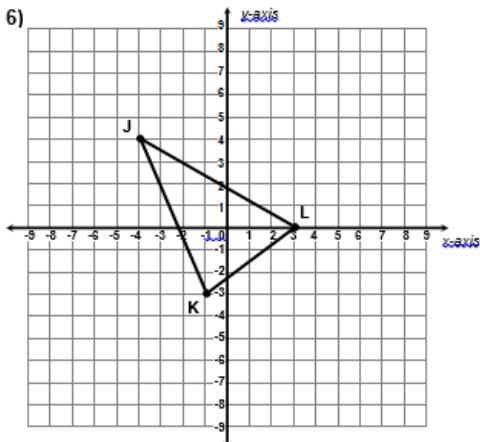
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Graph the dilated image of line segment AB using a scale factor of 2 and the origin as the center of dilation.

A: _____ A': _____
 B: _____ B': _____

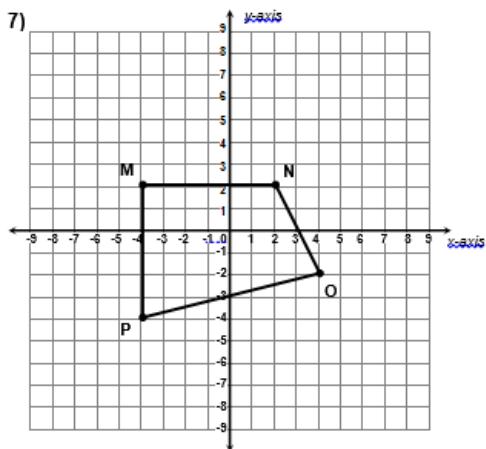
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Graph the dilated image of triangle JKL using a scale factor of 2 and (0,0) as the center of dilation.

$$\begin{array}{ll} J: \underline{\hspace{2cm}} & J': \underline{\hspace{2cm}} \\ K: \underline{\hspace{2cm}} & K': \underline{\hspace{2cm}} \\ L: \underline{\hspace{2cm}} & L': \underline{\hspace{2cm}} \end{array}$$

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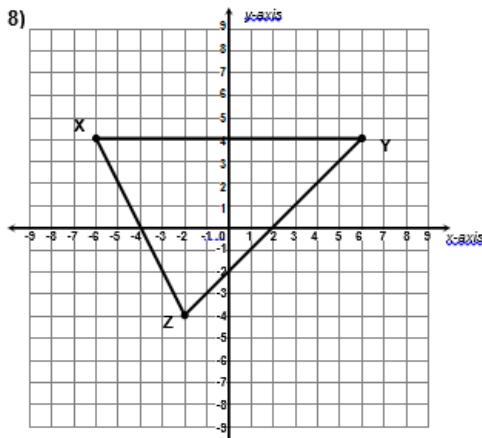
Graph the dilated image of quadrilateral MNOP using a scale factor of 1.5 and the origin as the center of dilation.

$$\begin{array}{ll} M: (-4, 2) & M': (-6, 3) \\ N: (2, 2) & N': (3, 3) \\ O: (4, -2) & O': (6, -3) \\ P: (-4, -4) & P': (-6, -6) \end{array}$$

$$\begin{aligned} 1.5 &= 1 + .5 \\ 4(1.5) &= 4(1) + 4(.5) \\ 4 &+ 2 = 6 \end{aligned}$$

$$\begin{aligned} 2(1.5) &= 2(1) + 2(.5) \\ 2 &+ 1 = 3 \end{aligned}$$

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Graph the dilated image of triangle XYZ using a scale factor of 1.5 and $(0,0)$ as the center of dilation.

X: _____ X' : _____

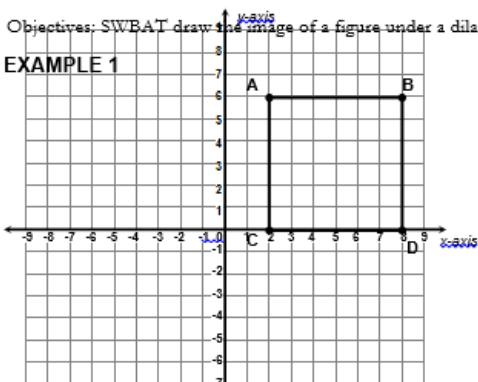
Y: _____ Y' : _____

Z: _____ Z' : _____

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Objectives: SWBAT draw the image of a figure under a dilation.

EXAMPLE 1



Graph the dilated image of quadrilateral ABCD using a scale factor of 0.5 and the origin as the center of dilation.

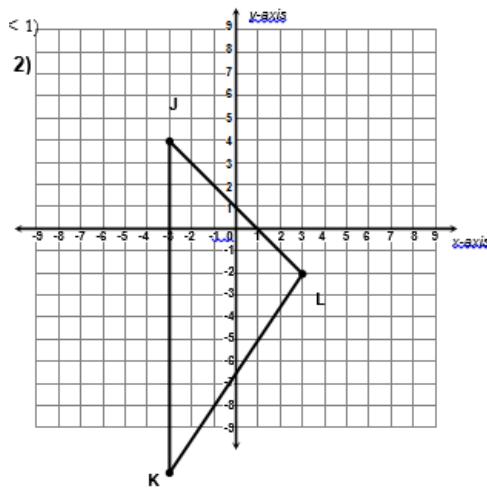
A: _____ A' : _____

B: _____ B' : _____

C: _____ C' : _____

D: _____ D' : _____

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Graph the dilated image of triangle JKL using a scale factor of $\frac{1}{3}$ and $(0,0)$ as the center of dilation.

J: _____

J' : _____

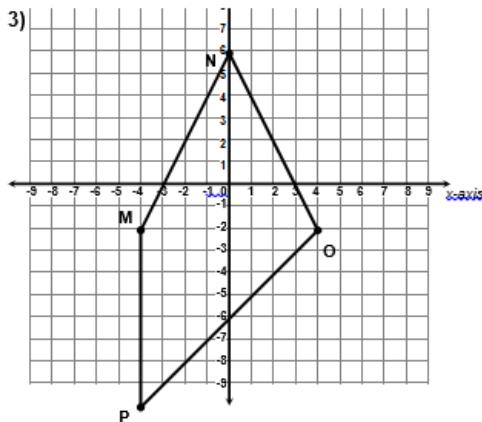
K: _____

K' : _____

L: _____

L' : _____

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Graph the dilated image of quadrilateral MNOP using a scale factor of 0.25 and the origin as the center of dilation.

M: _____

M' : _____

N: _____

N' : _____

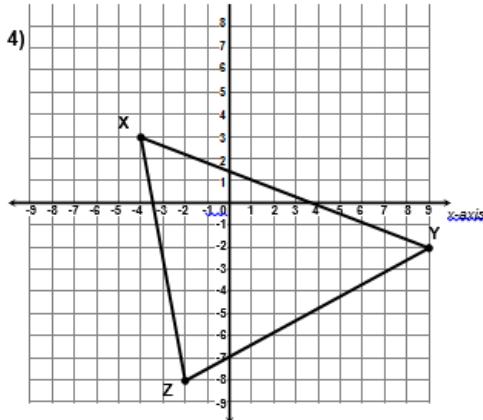
O: _____

O' : _____

P: _____

P' : _____

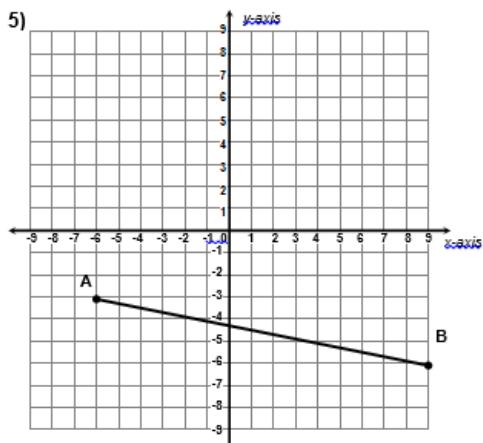
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Graph the dilated image of triangle XYZ using a scale factor of 0.5 and (0,0) as the center of dilation.

X: _____ X': _____
 Y: _____ Y': _____
 Z: _____ Z': _____

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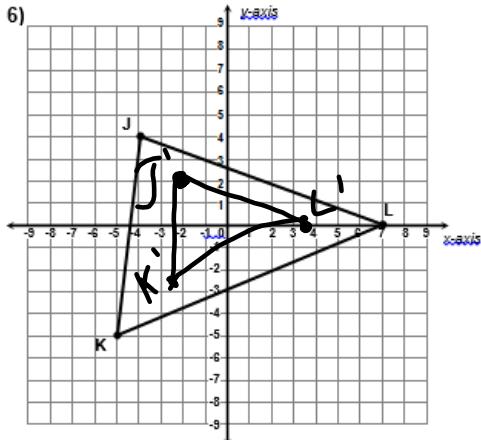
$\frac{1}{3}$ = Dividing by 3

$\frac{1}{4}$ = Dividing by 4

Graph the dilated image of line segment AB using a scale factor of $1/3$ and the origin as the center of dilation.

A: $(-6, -3)$ A': $(-2, -1)$
 B: $(9, -6)$ B': $(3, -2)$

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Graph the dilated image of triangle JKL using a scale factor of 0.5 and $(0,0)$ as the center of dilation.

$$\begin{array}{l} J: \\ \underline{-4, 4} \\ K: \\ \underline{-5, -5} \\ L: \\ \underline{3, 0} \end{array}$$

$$\begin{array}{l} J': \\ \underline{-2, 2} \\ K': \\ \underline{2.5, -2.5} \\ L': \\ \underline{3.5, 0} \end{array}$$

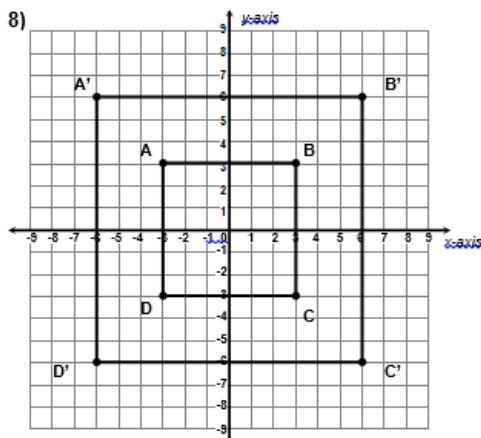
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7) Given the coordinates for each set of vertices, choose the appropriate transformation.

Triangle QRS	Triangle Q'R'S'
Q: $(-2, 4)$	$Q': (-4, 8)$
R: $(4, 0)$	$R': (2, 4)$
S: $(6, 2)$	$S': (4, 6)$

- A Dilation with a scale factor of 2
- B Dilation with a scale factor of 0.5
- C Translation 2 units left, 4 units up
- D Translation 2 units right, 4 units up

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Describe the dilation of quadrilateral ABCD, using the origin as the center.

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Oct 30-1:08 PM