

Lesson Ch7 Day 7: Dilations & Similarity on the Coordinate Plane

A _____ is a transformation that changes the size of a figure, but not its shape.

The image is always _____ to its pre-image. The _____

describes how much the figure is _____ or _____.

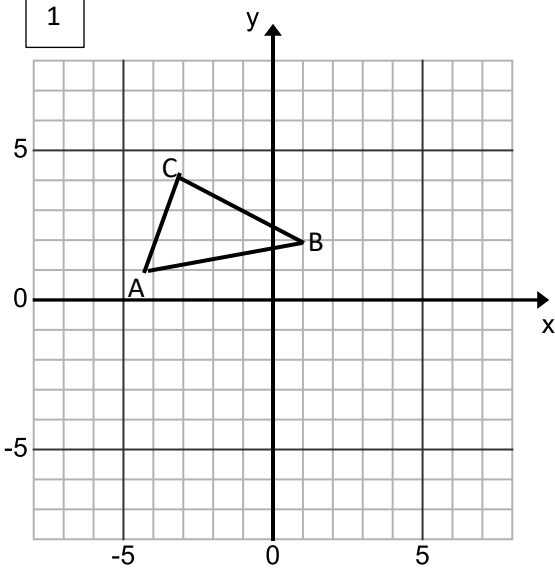
The _____ and _____ are **RECIPROCAL**s of each other.

The rule for dilations on the coordinate plane with the center of dilation at the origin is:

$$(x, y) \xrightarrow{D_{origin,k}} (k \cdot x, k \cdot y)$$

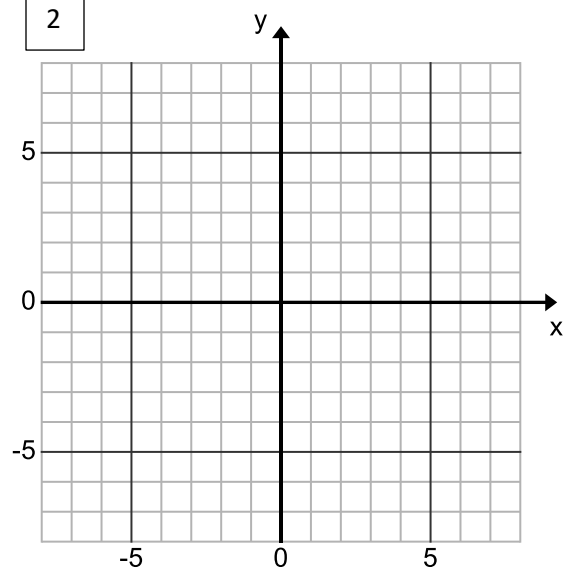
Problem Set A: Using arrow notation, show the dilation of each of the figures in each diagram and plot the new image and label.

1



Perform a $D_{origin,2}(\triangle ABC)$

2



Perform a $D_{origin,\frac{1}{3}}(\triangle XYZ)$

$X(-3, 6)$

$Y(3, -3)$

$Z(-6, -6)$

Slope:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Distance:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

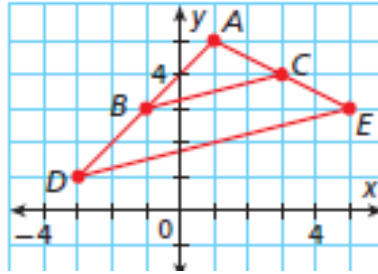
Problem Set B: Proving Triangles are Similar on the Coordinate Plane

3. By AA ~

Given: $A(1, 5)$, $B(-1, 3)$, $C(3, 4)$,
 $D(-3, 1)$, and $E(5, 3)$

Prove: $\triangle ABC \sim \triangle ADE$

Step 1 Plot the points and
draw the triangles.



Step 2: Find the slope of \overline{BC} & \overline{DE}

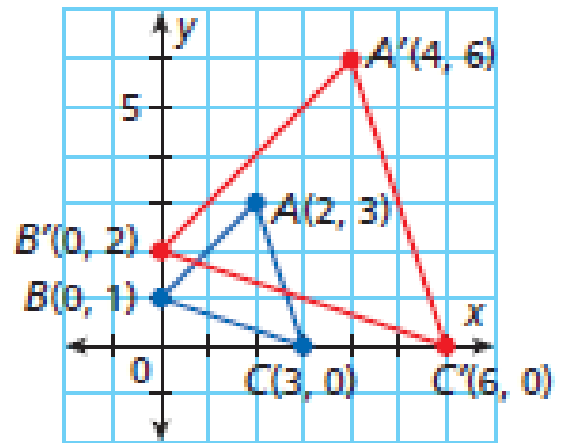
4. By *SSS* ~

Given: $\triangle ABC$ & $\triangle A'B'C'$

Prove: $\triangle ABC \sim \triangle A'B'C'$

Step 1: identify the corresponding sides

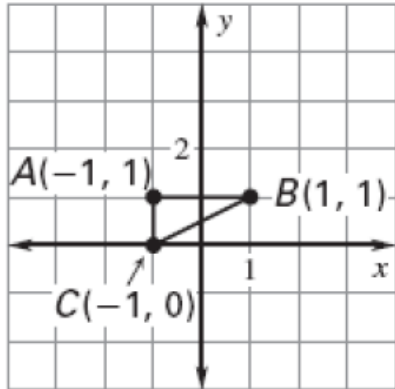
Step 2: Use distance formula and find the length of each side in simplest radical form.



Perform the following dilations on each figure and list pre-image coordinates and the image coordinates using arrow notation.

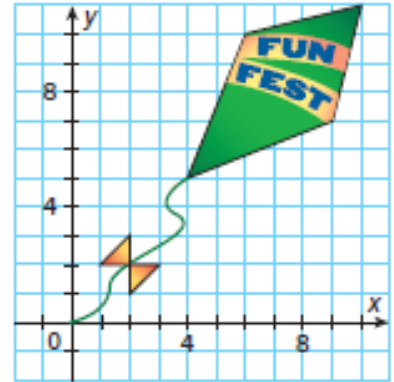
1)

$$D_{origin,3}$$



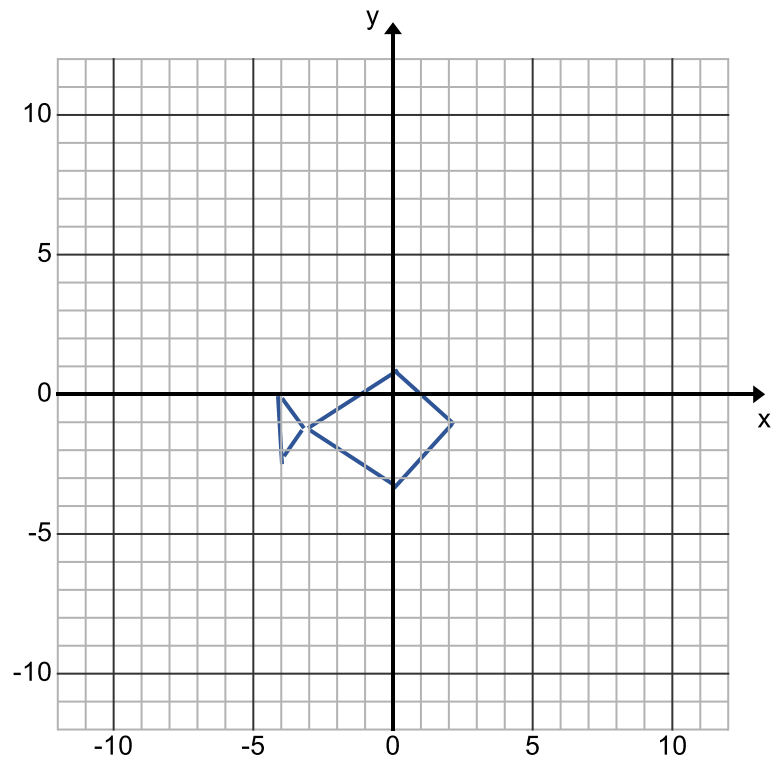
2)

$$D_{origin, \frac{1}{2}}$$



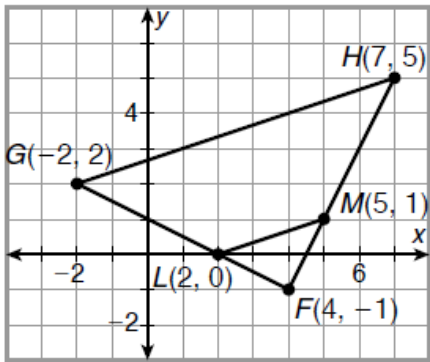
3. Perform the given dilation on the figure below.

$$D_{origin,3}$$



4.

Prove that $\triangle FGH \sim \triangle FLM$.



a) Find the slope of \overline{GH} & \overline{LM}

b) $\overline{GH} \underline{\hspace{1cm}} \overline{LM}$ because _____

c) _____ \cong _____ because parallel lines cut by a transversal create _____

d) $\sphericalangle F \cong \sphericalangle F$ by _____

e) Therefore, _____