Name: Date:

CCM2 Unit 2 Lesson 2: TRANSFORMATIONS

NOTES

TRANSFORMATIONS:

TRANSFORMATION	RULE
1) **Translation** with components h, K h = horizontal k= vertical	
2) **Reflection** Over y-axis	
3) **Reflection** Over x-axis	
4) **Reflection** Over y = x	
5) **Reflection** Over y = -x	
6) 90° Counter Clockwise **Rotation**	
7) 180**° Rotation**	
8) 270° Counter Clockwise **Rotation**	
9) 90° Clockwise **Rotation**	
10) Dilation	

Transformations:

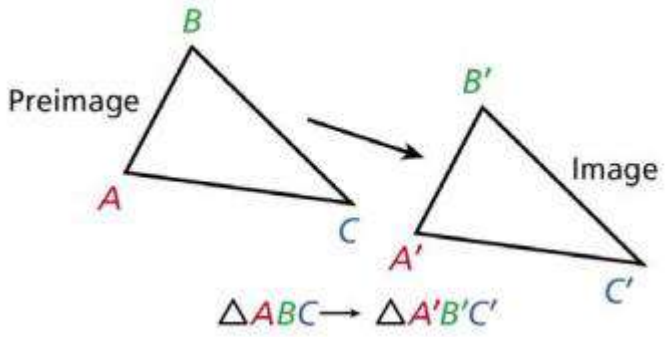
A transformation is a change in the position of a figure in some way.

The original figure is called the _____.

The resulting figure is called the _____.

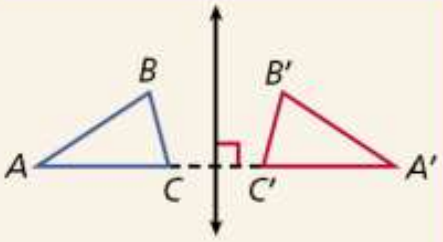
A transformation changes the _____ to the _____.

Arrow notation → is used to describe a transformation, and a (‘) is used to label the new image point



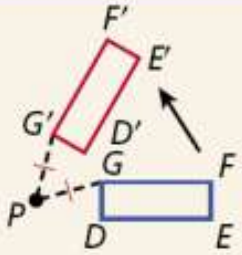
Transformations

REFLECTION



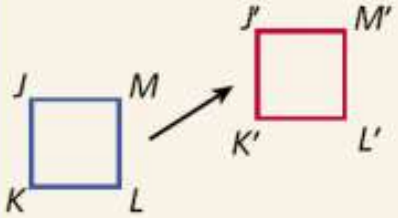
A **reflection** (or *flip*) is a transformation across a line, called the line of reflection. Each point and its image are the same distance from the line of reflection.

ROTATION



A **rotation** (or *turn*) is a transformation about a point *P*, called the center of rotation. Each point and its image are the same distance from *P*.

TRANSLATION

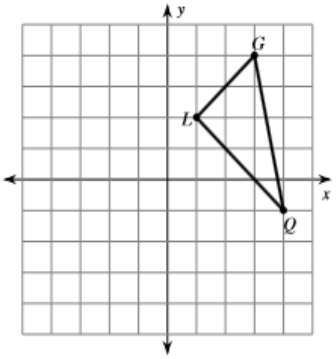


A **translation** (or *slide*) is a transformation in which all the points of a figure move the same distance in the same direction.

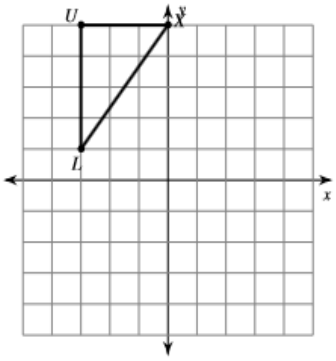
Reflections

Graph the image of the figure using the transformation given.

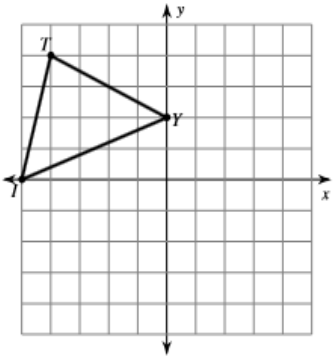
1) reflection across the x-axis



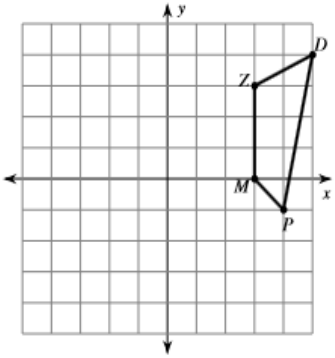
2) reflection across $y = 3$



3) reflection across $y = 1$



4) reflection across the x-axis



Find the coordinates of the vertices of each figure after the given transformation.

7) reflection across the x-axis
$K(1, -1), N(4, 0), Q(4, -4)$

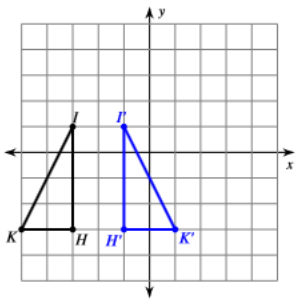
8) reflection across $y = -1$
$R(-3, -5), N(-4, 0), V(-2, -1), E(0, -4)$

9) reflection across $x = 3$
$F(2, 2), W(2, 5), K(3, 2)$

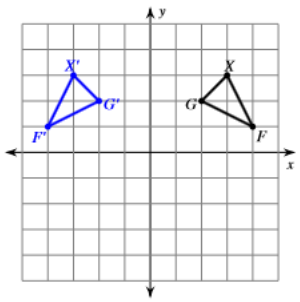
10) reflection across $x = -1$
$V(-3, -1), Z(-3, 2), G(-1, 3), M(1, 1)$

Write a rule to describe each transformation.

11)



12)



Dilations

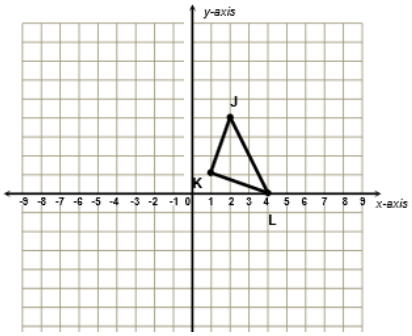
Directions: Answer the following questions to the best of your ability. For the y-axis, use the same scaling as the x-axis

1. In Math, the word dilate means to _____ or _____ a figure.

2. If a scale factor is less than 1, then your figure gets _____.

3. If a scale factor is greater than 1, then your figure gets _____.

4.



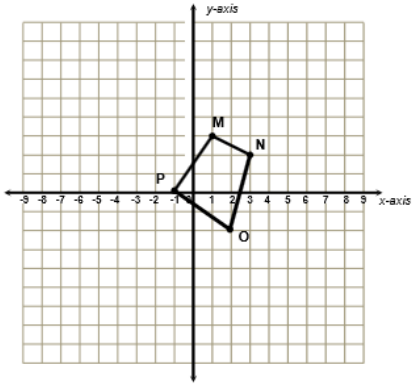
Graph the dilated image of triangle JKL using a scale factor of 2 and (0,0) as the center of dilation.

J: _____ J': _____

K: _____ K': _____

L: _____ L': _____

5.



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

M: _____ M': _____

N: _____ N': _____

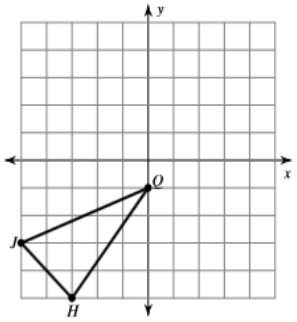
O: _____ O': _____

P: _____ P': _____

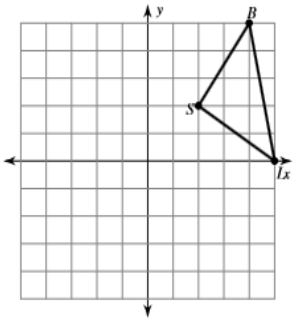
Rotations

Graph the image of the figure using the transformation given.

1) rotation 180° about the origin



2) rotation 90° counterclockwise about the origin



Find the coordinates of the vertices of each figure after the given transformation.

7) rotation 180° about the origin
$Z(-1, -5)$, $K(-1, 0)$, $C(1, 1)$, $N(3, -2)$

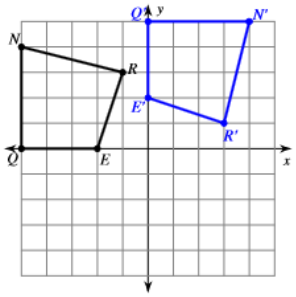
8) rotation 180° about the origin
$L(1, 3)$, $Z(5, 5)$, $F(4, 2)$

9) rotation 90° clockwise about the origin
$S(1, -4)$, $W(1, 0)$, $J(3, -4)$

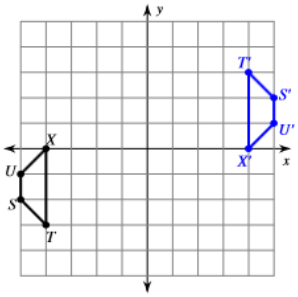
10) rotation 180° about the origin
$V(-5, -3)$, $A(-3, 1)$, $G(0, -3)$

Write a rule to describe each transformation.

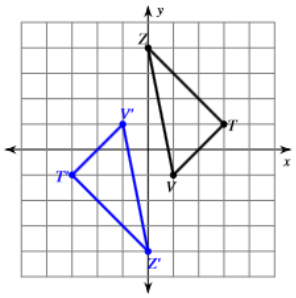
11)



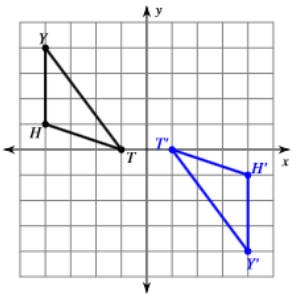
12)



13)



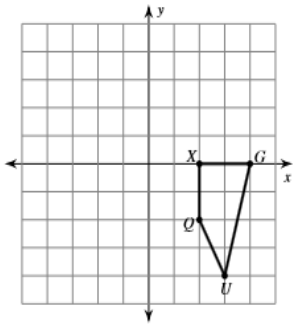
14)



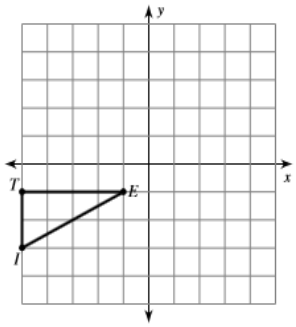
Transformations

Graph the image of the figure using the transformation given.

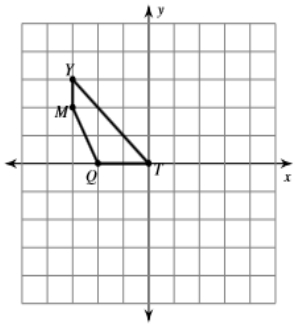
1) translation: 1 unit left



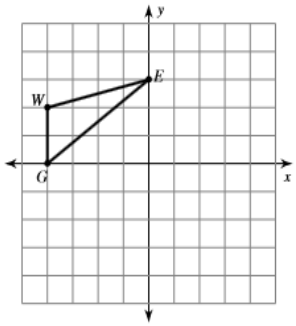
2) translation: 1 unit right and 2 units down



3) translation: 3 units right

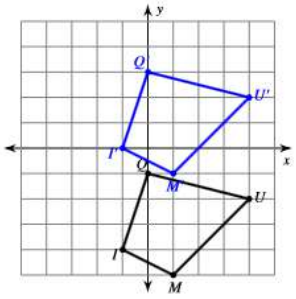


4) translation: 1 unit right and 2 units down

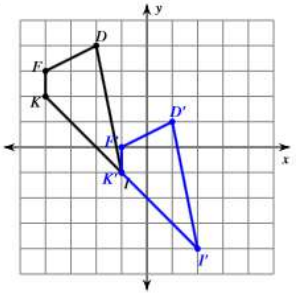


Write a rule to describe each transformation.

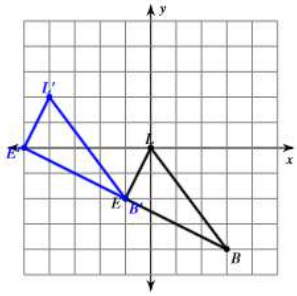
11)



12)



13)



14)