

# Transformations

Name: \_\_\_\_\_

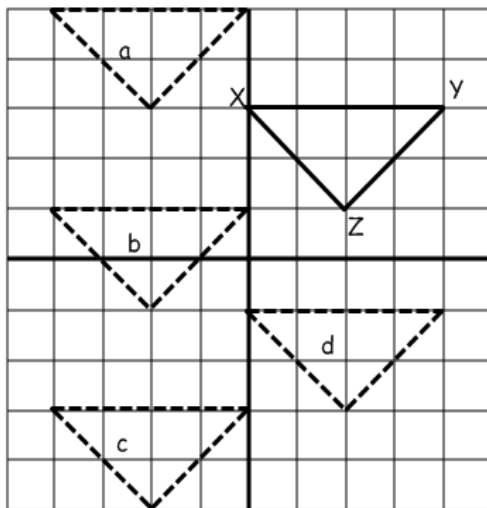
Date: \_\_\_\_\_ Period: \_\_\_\_\_

Fill in the Blanks.

1. In mathematics, the word "dilate" means to \_\_\_\_\_ or \_\_\_\_\_ a figure.
2. In math the word "translate" means to \_\_\_\_\_ a figure.
3. In math, the word "reflect" means to \_\_\_\_\_ a figure.
4. A rotation is a transformation that \_\_\_\_\_ a figure around a point.

Multiple Choice. Circle the correct answer for each problem.

5. If triangle XYZ was translated 4 left and 2 up, where would the image of the triangle be located?



- a) image a
- b) image b
- c) image c
- d) image d

6a.

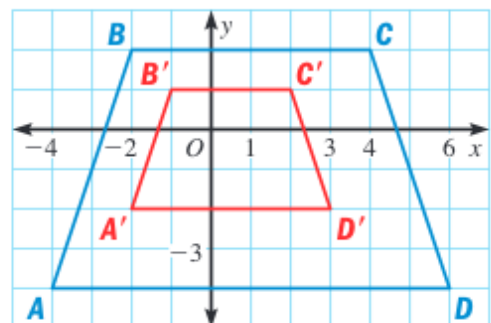
**Multiple Choice** Let  $P(2, 4)$  be a point on a figure, and let  $P'$  be the corresponding point on the image. The figure is dilated by a scale factor of 4. What are the coordinates of  $P'$ ?

- A.  $(-2, 0)$       B.  $(\frac{1}{2}, 1)$       C.  $(6, 8)$       D.  $(8, 16)$

6b.

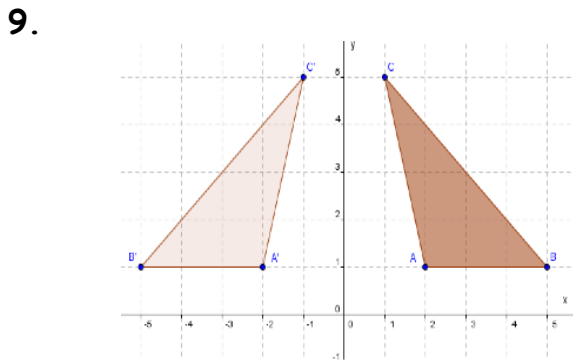
**Multiple Choice** In the diagram, quadrilateral  $A'B'C'D'$  is the image of quadrilateral  $ABCD$  after a dilation. What is the scale factor?

- F.  $\frac{1}{4}$       G.  $\frac{1}{2}$   
H. 2      I. 3

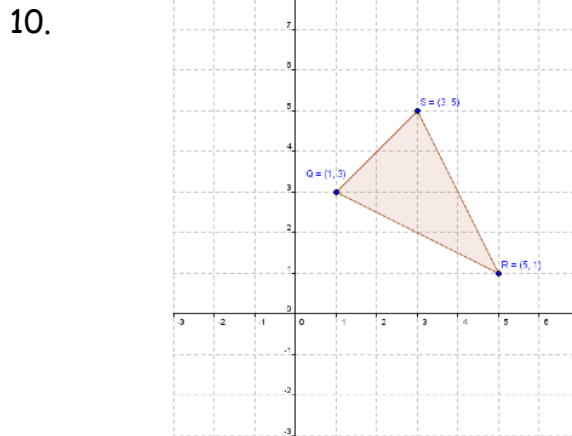


7. Suppose a constellation of stars is plotted on a coordinate plane. The coordinates of one star are  $(0,-8)$ . The point representing the star is then translated left 3 units. What are its new coordinates?
- $(3,-8)$
  - $(0,-5)$
  - $(0,-11)$
  - $(-3,-8)$

8. A figure is located **entirely** in the third quadrant. If it is reflected over the y-axis, in which quadrant will its image lie?
- first
  - second
  - third
  - fourth



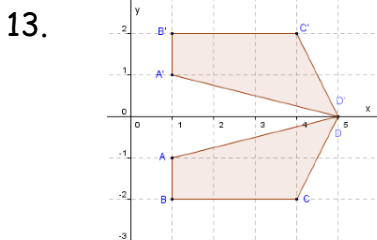
- Which of these describes the transformation of the triangle?
- Reflection over the x-axis
  - Reflection over the y-axis
  - Rotation of  $90^\circ$  clockwise about the origin
  - Rotation of  $180^\circ$  clockwise about the origin



- Triangle QRS is translated four units to the left and two units up. Which ordered pair is a vertex of the translated image?
- $(-1,3)$
  - $(1,-3)$
  - $(1,3)$
  - $(3,1)$

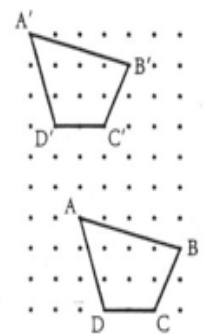
11. The marching band enters the gym and marches across the gym **without** turning. Which of these describes the transformation?
- dilation
  - reflection
  - rotation
  - translation

12. Which of the following describes the movement of a figure that is translated according to the rule below?
- $$(x, y) \rightarrow (x - 7, y + 1)$$
- down 7 units and right 1 unit
  - left 7 units and up 1 unit
  - right 7 units and down 1 unit
  - up 7 units and left 1 unit



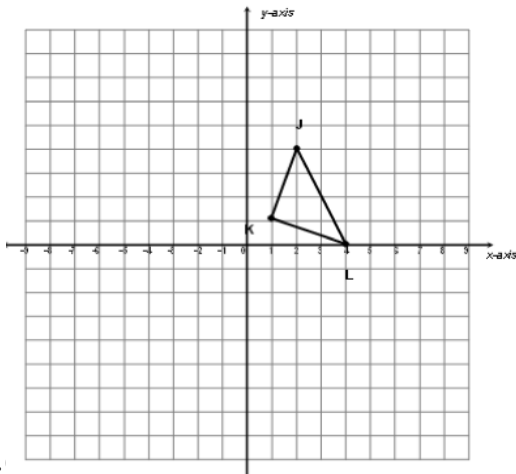
- Which of the following describes the transformation shown here?
- dilation with a scale factor of 2
  - rotation of  $90^\circ$  counterclockwise
  - reflection over the x-axis
  - translation up 2 units

14. Describe the translation on the right.
- 3 units right, 6 units down
  - 2 units left, 6 units up
  - 3 units left, 6 units up
  - 2 units right, 4 units down



**Short Answer.**

**15.** Dilate this figure by a scale factor of 2. Write the coordinates of the image after the dilation.



J ( 2 , 2 )      J' ( , )

K ( 1 , 1 )      K' ( , )

L ( 3 , 1 )      L' ( , )

Is this an enlargement or a reduction? (circle one)

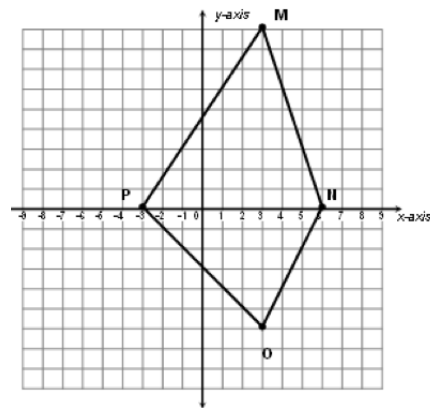
**1** of 1/3.  
Write the coordinates of the image after the dilation.

M ( , )      M' ( , )

N ( , )      N' ( , )

O ( , )      O' ( , )

P ( , )      P' ( , )



Is this an enlargement or a reduction? (circle one)

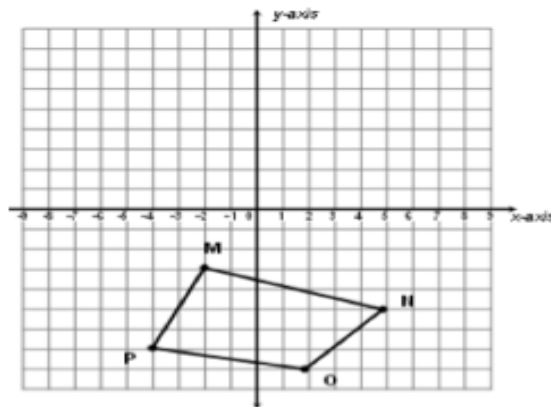
**17.** Reflect this figure across the **x - axis**.

M ( )      M' ( , )

N ( )      N' ( , )

O ( )      O' ( , )

P ( )      P' ( , )



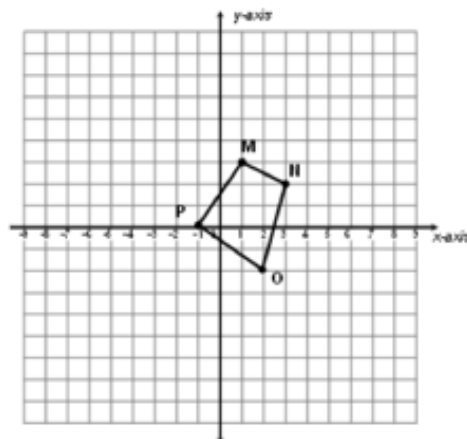
**18.** Reflect this figure across the **y - axis**

M ( )      M' ( , )

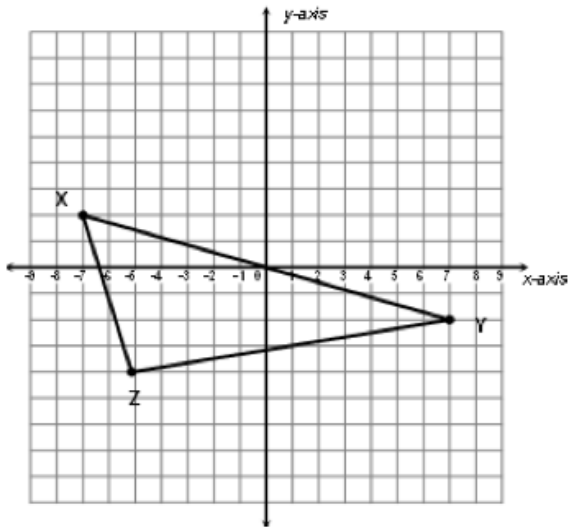
N ( )      N' ( , )

O ( )      O' ( , )

P ( )      P' ( , )



19.



Translate this figure following the rule  $(x, y) \rightarrow (x - 2, y + 6)$ .

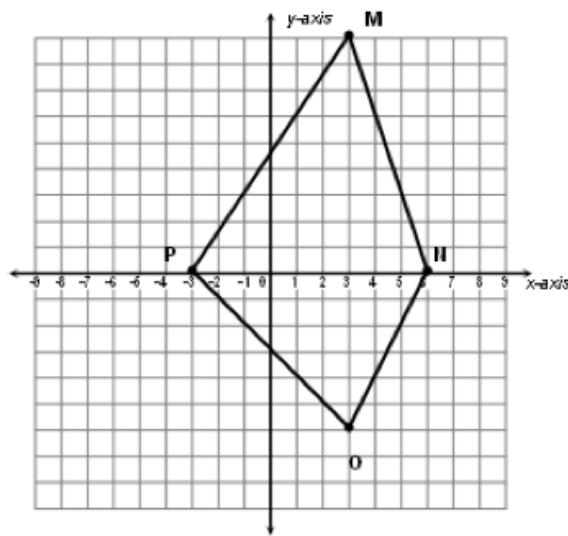
X ( , )      X' ( , )

Y ( , )      Y' ( , )

Z ( , )      Z' ( , )

2

20.



Translate this figure following the rule  $(x, y) \rightarrow (x + 3, y - 3)$ .

M ( , )      M' ( , )

N ( , )      N' ( , )

O ( , )      O' ( , )

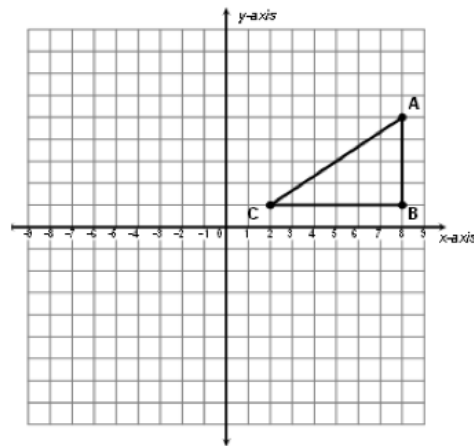
P ( , )      P' ( , )

21. Rotate this figure  $90^\circ$  counter clockwise about the origin.

A ( , )      A' ( , )

B ( , )      B' ( , )

C ( , )      C' ( , )

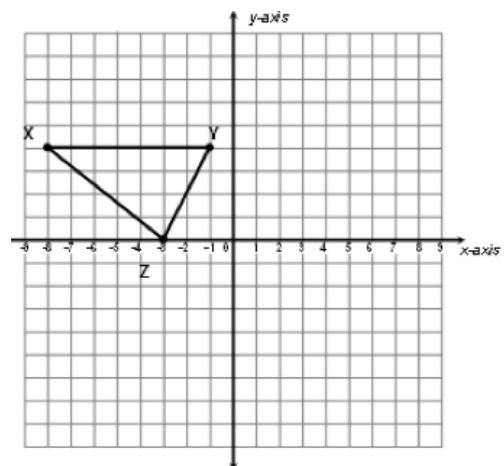


22. Reflect this figure  $180^\circ$  clockwise about the origin.

X ( , )      X' ( , )

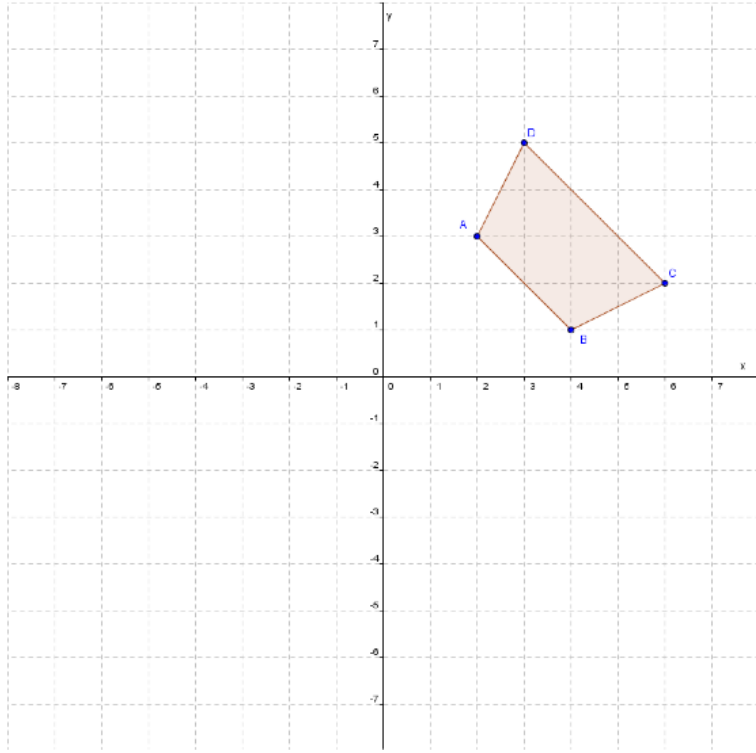
Y ( , )      Y' ( , )

Z ( , )      Z' ( , )



4

23. This is a double reflection. Pay close attention to the axis you are reflecting over. Show all coordinates in the chart below.



Reflection of a trapezoid across intersecting lines

- a. **1 point.** On the grid provided, reflect trapezoid ABCD over the y-axis. Label the corresponding vertices of the image A', B', C' and D' respectively.
- b. **1 point.** Now, reflect this image, trapezoid A'B'C'D', over the x-axis. Label the corresponding vertices A'', B'', C'' and D'', respectively.
- c. **1 point.** Identify the vertices of the images in the table below.

Pre-image		Reflection over the y-axis		Reflection over the x-axis	
Vertex	Ordered Pair	Vertex	Ordered Pair	Vertex	Ordered Pair
A	(2,3)	A'	_____	A''	_____
B	(4,1)	B'	_____	B''	_____
C	(6,2)	C'	_____	C''	_____
D	(3,5)	D'	_____	D''	_____