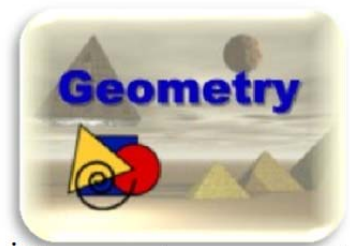


# Transformations

Name \_\_\_\_\_

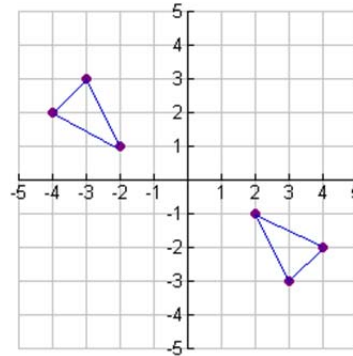


1. If a reflection in the line  $y = -x$  occurs, then the rule for this reflection is:

- [1]  $(x, y) \rightarrow (x, -y)$       [3]  $(x, y) \rightarrow (y, x)$   
 [2]  $(x, y) \rightarrow (-x, y)$       [4]  $(x, y) \rightarrow (-y, -x)$

2. Which of the following transformations is illustrated by the graph at the right?

- [1] dilation  
 [2] reflection in  $y = x$   
 [3] translation  
 [4] reflection in the origin



3. Under the translation  $T_{3,2}$ , the point  $(2,5)$  becomes

- [1]  $(3,2)$       [2]  $(6,10)$       [3]  $(5,7)$       [4]  $(4,8)$

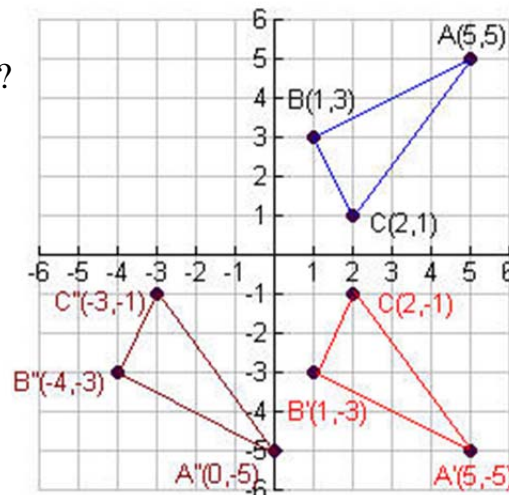
4. Which of the following capital letters (if written simply) has at least one line of symmetry?      [1] F      [2] R      [3] O      [4] L

5. Which of the following rules is the composition of a dilation of scale factor 2 following a translation of 3 units to the right?

- [1]  $D_2 \circ T_{3,0}(x, y) = (2x + 3, 2y)$       [3]  $T_{3,0} \circ D_2(x, y) = (2x + 3, 2y)$   
 [2]  $D_2 \circ T_{3,0}(x, y) = (2x + 6, 2y)$       [4]  $T_{3,0} \circ D_2(x, y) = (2x + 6, 2y)$

6. Which of the following descriptions (pertaining to the graph at the right) is true?

- [1]  $\triangle A''B''C''$  is a translation of  $\triangle ABC$   
 [2]  $\triangle A''B''C''$  is a glide reflection of  $\triangle ABC$   
 [3]  $\triangle A''B''C''$  is a reflection in the origin of  $\triangle ABC$   
 [4]  $\triangle A''B''C''$  is a dilation of scale factor 2 of  $\triangle ABC$



1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

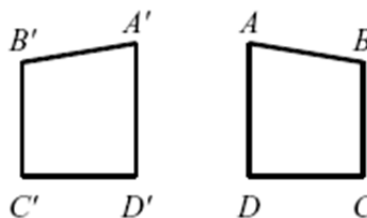
6. \_\_\_\_\_

7. Which of the following transformations creates a figure that is similar (but not congruent) to the original figure?

- I. translation      II. rotation      III. Dilation  
 [1] I only      [2] II only      [3] III only      [4] II and III

8. Regarding the transformation at the right, do the figures have the *same* or *opposite* orientation?

- [1] same      [2] opposite



9. The image of  $(-2,6)$  after a dilation with respect to the origin is  $(-10,30)$ . What is the constant of the dilation?      [1] 5      [2] 8      [3] 10      [4] -8

10. What are the coordinates of point  $T'$ , the image of point  $T(-2,5)$  after a reflection in the origin?      [1]  $(2,5)$       [2]  $(2,-5)$       [3]  $(-2,-5)$       [4]  $(5,-2)$

11. What is the image of point  $(4,-2)$  after a dilation of 3?

- [1]  $(12, -6)$       [2]  $(7, 1)$       [3]  $(1, -5)$       [4]  $(4/3, -2/3)$

12. Point  $P'(-6,-4)$  is the image of point  $P(-2,3)$  under translation  $T$ . What is the image of  $(5,-1)$  under the same translation?

- [1]  $(9,6)$       [2]  $(-1,-5)$       [3]  $(1,-8)$       [4]  $(3, 2)$

13. A dilation maps  $(6,10)$  to  $(3,5)$ . What are the coordinates of the image of  $(12,4)$  under the same dilation?

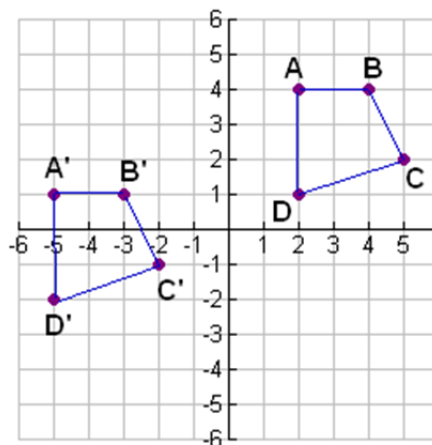
- [1]  $(6,2)$       [2]  $(9,1)$       [3]  $(2,6)$       [4]  $(9,-1)$

14. A translation maps  $(x, y)$  to  $(x - 5, y + 3)$ . In which quadrant does the point  $(-3,-2)$  lie under the same translation?

- [1] I      [2] II      [3] III      [4] IV

15. Which of the following descriptions does **NOT** pertain to the transformation shown at the right?

- [1]  $T_{(-7,-3)}$   
 [2]  $(x, y) \rightarrow (x - 7, y - 3)$   
 [3] 7 units down and 3 units left  
 [4]  $\vec{v} = \langle -7, -3 \rangle$



7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

16. Which of the following is **NOT** invariant under a dilation?

- [1] angle measure                      [3] distance  
[2] orientation                         [4] parallelism

16. \_\_\_\_\_

17. A figure is translated  $\langle 3, -3 \rangle$ . Which translation will move the image back to its original position?

- [1]  $\langle 3, -3 \rangle$             [2]  $\langle -3, 3 \rangle$             [3]  $\langle -3, 0 \rangle$             [4]  $\langle 0, 3 \rangle$

17. \_\_\_\_\_

18. A positive angle of rotation turns a figure

- [1] clockwise                      [2] counterclockwise

18. \_\_\_\_\_

19. The composition  $r_{y=x} \circ r_{y-axis}$  can also be expressed as which of the following single transformation?

- [1]  $r_{x-axis}$                       [2]  $T_{(0,-2)}$                       [3]  $D_{0.5}$                       [4]  $R_{270^\circ}$

19. \_\_\_\_\_

20. An isometry is a transformation of the plane that preserves length.

- [1] TRUE                      [2] FALSE

20. \_\_\_\_\_