

**Unit 11—Transformational Geometry  
Test**

**Good Luck To:** \_\_\_\_\_  
**Period:** \_\_\_\_\_

1. Define *rotation*:

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2. Define *image*:

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3. Define *isometry*:

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4. Define *translation*:

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5. Define *transformation*:

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6. List the three main transformations:

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7. What happens to the ordered pair  $(x, y)$  when you have a **rotation**:

of  $90^\circ$ ? \_\_\_\_\_  
of  $180^\circ$ ? \_\_\_\_\_  
of  $270^\circ$ ? \_\_\_\_\_

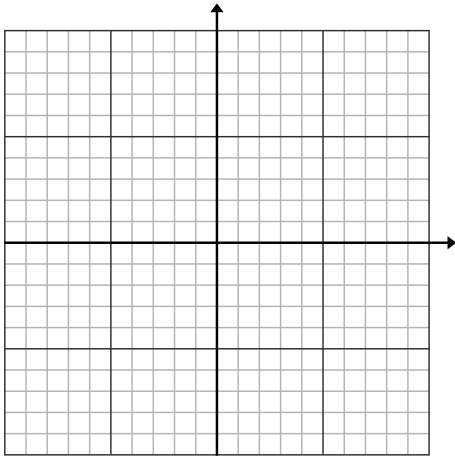
For problems 8 and 9, choose a letter of the alphabet (capital or lower case) that shows symmetry. Show the letter and its line of symmetry. For example: Horizontal Symmetry

8. Vertical Symmetry

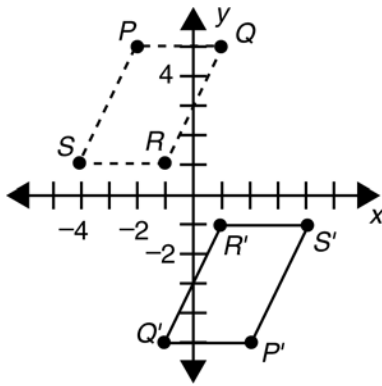
9. Horizontal Symmetry



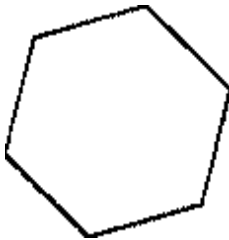
10. Graph the triangle whose vertices have the coordinates given below. Then draw its reflection in the  $x$ -axis.  
 $(-6, 2)$ ,  $(-1, 3)$ ,  $(-5, 7)$ . Make sure you label all coordinate points.



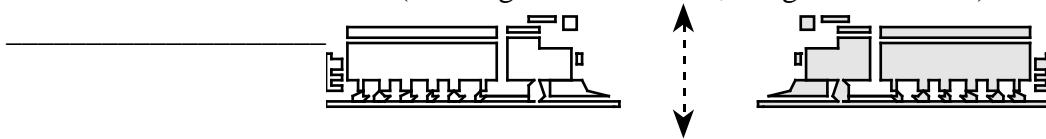
11. The degree of rotation that maps parallelogram  $PQRS$  onto parallelogram  $P'Q'R'S'$  is \_\_\_\_\_.



12. How many lines of symmetry does a regular hexagon have? \_\_\_\_\_  
 Sketch the symmetry lines on the figure below.



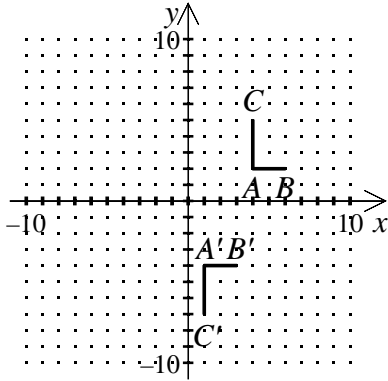
13. Name the transformation. (Preimages are unshaded; images are shaded.)



14. Classify the frieze pattern below. \_\_\_\_\_

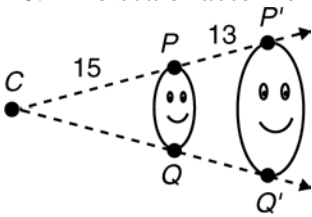


15. Which glide reflection could map figure  $ABC$  to figure  $A'B'C'$ ? \_\_\_\_\_

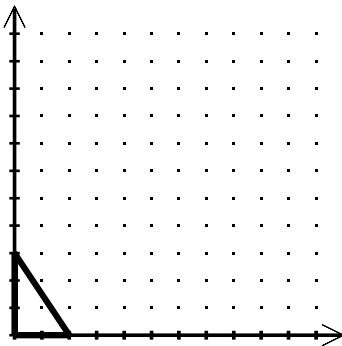


- A. Translation:  $(x, y) \rightarrow (x - 3, y)$  Reflection: in  $y = -1$
- B. Translation:  $(x, y) \rightarrow (x + 1, y - 3)$  Reflection: in  $x = -1$
- C. Translation:  $(x, y) \rightarrow (x - 3, y + 1)$  Reflection: in  $y = -1$
- D. Translation:  $(x, y) \rightarrow (x, y - 3)$  Reflection: in  $x = -1$

16. The scale factor for the dilation shown below is \_\_\_\_\_.

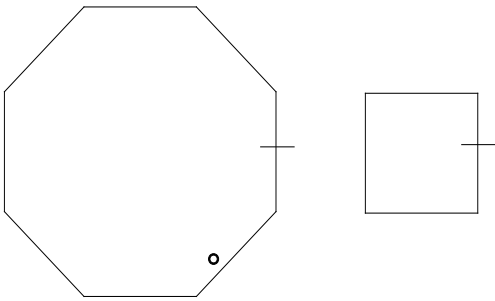


17. Draw the image of the figure for a dilation centered at the origin with scale factor 2.

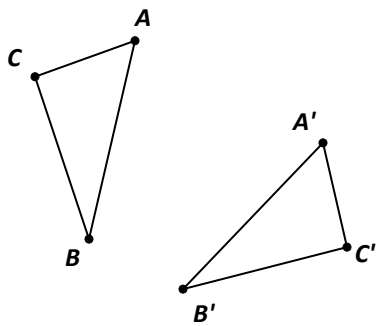


18. Determine whether the shapes can be used to create a tessellation.  
If so, sketch the tessellation, and classify it as semiregular or nonregular.

**Regular Octagon and Square**



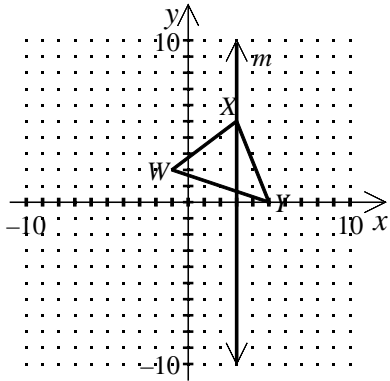
- (SE) 19. Given the figure below:



What transformation mapped  $\triangle ABC$  to  $\triangle A'B'C'$ ? \_\_\_\_\_

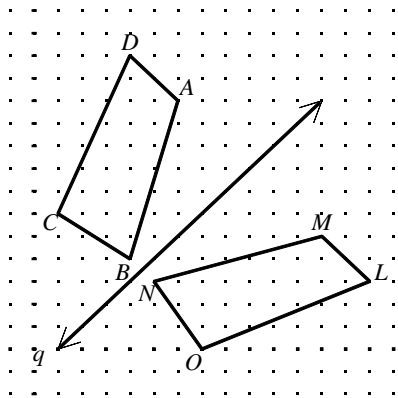
- A. reflection
  - B. rotation
  - C. translation
  - D. dilation
- (SE) 20. How many lines of symmetry does a rectangle have? \_\_\_\_\_
- A. 0
  - B. 1
  - C. 2
  - D. 4

(SE) 21. What are the coordinates of the vertices when the figure is reflected in line  $m$ ? \_\_\_\_\_



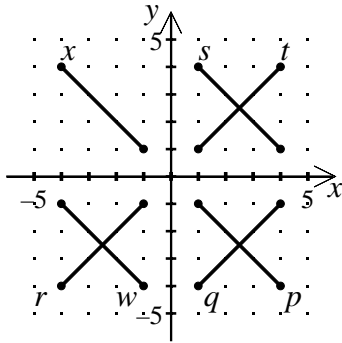
- A.  $W'(1, -2), X'(-3, -5), Y'(-5, 0)$
- B.  $W'(2, 7), X'(5, 3), Y'(0, 1)$
- C.  $W'(7, 2), X'(3, 5), Y'(1, 0)$
- D.  $W'(1, 2), X'(3, -5), Y'(-5, 0)$

(PE) 22. The reflection image of  $\overline{OL}$  in line  $q$  is \_\_\_\_\_.



(PE) 23. Use the figure below.

If segment  $x$  is reflected in the line  $y = x$ , its image is \_\_\_\_\_.



- A. segment  $q$
- B. segment  $s$
- C. segment  $r$
- D. segment  $p$

(LTMR) 24. The perpendicular bisectors of a triangle all pass through what point? \_\_\_\_\_

(LTMR) 25. How many midsegments does a triangle have? \_\_\_\_\_

(LTMR) 26. Two sides of a triangle have lengths 8 and 11.  
What are the possible lengths of the third side  $x$ ? \_\_\_\_\_