

## Chapter 4 Review

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

1) translation:  $(x, y) \rightarrow (x - 2, y - 4)$   
 $D(-2, 1), E(-3, 5), F(2, 4)$

2) translation:  $(x, y) \rightarrow (x + 4, y - 1)$   
 $D(-5, -3), C(-1, 0), B(-1, -4)$

Write a rule to describe each transformation.

3)  $T(0, 2), U(3, 5), V(3, 2)$   
     to  
 $T'(-4, 1), U'(-1, 4), V'(-1, 1)$

4)  $A(1, -3), B(2, -2), C(3, -5)$   
     to  
 $A'(0, 3), B'(1, 4), C'(2, 1)$

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

5) reflection across  $y = -2$   
 $V(-3, -3), W(1, -2), X(-1, -5)$

6) reflection across  $y = -x$   
 $W(-5, -3), X(-5, 2), Y(-3, -1)$

7) reflection across the y-axis  
 $S(-3, -3), T(-2, -1), U(-1, -5)$

8) reflection across  $y = x$   
 $R(-5, -4), S(-5, -2), T(-4, -2)$

9) reflection across the x-axis  
 $Q(1, -4), R(5, -1), S(5, -5)$

10) reflection across  $x = -2$   
 $S(-5, 4), T(-3, 5), U(-1, 3)$

Write a rule to describe each transformation.

11)  $K(-4, -2), L(-4, 3), M(1, 1), N(0, -4)$   
to  
 $L'(-4, -3), M'(1, -1), N'(0, 4), K'(-4, 2)$

12)  $D(2, 3), E(5, 5), F(5, 2)$   
to  
 $E'(-5, 5), F'(-5, 2), D'(-2, 3)$

13)  $I(-4, -1), H(-3, 4), G(-1, 0)$   
to  
 $H'(-4, 3), G'(0, 1), I'(1, 4)$

14)  $V(-4, -3), W(-3, -1), X(-3, -3)$   
to  
 $W'(-1, -3), X'(-3, -3), V'(-3, -4)$

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

15) rotation  $180^\circ$  about the origin  
 $I(0, 3), J(4, 4), K(2, 0)$

16) rotation of  $270^\circ$  about the origin  
 $S(1, -3), T(4, -1), U(4, -5)$

17) rotation of  $90^\circ$  about the origin  
 $E(3, -1), F(4, 3), G(5, 1)$

18. A dilation maps the preimage  $(-2, 3)$  onto the image  $(4, -6)$ . What is the scale factor of the dilation?

19. The base of a triangle measures 5 cm and the height measures 7 cm. After a dilation is performed by a scale factor of 3, what is the area of the new triangle?

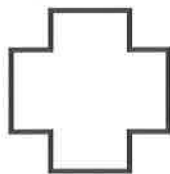
20. A translation using the vector  $\langle -2, 5 \rangle$  is performed to create the image  $(4, -2)$ . What are the coordinates of the preimage?

21. What would the scale factor be of a dilation that rotates a figure  $180^\circ$  and makes the image a third of the size of the preimage?

22. Write a coordinate rule that would translate an image 3 units up and 4 units left.

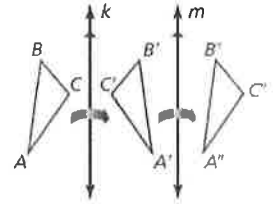
23. A ferris wheel takes 40 seconds to complete a rotation. A seat that starts on coordinate  $(10, 0)$  is rotated for 10 seconds about the origin. What are the new coordinates for the seat after the rotation?

24. Determine a) how many lines of symmetry each figure has (if any) and b) What are the angles of rotational symmetry for each figure (if any)?

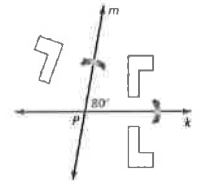


25. Triangle ABC is reflected over line k and then reflected over line m. The distance between line k and m is 5 cm. The distance between point B and line k is 3 cm, and the distance between point C'' and line m is 4 cm.

- What is the distance from A to A''?
- What is the distance from B' to B''?
- What is the distance from C to C'?
- What single transformation is equivalent to these two reflections?

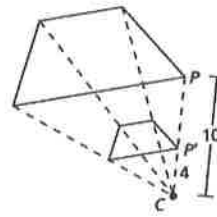
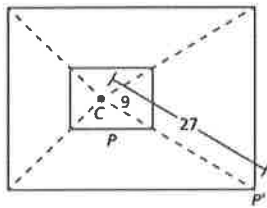


26. A figure is reflected over line k and then reflected over line m. What is the angle of rotation this figure could go through to end up in the same location?



27. If a figure is rotated 100 degrees. Your friend tells you that this transformation could have also been completed by using a reflection over two intersecting lines. What would the angle be between those two intersecting lines in order to be equivalent to a 100 degree rotation?

28. Find the scale factor of each dilation. Tell whether it was an enlargement or reduction.



29. Describe the difference between a rigid motion and a non-rigid motion.

30. **Challenge:** Find the image of the point (2, 11) after being reflected over the line  $y = 2x + 1$ . You may leave your answer in decimal form.

Find point C on the x-axis so  $AC + BC$  is a minimum.

31.  $A(1, 4)$  and  $B(6, 1)$

32.  $A(4, -5)$  and  $B(12, 3)$

33.  $A(-8, 4)$  and  $B(-1, 3)$

34.  $A(-1, 7)$  and  $B(5, -4)$