

## LESSON 160 Review: Transformations

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- Which quadrilateral has both reflectional and rotational symmetry? Select all that apply.  
A) parallelogram      B) rhombus  
C) rectangle          D) square  
E) trapezoid          F) kite
- How many lines of symmetry does an equilateral triangle have?
- An equilateral triangle is rotated about its center. What is the smallest angle through which the triangle is rotated to map onto itself?
- A translation maps  $\triangle XYZ$  to  $\triangle X'Y'Z'$ . Which segment(s) must be congruent to  $\overline{XY}$ ?
- What is the image of  $P(3, -6)$  after a translation of  $(x, y) \rightarrow (x - 5, y + 2)$ .
- A translation maps  $A(2, 0)$  to  $A'(4, -1)$ . What is the rule of this translation?
- A reflection over line  $l$  maps  $\triangle XYZ$  to  $\triangle X'Y'Z'$ . Which segment(s) must be parallel to  $\overline{XX'}$ ?
- What is the image of  $P(3, -6)$  after a reflection over the  $x$ -axis?
- A reflection maps  $B(1, 2)$  to  $B'(-1, 2)$ . What is the line of reflection?
- A rotation about point  $C$  maps  $\triangle XYZ$  to  $\triangle X'Y'Z'$ . Which angle(s) must be congruent to  $\angle XCX'$ ?
- What is the image of  $P(3, -6)$  after a rotation of  $90^\circ$  about the origin?
- A rotation about the origin maps  $C(1, 4)$  to  $C'(4, -1)$ . What is the angle of rotation?
- A dilation about the origin with a scale factor of 5 maps  $\triangle XYZ$  to  $\triangle X'Y'Z'$ . What must be the length of  $\overline{X'Y'}$  if the length of  $\overline{XY}$  is 2?
- What is the image of  $P(3, -6)$  after a dilation about the origin with a scale factor of 2?
- A dilation about the origin maps  $D(0, -2)$  to  $D'(0, -8)$ . What is the scale factor?
- A dilation maps  $\triangle ABC$  to  $\triangle A'B'C'$ . Find the value of  $x$  if  $AB = 8$ ,  $A'B' = 12$ ,  $BC = 12$  and  $B'C' = x$ .

17. Which transformation produces congruent figures? Select all that apply.

- A) translation                      B) reflection  
 C) rotation                          D) dilation

18. Which transformation preserves angle measures? Select all that apply.

- A) translation                      B) reflection  
 C) rotation                          D) dilation

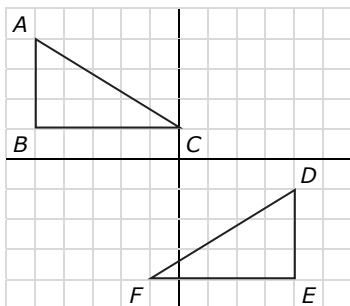
19. Which transformation preserves the orientation of a figure? Select all that apply.

- A) translation                      B) reflection  
 C) rotation                          D) dilation

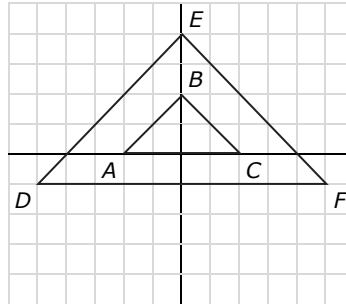
20. What is the image of  $P(3, -6)$  after a translation of  $(x, y) \rightarrow (x - 3, y)$  followed by a reflection over the  $y$ -axis?

21. What is the image of  $P(3, -6)$  after a dilation about the origin with a scale factor of  $1/3$  followed by a rotation of  $180^\circ$  about the origin?

22. Describe a sequence of transformations that maps  $\triangle ABC$  to  $\triangle DEF$ .



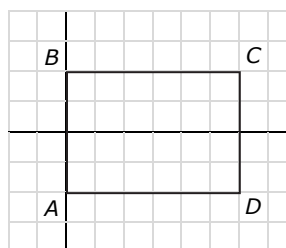
23. Describe a sequence of transformations that maps  $\triangle ABC$  to  $\triangle DEF$ .



24. A figure is translated by the rule  $(x, y) \rightarrow (x + 3, y)$  and then translated again by the rule  $(x, y) \rightarrow (x - 3, y - 2)$ . What single transformation produces the same final image of the figure?

25. A figure is reflected over the  $x$ -axis and then reflected again over the  $y$ -axis. What single transformation produces the same final image of the figure?

26. (HONORS) Which transformation maps the rectangle onto itself? Select all that apply.



- A) a reflection over the  $x$ -axis  
 B) a reflection over the line  $x = 3$   
 C) a reflection over the line  $y = 3$   
 D) a rotation of  $180^\circ$  about the origin  
 E) a rotation of  $180^\circ$  about point  $(3, 0)$