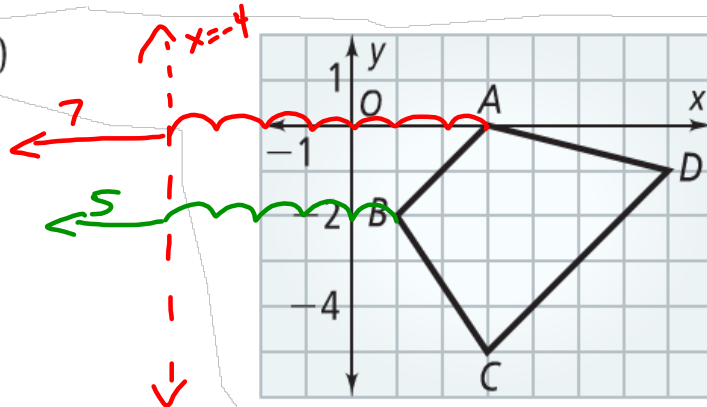


1.  $R_{x=-4}(ABCD)$

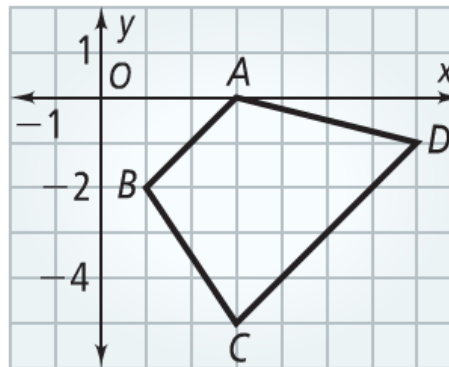
- $A'(-11, 0)$
- $B'(-9, -2)$
- $C'(-11, -5)$
- $D'(-15, -1)$



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2.  $T_{\langle -6, 8 \rangle}(ABCD)$

- $A'(-3, 8)$
- $B'(-5, 6)$
- $C'(-3, 3)$
- $D'(1, 7)$



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$$r_{(90^\circ, 0)}(x, y) = (-y, x)$$

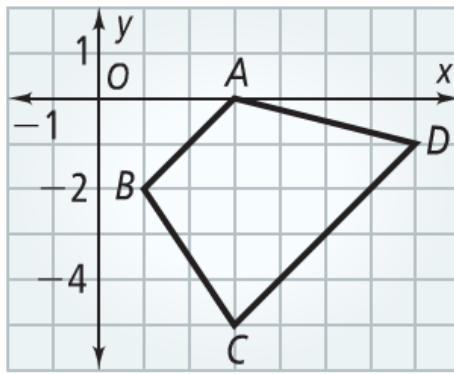
$$3. r_{(90^\circ, 0)}(ABCD)$$

$$A'(0, 3)$$

$$B'(2, 1)$$

$$C'(5, 3)$$

$$D'(1, 7)$$



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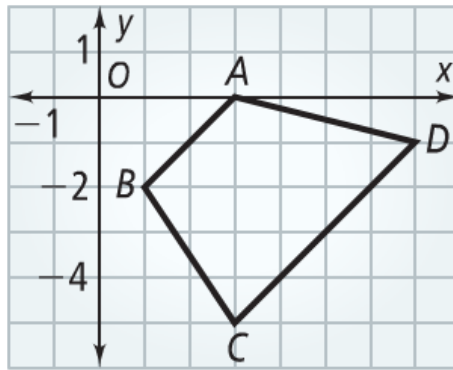
$$4. D_{\frac{2}{3}}(ABCD)$$

$$A'(2, 0)$$

$$B'(\frac{2}{3}, -\frac{4}{3})$$

$$C'(2, -\frac{10}{3})$$

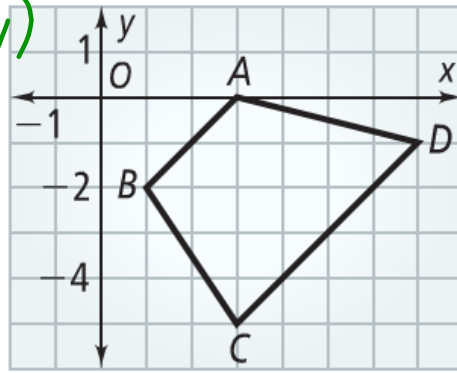
$$D'(\frac{14}{3}, -\frac{2}{3})$$



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$$R_{x=0}(x,y) = R_{y\text{-axis}}(x,y) = (-x,y)$$

- $A'(3,5)$
- $B'(1,3)$
- $C'(3,0)$
- $D'(7,4)$

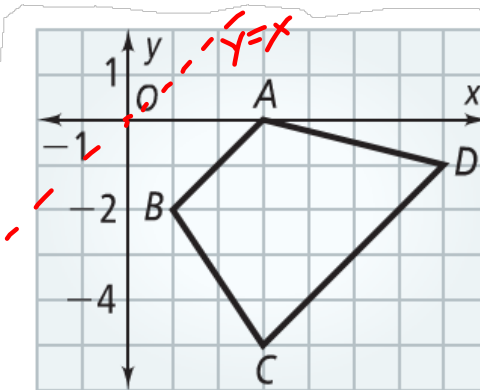


5.  $(R_{x=0} \circ T_{\langle 0,5 \rangle})(ABCD)$

- $A''(-3,5)$
- $B''(-1,3)$
- $C''(-3,0)$
- $D''(-7,4)$

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$$R_{y=x}(x,y) = (y,x)$$



6.  $R_{y=x}(ABCD)$

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

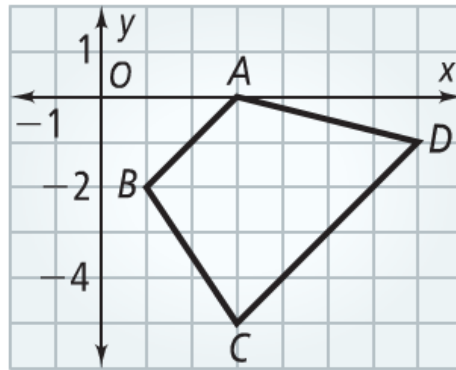
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$$A' = (9, 0)$$

$$B' = (3, -6)$$

$$C' = (9, -15)$$

$$D' = (21, -3)$$



7.  $D_3(ABCD)$

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8. Write the translation rule that maps  $P(-4, 2)$  to  $P'(-1, -1)$ .

$$T_{\langle 3, -3 \rangle}(P)$$

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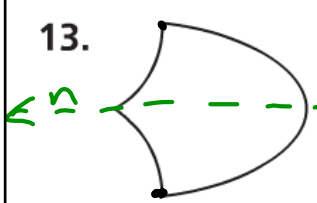
What type of transformation has the same effect as each composition of transformations?

- 9.  $R_{x=6} \circ T_{\langle 0, -5 \rangle}$  glide reflection
- 10.  $T_{\langle -3, 2 \rangle} \circ T_{\langle 8, -4 \rangle}$  Translation  $T_{\langle 5, -2 \rangle}$
- 11.  $R_{x=4} \circ R_{x=-2}$  Translation  $T_{\langle 12, 0 \rangle}$
- 12.  $R_{y=x} \circ R_{y=-x}$  Rotation  $r_{(180)}$

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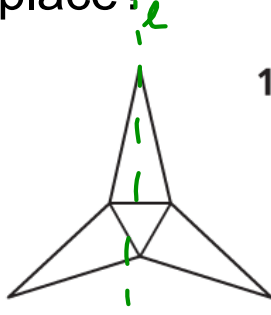
What transformation rules will put the objects back in the same place?

13.



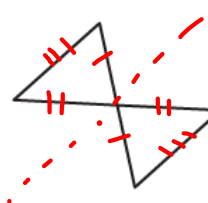
$r_{(360)}$   
 $R_n$

14.



$r_{(360)}$   
 $\frac{360}{3} = 120$   
 $r_{(120)}$   
 $R_e$   
 $r_{(240)}$

15.



$r_{(180)}$   
 $r_{(360)}$

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For Exercises 16 and 17, find the coordinates of the vertices of  $\triangle XYZ$  with vertices  $X(3, 4)$ ,  $Y(2, 1)$ , and  $Z(-2, 2)$  for each similarity transformation.

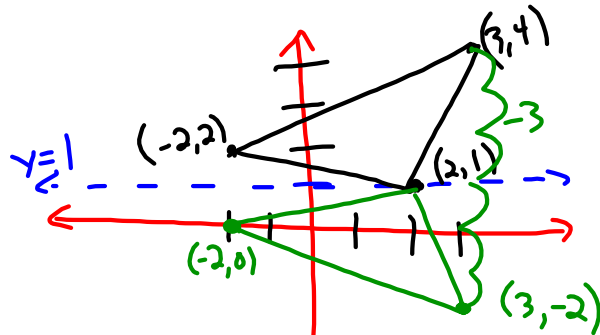
16.  $(r_{(90^\circ, 0)} \circ R_{y=1})(\triangle XYZ)$

$x'(3, -2)$

$y'(2, 1)$

$z'(-2, 0)$

$x''(2, 3)$   
 $y''(-1, 2)$   
 $z''(0, -2)$



$r_{(90^\circ)}(x, y) = (-y, x)$

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For Exercises 16 and 17, find the coordinates of the vertices of  $\triangle XYZ$  with vertices  $X(3, 4)$ ,  $Y(2, 1)$ , and  $Z(-2, 2)$  for each similarity transformation.

17.  $(r_{(180^\circ, 0)} \circ T_{\langle 2, -1 \rangle})(\triangle XYZ)$

$x'(5, 3)$

$y'(4, 0)$

$z'(0, 1)$

$x''(-5, -3)$

$y''(-4, 0)$

$z''(0, -1)$

$r_{(180^\circ)}(x, y) = (-x, -y)$

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