

Name: Key

Geometry

Unit 1 Study Guide

1. What type of transformation moves  $P(3, -6)$  to  $P'(3, 6)$ ?

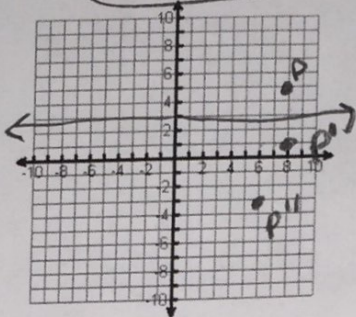
Reflection over x-axis.

2. If the result of  $(x, y) \rightarrow (x - 2, y + 3)$  is  $A'(-5, 2)$ , what is the **pre-image**, of A?

$$\begin{aligned} x - 2 &= -5 & y + 3 &= 2 \\ x &= -3 & y &= -1 \end{aligned} \quad A(-3, -1)$$

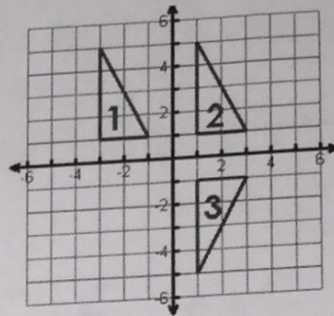
3. If  $P(8, 5)$  is reflected over the line  $y = 3$  and then translated according to the rule  $(x, y) \rightarrow (x - 2, y - 4)$ , what quadrant will  $P''$  be in? (Hint: Quadrant I, Quadrant II, Quadrant III or Quadrant IV)

$P'(8, 1)$   
 $P''(6, -3)$



4. Triangle 1 is transformed as shown in the diagram, resulting in Triangle 2. Triangle 2 is transformed to create Triangle 3. Describe the combination of transformations ( $1 \rightarrow 2 \rightarrow 3$ ).

Translation  
 $(x+4, y)$   
Reflection  
over  
x-axis



5. Line segment JK with coordinates  $J(-1, 1)$ ,  $K(-3, -1)$  is rotated  $90^\circ$  counterclockwise to produce image  $J'K'$ . What transformations of JK would produce the same image  $J'K'$ ?

$270^\circ$  clockwise

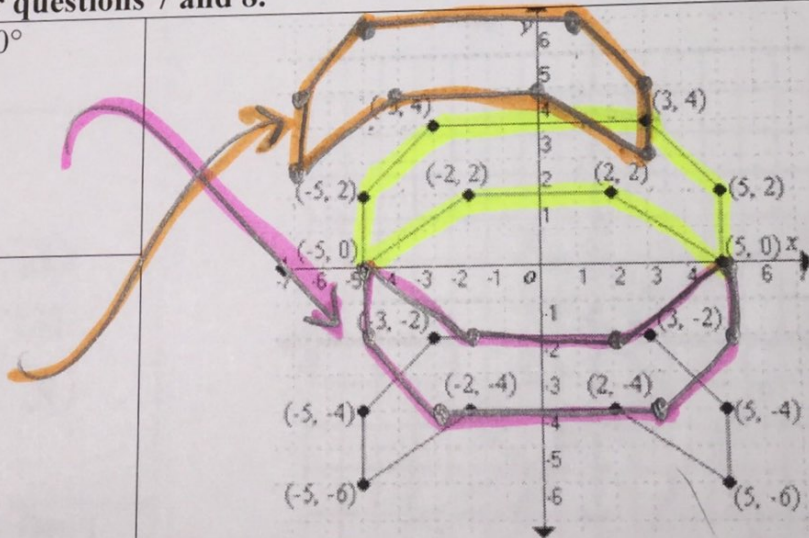
6. A figure is transformed according to the rule  $(x, y) \rightarrow (x - 1, y + 4)$ . Describe the transformation that has taken place.

A horizontal shift to the left 1 unit and a vertical shift up 4 units

The graph to the right is used to answer questions 7 and 8.

7. Top picture is **pre-image**. Rotate  $180^\circ$

8. Top picture is **pre-image**.  
Translate  $(x, y) \rightarrow (x - 2, y + 3)$ .

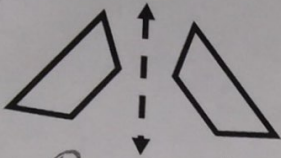


9. Given A  $(5, 6)$ , if A is transformed by the rule  $(x, y) \rightarrow (x + 2, y - 8)$  and then reflected over the x-axis, what is  $A''$ ?

$$A'(7, -2) \rightarrow A''(7, 2)$$

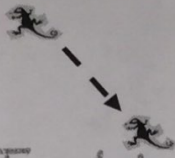


10.



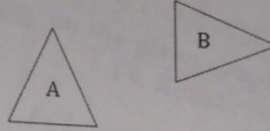
Reflection

11.



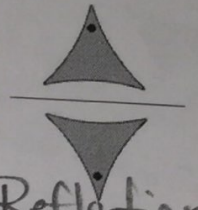
Translation

12.



Rotation

13.



Reflection

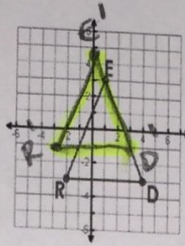
Perform the given transformations and graph the image on the given graph below.

14. Translate the figure by  $(x - 1, y + 2)$

$R(-2, -3) \rightarrow R'(-3, -1)$

$E(1, 3) \rightarrow E'(0, 5)$

$D(4, 3) \rightarrow D'(3, -1)$

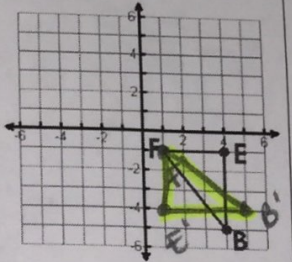


15. Reflect the figure over the line  $y = -x$ .

$F(1, -1) \rightarrow F'(1, -1)$

$E(4, 1) \rightarrow E'(1, -4)$

$B(4, 5) \rightarrow B'(5, -4)$

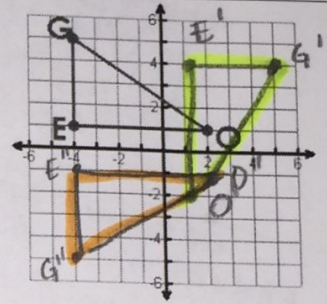


16. Rotate  $90^\circ$  clockwise around the origin, then reflect over  $y = -x$ .

$G(-4, 5) \rightarrow G'(5, 4) \rightarrow G''(-4, -5)$

$E(-4, 1) \rightarrow E'(1, 4) \rightarrow E''(-4, -1)$

$O(2, 1) \rightarrow O'(1, -2) \rightarrow O''(2, -1)$



The vertices of  $\triangle ABC$  are  $A(2, 1)$ ,  $B(-1, 2)$ , and  $C(-1, -1)$ . Three transformations are performed on this triangle. The first is a transformation of the reflection of  $\triangle ABC$  through the x-axis. Then it is translated left 4 units and down 2 units. Finally, the triangle is rotated  $90^\circ$  counterclockwise.

17. What is the rule for the first transformation?

$(x, y) \rightarrow (x, -y)$

18. List the coordinates after every transformation:

$A'(2, -1) \rightarrow A''(-2, -3) \rightarrow A'''(3, -2)$

$B'(-1, -2) \rightarrow B''(-5, -4) \rightarrow B'''(4, -5)$

$C'(-1, 1) \rightarrow C''(-5, -1) \rightarrow C'''(1, -5)$

19. Graph all of them on the given graph. Don't forget to label!

