

Unit 1 Study Guide

General Transformation Understanding

1. Which of the following transformations produce a figure that is **CONGRUENT** to the original figure:

translationreflectionrotation

dilation

2. Which of the following transformations produce a figure that is **SIMILAR** to the original figure:


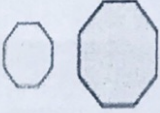
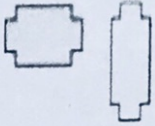
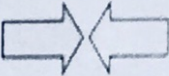
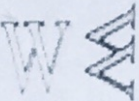

translation

reflection

rotation

dilation

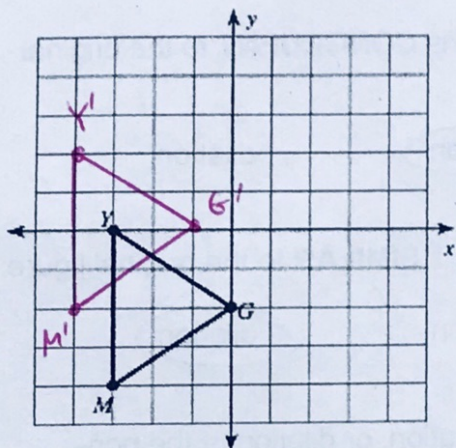
3. Tell whether the shaded figure is a translation, reflection, rotation, or dilation of the non-shaded figure. Circle only **one answer** per shape.

	Translation	<u>Reflection</u>	Rotation	Dilation
	Translation	Reflection	Rotation	<u>Dilation</u>
	Translation	Reflection	<u>Rotation</u>	Dilation
	Translation	<u>Reflection</u>	<u>Rotation</u>	Dilation
	Translation	Reflection	<u>Rotation</u>	Dilation
	<u>Translation</u>	Reflection	Rotation	Dilation

Translations

For each transformation, record the original coordinates and the coordinates of the figure after the transformation. Then, graph the figure after the transformation.

4. Translate 1 unit left and 2 units up

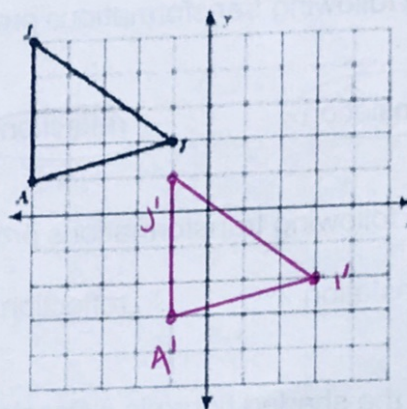


$$M: (-3, -4) \rightarrow M': (-4, -2)$$

$$Y: (-3, 0) \rightarrow Y': (-4, 2)$$

$$G: (0, -2) \rightarrow G': (-1, 0)$$

5. Translate using the rule $(x, y) \rightarrow (x + 4, y - 4)$

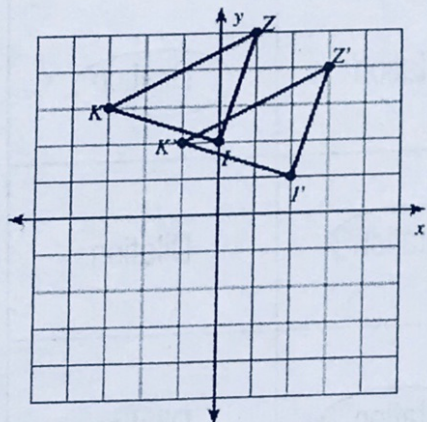


$$A: (-5, 1) \rightarrow A': (-1, -3)$$

$$J: (-5, 5) \rightarrow J': (-1, 1)$$

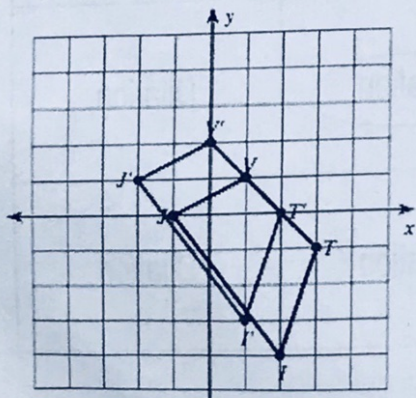
$$I: (-1, 2) \rightarrow I': (3, -2)$$

6. Write a rule, using translation notation, to describe the following translation:



$$(x, y) \rightarrow (x + 2, y - 1)$$

7. Write a rule, using translation notation, to describe the following translation:

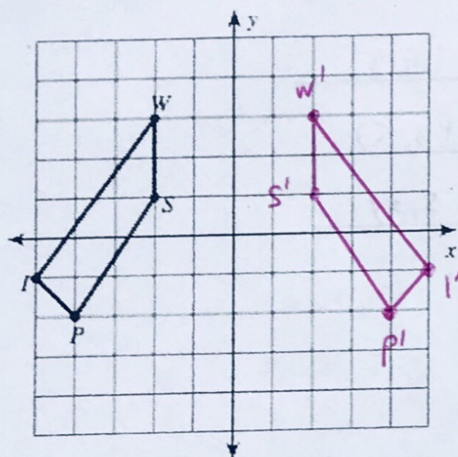


$$(x, y) \rightarrow (x - 1, y + 1)$$

Reflections

For each transformation, record the original coordinates and the coordinates of the figure after the transformation. Then, graph the figure after the transformation.

8. Reflect across the y-axis



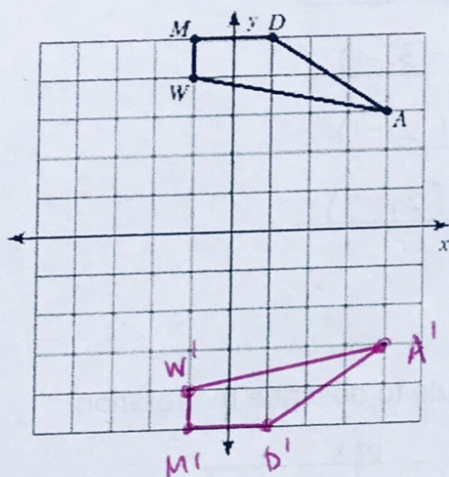
$$W: (-2, 3) \rightarrow W': (2, 3)$$

$$S: (-2, 1) \rightarrow S': (2, 1)$$

$$I: (-4, -1) \rightarrow I': (4, -1)$$

$$P: (-4, -2) \rightarrow P': (4, -2)$$

9. Reflect across the x-axis



$$M: (-1, 5) \rightarrow M': (-1, -5)$$

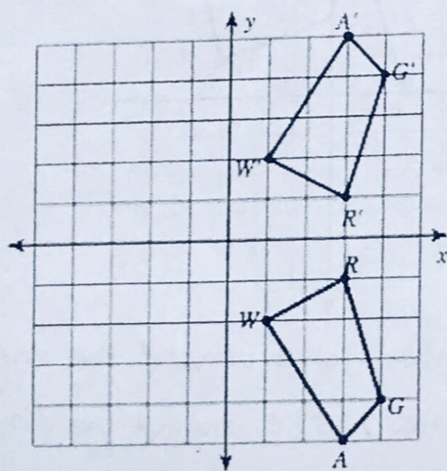
$$D: (1, 5) \rightarrow D': (1, -5)$$

$$A: (4, 3) \rightarrow A': (4, -3)$$

$$W: (-1, 4) \rightarrow W': (-1, -4)$$

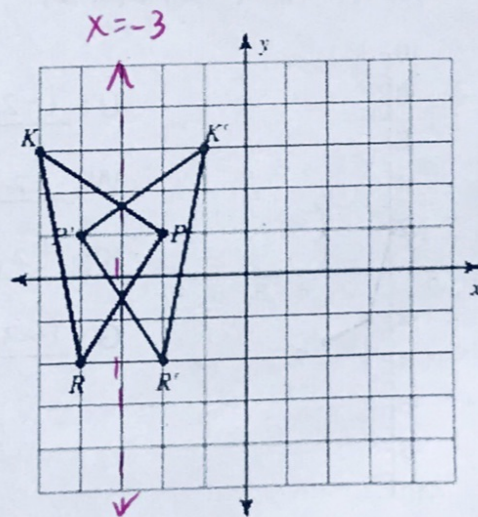
Write a rule to describe each reflection.

10.



Reflect across x-axis

11.

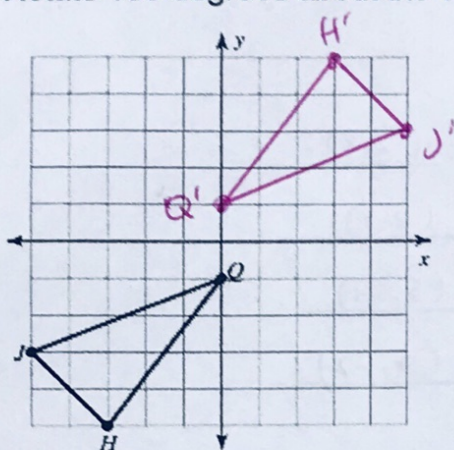


Reflect across $x = -3$

Rotations

For each transformation, record the original coordinates and the coordinates of the figure after the transformation. Then, graph the figure after the transformation.

12. Rotate 180 degrees about the origin.

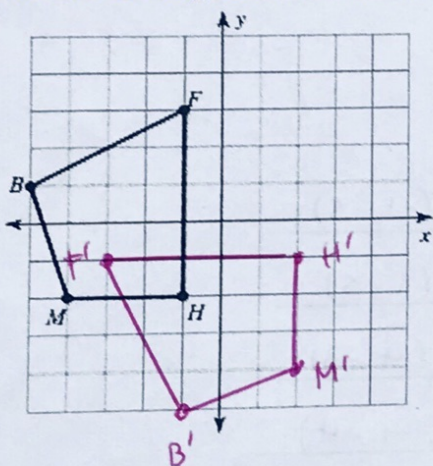


$$Q: (0, -1) \rightarrow Q': (0, 1)$$

$$H: (-3, -5) \rightarrow H': (3, 5)$$

$$J: (-5, -3) \rightarrow J': (5, 3)$$

13. Rotate 90 degrees counterclockwise about the origin.



$$B: (-5, 1) \rightarrow B': (-1, -5)$$

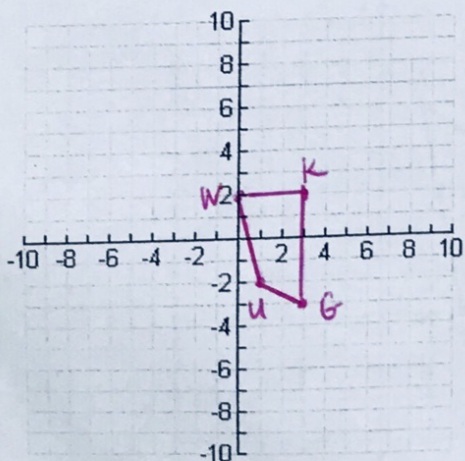
$$F: (-1, 3) \rightarrow F': (-3, -1)$$

$$H: (-1, -2) \rightarrow H': (2, -1)$$

$$M: (-4, -2) \rightarrow M': (2, -4)$$

14. Rotate 90 degrees clockwise about the origin.

U(1, -2), W(0, 2), K(3, 2), G(3, -3)



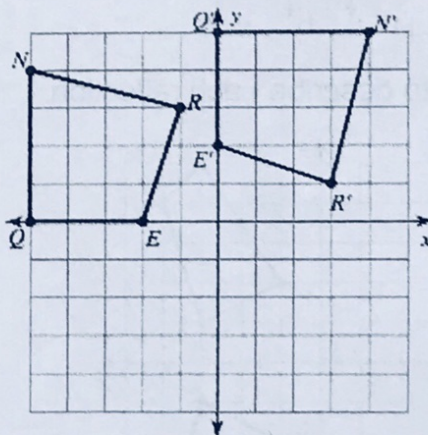
$$U': (-2, -1)$$

$$W': (2, 0)$$

$$K': (2, -3)$$

$$G': (-3, -3)$$

15. Write a rule to describe the rotation.



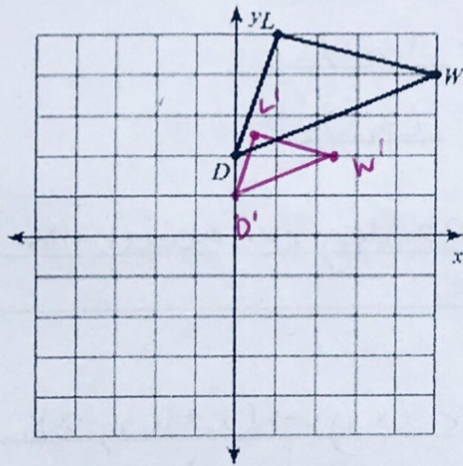
Rotate 90° c around the origin.

Rotate 270° cc around the origin.

Dilations

For each transformation, record the original coordinates and the coordinates of the figure after the transformation. Then, graph the figure after the transformation.

16. Dilation of $1/2$



$$L: (1, 5) \rightarrow L': (0.5, 2.5)$$

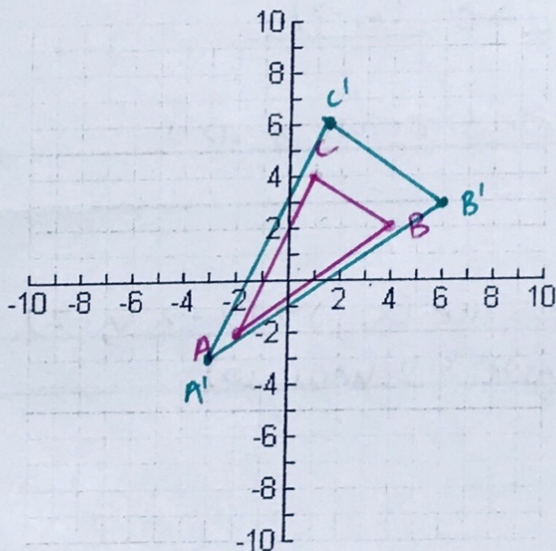
$$W: (5, 4) \rightarrow W': (2.5, 2)$$

$$D: (0, 2) \rightarrow D': (0, 1)$$

17. Find the coordinates of the image $A'B'C'D'$ with vertices $A(0, 0)$, $B(0, 3)$, $C(3, 3)$, and $D(3, 0)$ after a dilation with a scale factor of 4.

$$A': (0, 0) \quad B': (0, 12) \quad C': (12, 12) \quad D': (12, 0)$$

18. A triangle has coordinates $A(-2, -2)$, $B(4, 2)$, and $C(1, 4)$. Graph the triangle and its image $A'B'C'$ after a dilation with a scale factor of $\frac{3}{2}$. Give the coordinates of $A'B'C'$.



$$-2 \cdot \frac{3}{2} = \frac{-6}{2} = -3$$

$$4 \cdot \frac{3}{2} = \frac{12}{2} = 6$$

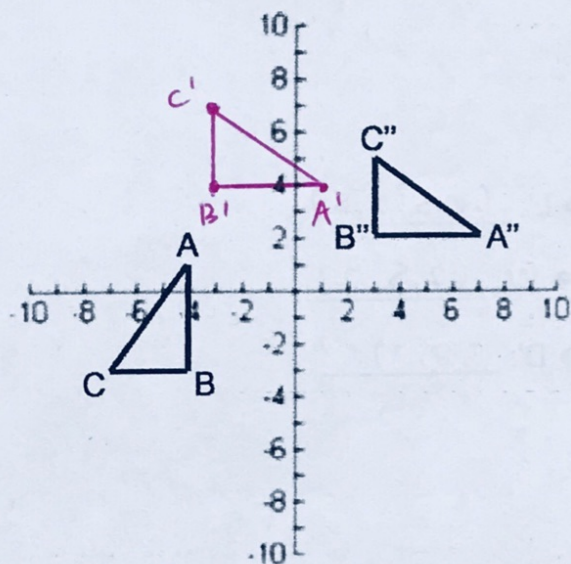
$$A': (-3, -3)$$

$$B': (6, 3)$$

$$C': (1.5, 6)$$

Two-Move Transformations

19. Describe the move from $\triangle ABC$ to $\triangle A''B''C''$.



A: $(-4, 1) \rightarrow A'': (7, 2)$

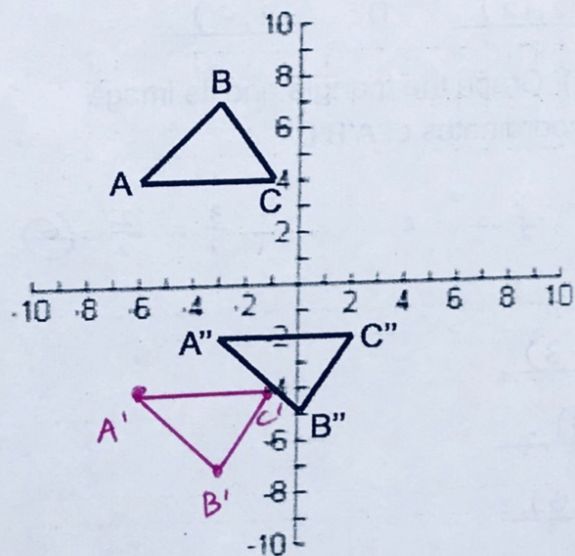
B: $(-4, -3) \rightarrow B'': (3, 2)$

C: $(-7, -3) \rightarrow C'': (3, 5)$

Move 1: Rotate 90 degrees about the origin clockwise.

Move 2: Translate $(x, y) \rightarrow (x+6, y-2)$.
(6 units right & 2 units down)

20. Describe the move from $\triangle ABC$ to $\triangle A''B''C''$.



A: $(-6, 4) \rightarrow A'': (-3, -2)$

B: $(-3, 7) \rightarrow B'': (0, -5)$

C: $(-1, 4) \rightarrow C'': (2, -2)$

Move 1: Reflect across x-axis.

Move 2: Translate $(x, y) \rightarrow (x+3, y+2)$.
(3 units right & 2 units up)