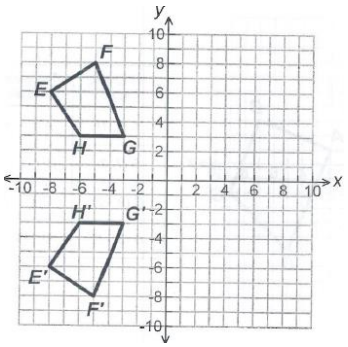
PRACTICE: LESSON 10.4 – ROTATIONS W/ ALGEBRAIC RULE Name: _____

Learning Goal: I can ***rotate*** a figure and write the algebraic rule for the ***rotation***. **Meta de Aprendizaje**: *Puedo **rotar** una figura y escribir la regla algebraica para la **rotación**.*	**Language Goal:** I can write the algebraic rule for a ***rotation*** and justify my answer to a partner. **Lenguaje Objetivo**: *Puedo escribir la regla algebraica para una **rotación** y justificar mi respuesta a un compañero.*

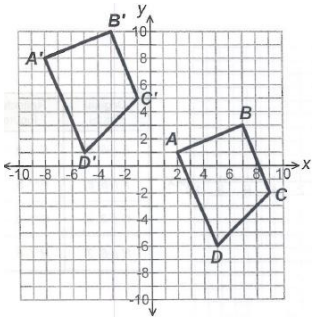
Directions: Use your notes from Lesson 10.1 and Lesson 10.4 to answer the following questions.

1. Which rule is the **ONLY** rule that adds or subtracts? _____
2. Which rule is the **ONLY** rule that multiplies? _____
3. Are the angles and side lengths congruent for **rotations**? Circle one: **YES** **NO** **SOMETIMES**
4. What is a **dilation** called that gets bigger? _____
5. What transformation is described by the rule $(x, y) \rightarrow (-y, x)$? _____
6. What transformation is described by the rule $(x, y) \rightarrow (x - 1, y)$? _____
7. What transformation is described by the rule $(x, y) \rightarrow (0.5x, 0.5y)$? _____
8. What transformation is described by the rule $(x, y) \rightarrow (x, -y)$? _____

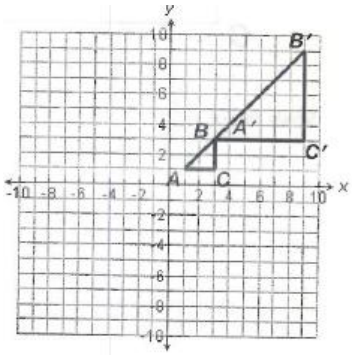
Problems 9 through 12: What transformation is represented by each graph?



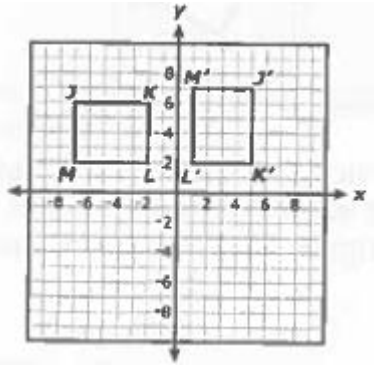
Answer: _____



Answer: _____



Answer: _____

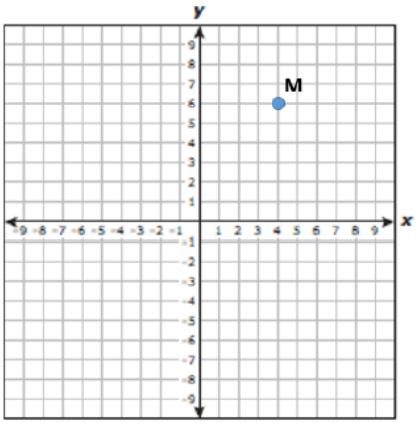


Answer: _____

Directions: **Rotate** the shape, if required. Determine the rule for the **rotation**.

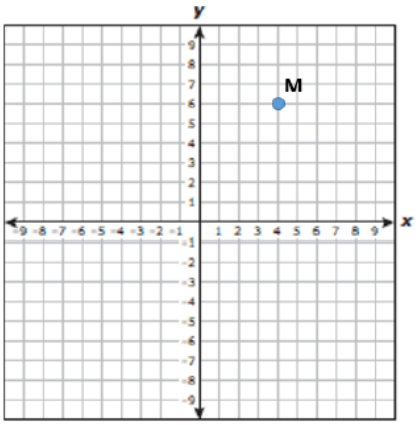
1. Point M has coordinates of (4 , 6). **Rotate** Point M ***90°clockwise***. What are the new coordinates for Point M'?

Point	(x , y) Coordinate
M	(4 , 6)
M'	(,)



What is the rule for the **rotation**? $(x, y) \rightarrow (\_\_\_\_\_, \_\_\_\_\_)$

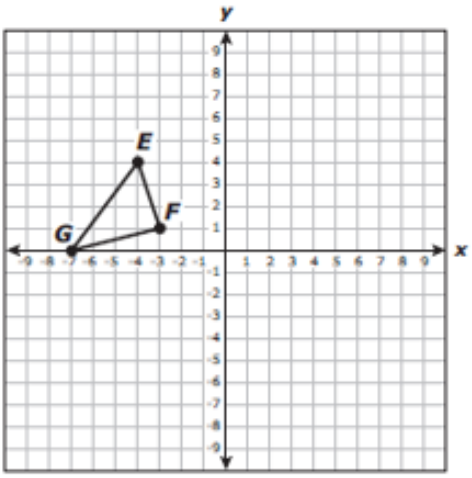
2. Point M has coordinates of (4 , 6). **Rotate** Point M ***90° counter-clockwise***. What are the new coordinates for Point M'?



What is the rule for the **rotation**? $(x, y) \rightarrow (\_\_\_\_\_, \_\_\_\_\_)$

3. Triangle GEF has coordinates as shown below. What are the coordinates of Triangle GEF after a ***180° counter-clockwise* rotation**. Fill in the table.

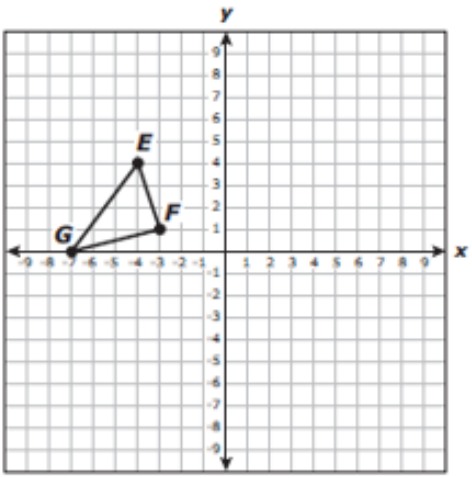
Point	(x , y) Coordinate
G	(-7 , 0)
G'	(,)
E	(-4 , 4)
E'	(,)
F	(-3 , 1)
F'	(,)



What is the rule for the **rotation**? $(x, y) \rightarrow (\_\_\_\_\_, \_\_\_\_\_)$

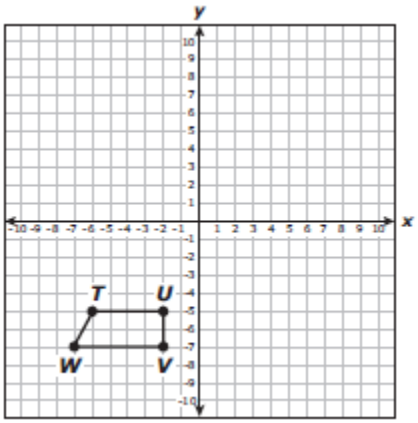
4. Triangle GEF has coordinates as shown below. What are the coordinates of Triangle GEF after a ***270° clockwise* rotation**. Fill in the table.

Point	(x , y) Coordinate
G	(-7 , 0)
G'	(,)
E	(-4 , 4)
E'	(,)
F	(-3 , 1)
F'	(,)



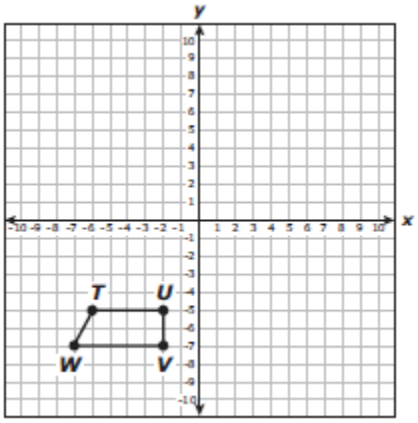
What is the rule for the **rotation**? $(x, y) \rightarrow (\_\_\_\_\_, \_\_\_\_\_)$

5. Trapezoid TUVW is as shown. If the vertices were **reflected** ***across the x-axis***, what would be the rule?



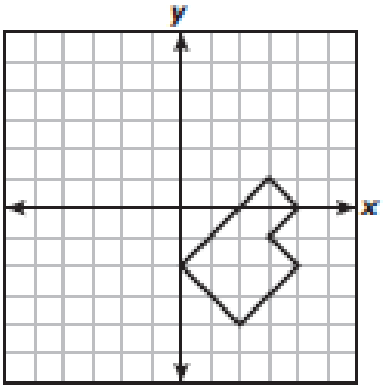
$(x, y) \rightarrow (\_\_\_\_\_, \_\_\_\_\_)$

6. Trapezoid TUVW is as shown. If the vertices were **rotated** ***90°clockwise***, what would be the rule?



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

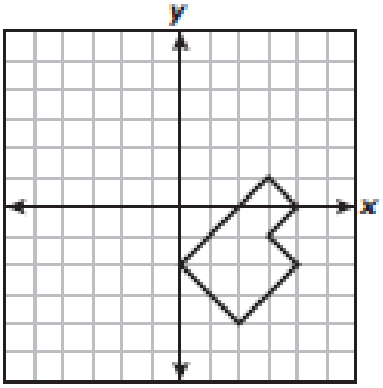
7. **Translate** the figure 2 units down and 5 units left.



What is the rule for the **translation**?

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

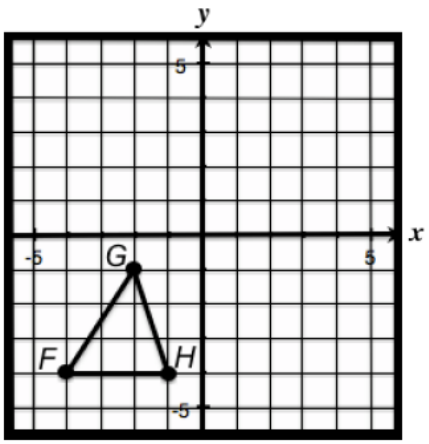
8. **Rotate** the figure ***90° counter-clockwise***.



What is the rule for the **rotation**?

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

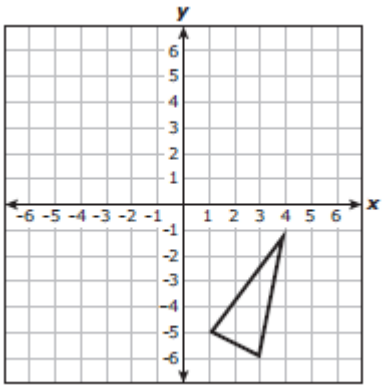
9. Triangle FGH was **rotated** to create Triangle F'G'H'.
As shown, Vertex F was at $(-4, -4)$.



If Vertex F' is now at $(4\,,4)$, which rule describes this **rotation**?

A. $(x, y) \rightarrow (\,x + 8\,, y + 4\,)$
B. $(x, y) \rightarrow (-x\,, -y\,)$
C. $(x, y) \rightarrow (\,y\,, -x\,)$
D. $(x, y) \rightarrow (\,-x\,, y\,)$

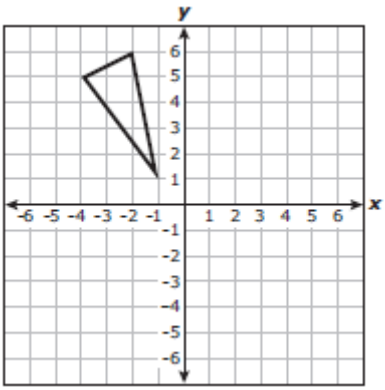
10. **Rotate** the triangle ***180° clockwise***.



What is the rule for the **rotation**?

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

11. **Rotate** the triangle ***270° counter-clockwise***.



What is the rule for the **rotation**?

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

12. What are the **TWO** rules for **reflections**? $(x, y) \rightarrow (\,\_\_\_\,,\_\_\_\,)$ and $(x, y) \rightarrow (\,\_\_\_\,,\_\_\_\,)$

13. Which transformation has the **ONLY** rule that ADDS or SUBTRACTS? _____

14. Are the sides and angles of **rotations** congruent? **YES** **NO** **SOMETIMES**

15. Which transformation has the **ONLY** rule that multiplies? _____

16. What are the **FOUR** rules for **rotations**? $(x, y) \rightarrow (\,\_\_\_\_\,,\_\_\_\_\,)$; $(x, y) \rightarrow (\,\_\_\_\_\,,\_\_\_\_\,)$

$(x, y) \rightarrow (\,\_\_\_\_\,,\_\_\_\_\,)$; $(x, y) \rightarrow (\,\_\_\_\_\,,\_\_\_\_\,)$