

# Bernhard

Chapter 4 Sections 1-3 - HW

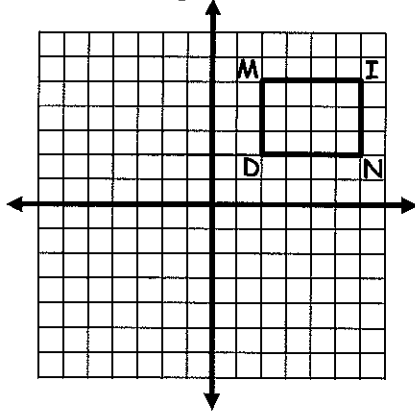
Name: \_\_\_\_\_

## Transformations

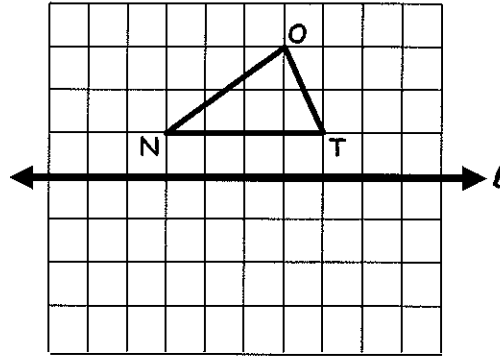
### Worksheet

For # 1-6, highlight the line of reflection then draw and label the image using prime notation. Accurately plot the points and use a RULER to draw the new images.

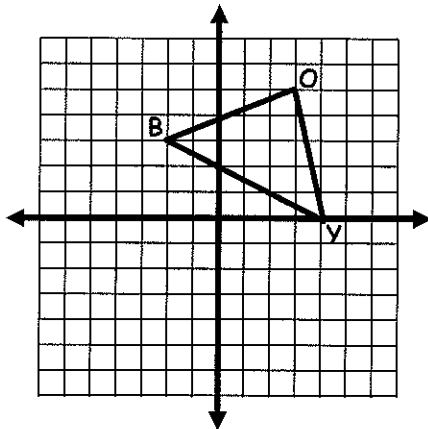
1. Reflect the figure across the line  $y = 1$ .



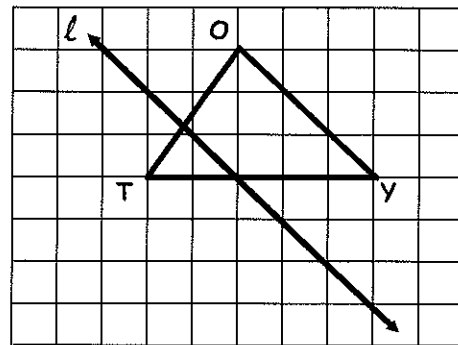
2. Reflect the figure across line  $l$ .



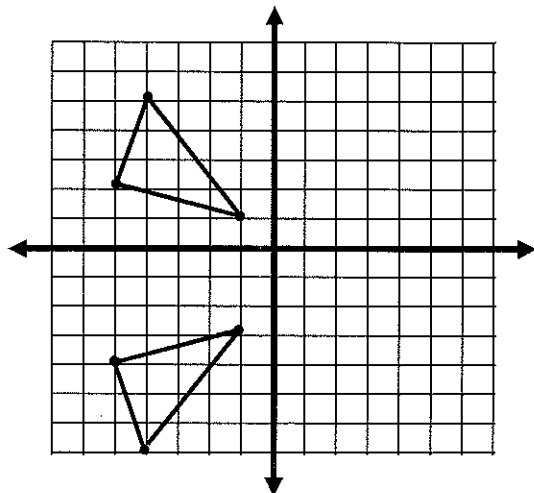
3. Reflect the figure across the y axis.



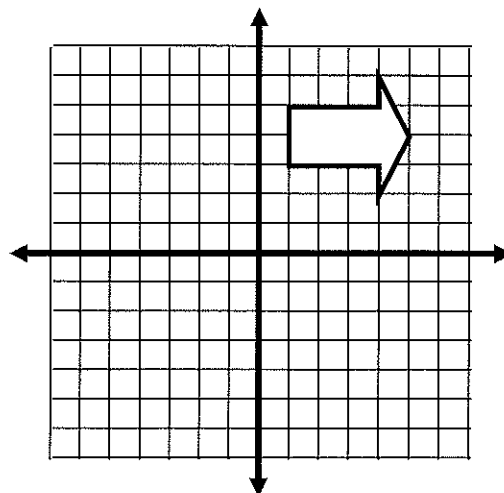
4. Reflect the figure across line  $l$ .



5. Draw and name the line of reflection.



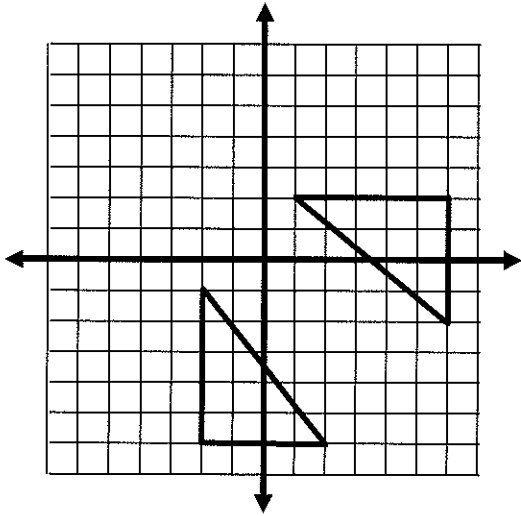
6. Reflect the image about the origin



Line of Reflection = \_\_\_\_\_

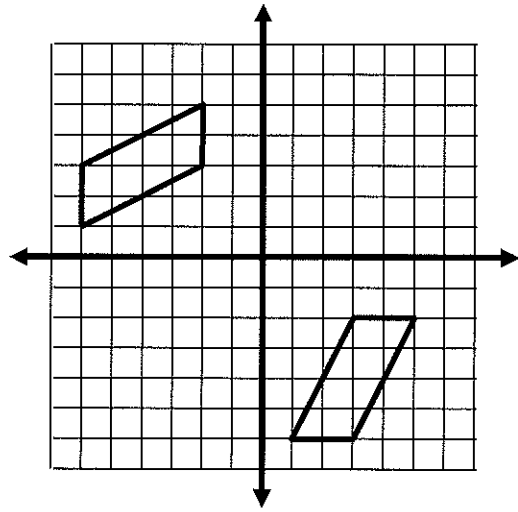
For #7-8, draw and name the line of reflection.

7.



Line of Reflection = \_\_\_\_\_

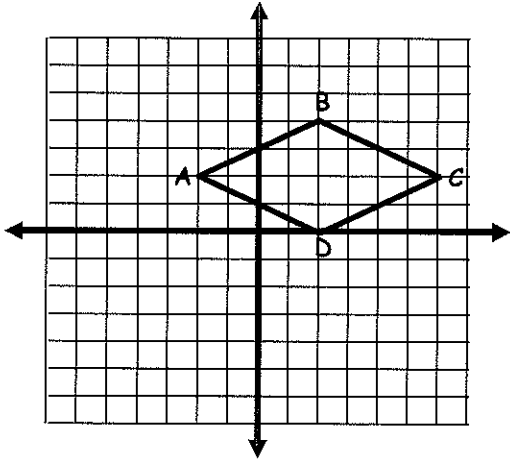
8.



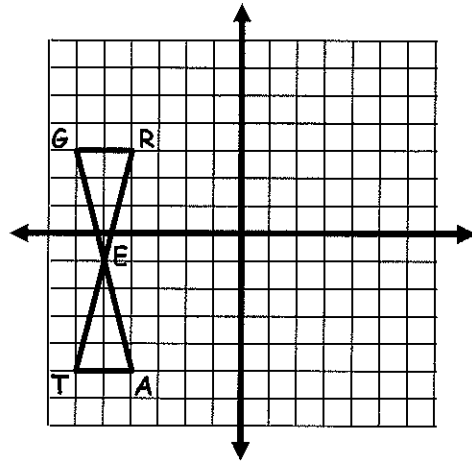
Line of Reflection = \_\_\_\_\_

For #9-10, highlight the line of reflection then draw and label the image using prime notation. Accurately plot the points and use a RULER to draw the new images.

9. Reflect over the x-axis.



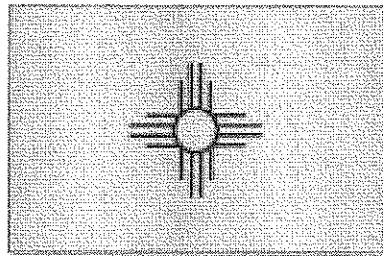
10. Reflect over the  $x = -3$  line.



11. The New Mexico state flag is an example of a rotation. Identify the order and magnitude of the symmetry of the figure on the flag.

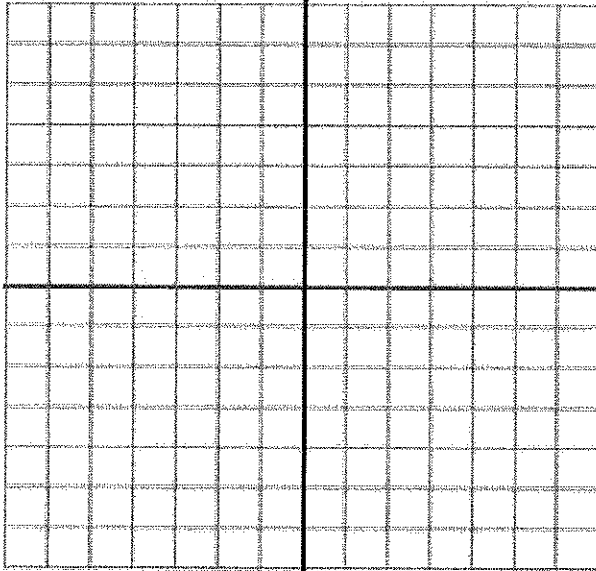
Order = \_\_\_\_\_

Magnitude = \_\_\_\_\_

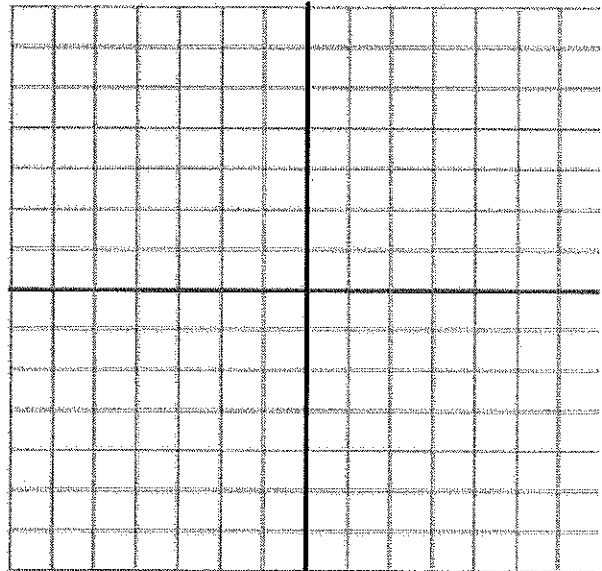


For # 12 - 15, graph each figure and the image under the given translation

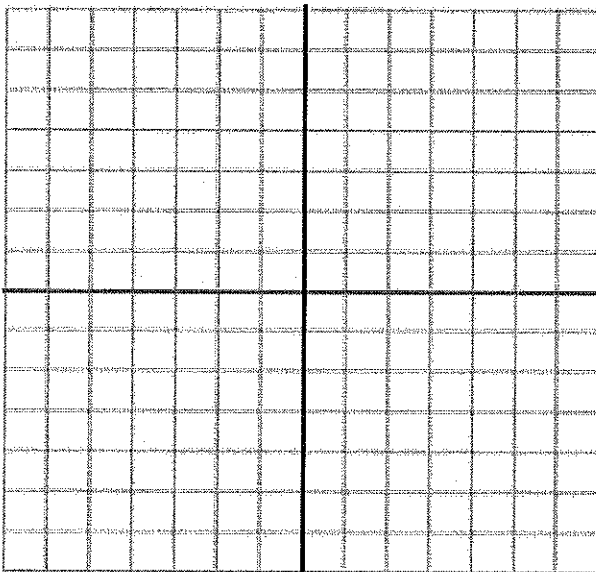
12.  $\overline{PQ}$  with endpoints  $P(2, -4)$  and  $Q(4, 2)$  translated left 3 units and up 4 units.



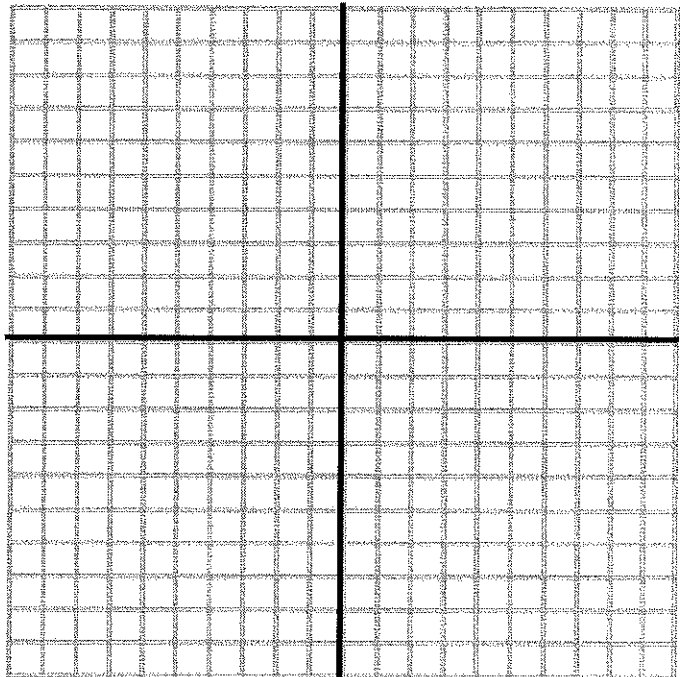
13.  $\triangle MJP$  with  $M(-2, -2)$ ,  $J(-5, 2)$ , and  $P(0, 4)$  translated by  $(x, y) \rightarrow (x + 4, y - 3)$



14. Quadrilateral PQRS with vertices  $P(1, 4)$ ,  $Q(-1, 4)$ ,  $R(-2, -4)$  and  $S(2, -4)$  translated by  $(x, y) \rightarrow (x - 5, y + 3)$

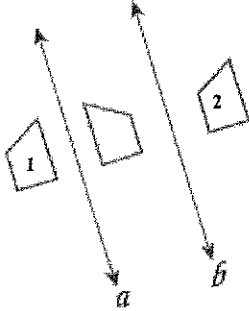


15.  $\triangle ADF$  with  $A(3, 1)$ ,  $D(9, 7)$ , and  $F(6, 9)$  translated by  $(x, y) \rightarrow (x - 11, y - 9)$



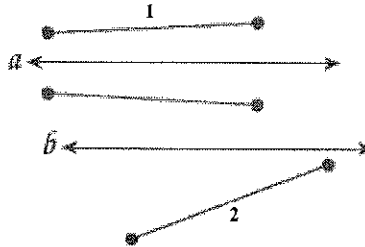
For # 16-18, determine whether figure #1 is a translation image of figure #2. In each figure,  $a \parallel b$ . Write yes or no. Explain your answer.

16. Translation? Yes/No



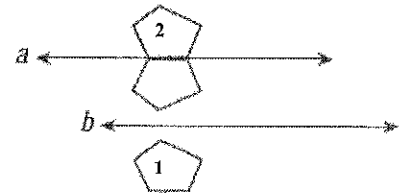
Explanation:

17. Translation? Yes/No



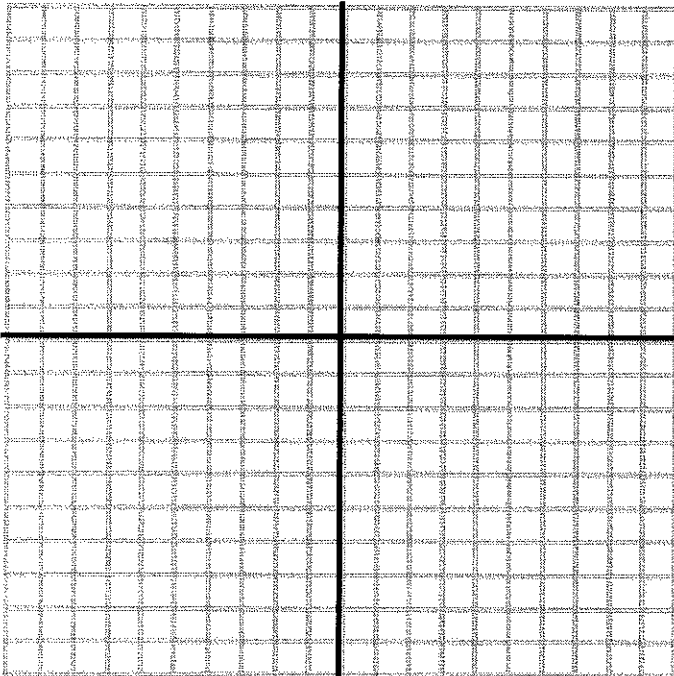
Explanation:

18. Translation? Yes/No

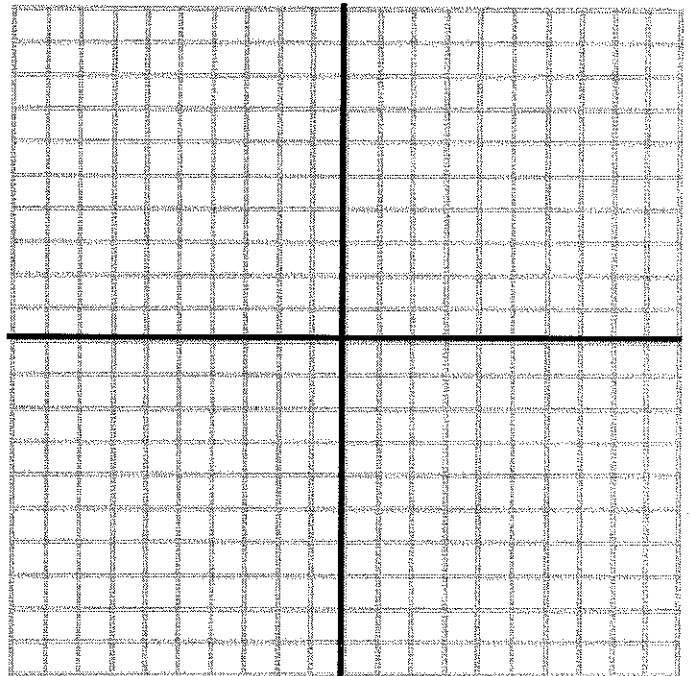


Explanation:

19.  $\Delta RST$  with  $R(-4, -1)$ ,  $S(6, 4)$ , and  $T(6, 1)$  reflected over  $y = 2$  and then reflected over  $y = -2$ .



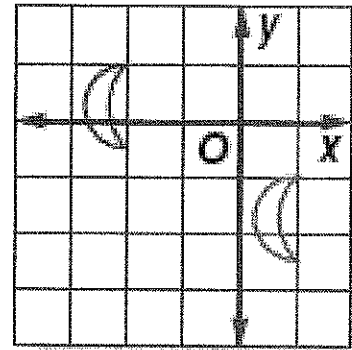
20. Under  $(x, y) \rightarrow (x-4, y+5)$ ,  $\Delta ABC$  has translated vertices  $A'(-8, 5)$ ,  $B'(2, 7)$  and  $C'(3, 1)$ . Find the coordinates of  $A$ ,  $B$ , and  $C$ .



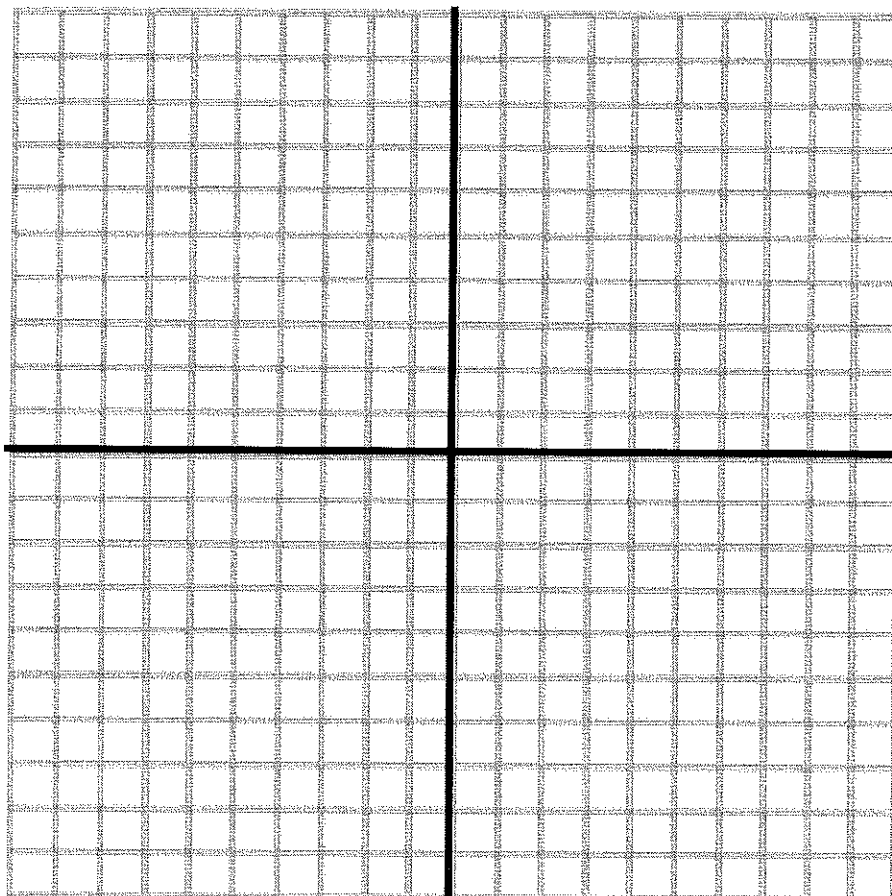
21. Allie and Tyrone are describing the transformation in the drawing. Who is correct? Explain your reasoning.

Allie  
This is a translation  
right 3 units and  
down 2 units.

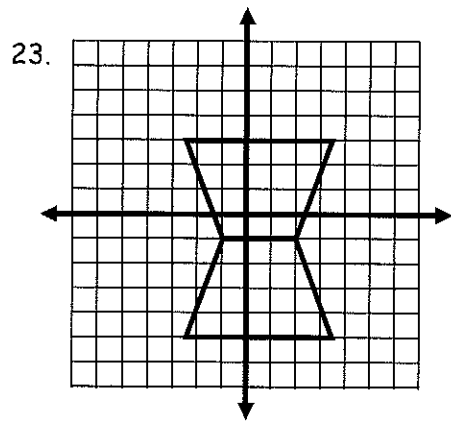
Tyrone  
This is a reflection  
in the  $y$ -axis and  
then the  $x$ -axis.



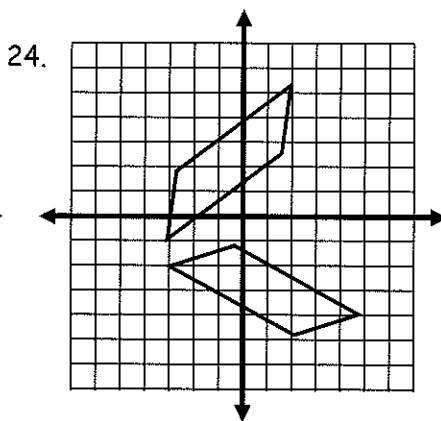
22.  $\triangle TWY$  has vertices  $T(3, -7)$ ,  $W(7, -4)$  and  $Y(9, -8)$ . Triangle  $BDG$  has vertices  $B(3, 3)$ ,  $D(7, 6)$ , and  $G(9, 2)$ . If  $\triangle BDG$  is the translation image of  $\triangle TWY$  resulting from a composition of reflections with respect to two parallel lines, find the equations that represent two possible parallel lines.



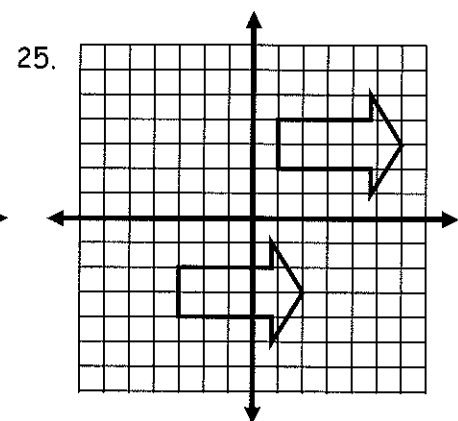
For #23-25, name the type of transformation between the two figures.



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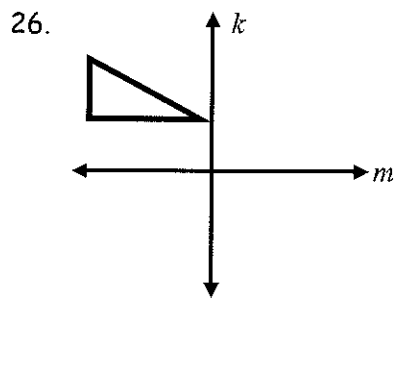


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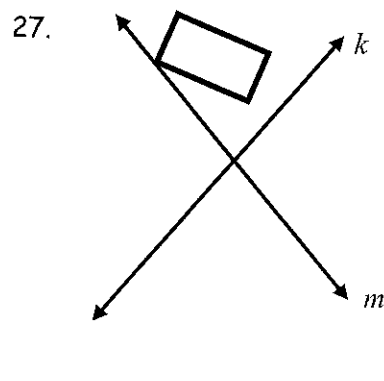


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For #26-27, reflect the figure over line  $k$  and then over line  $m$ . What is the resulting transformation from the preimage to the image?

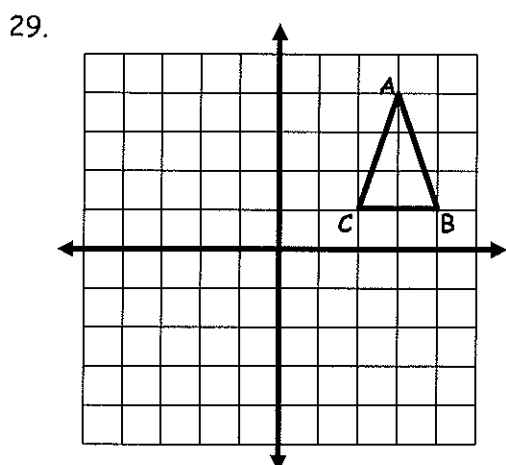
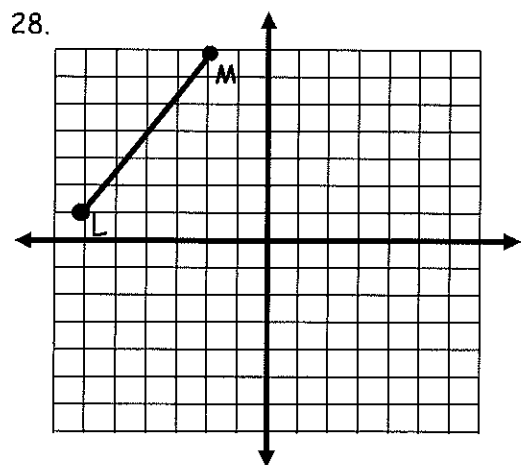


\_\_\_\_\_



\_\_\_\_\_

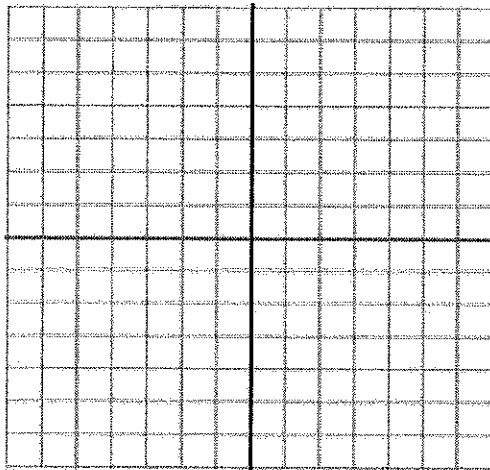
For #28-29, reflect each figure over the x-axis and then over the y-axis.



For #30-31

- a) Graph each triangle and the lines of reflection
- b) Graph the image after each reflection and list the coordinates of the image
- c) Name the resulting transformation from the preimage to the final image
- d) If the resulting transformation is a rotation, determine how many degrees the preimage was rotated

30. A (1, 2), B (4, 3), C (5, 1)  
 Reflected across  $x = 2$  and  
 then  $x = -1$ .

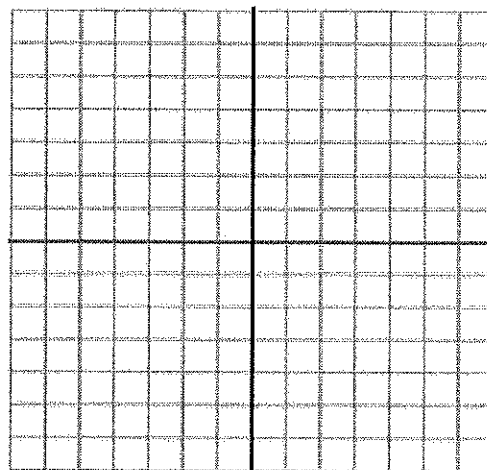


A' ( , )  
 B' ( , )  
 C' ( , )  
 A'' ( , )  
 B'' ( , )  
 C'' ( , )

Type of Transformation: \_\_\_\_\_

Degrees of Rotation = \_\_\_\_\_

31. E (-1, -1), F (-1, -3), G (-5, -3)  
 Reflected across  $y = 1$  and then  
 $y = x$ .



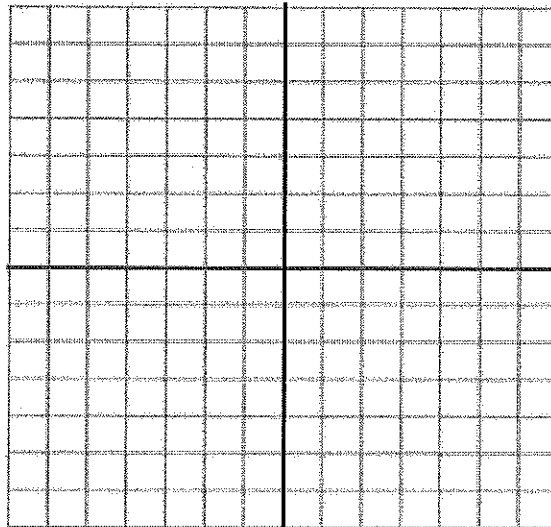
E' ( , )  
 F' ( , )  
 G' ( , )  
 E'' ( , )  
 F'' ( , )  
 G'' ( , )

Type of Transformation: \_\_\_\_\_

Degrees of Rotation = \_\_\_\_\_

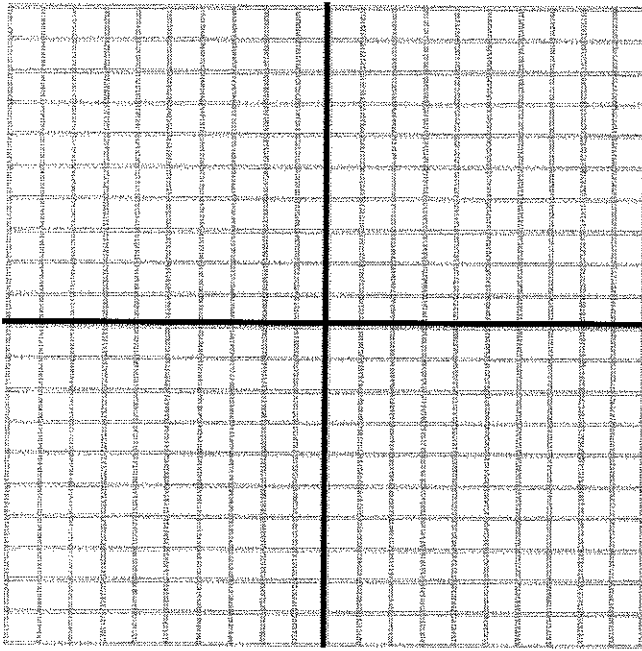
32. Draw a figure on the coordinate plane with an image that when reflected over an axis looks exactly like the original figure.

What types of figures share this characteristic? \_\_\_\_\_

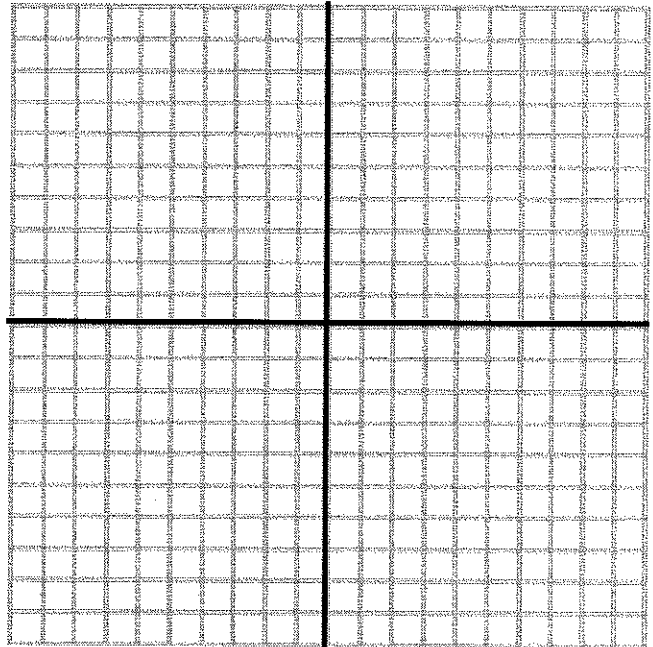


For #33-34, draw the rotation image of each figure  $90^\circ$  in the clockwise direction about the origin and label the vertices.

33.  $\triangle TUV$  with vertices  $T(5, 5)$ ,  $U(7, 3)$ , and  $V(1, 2)$

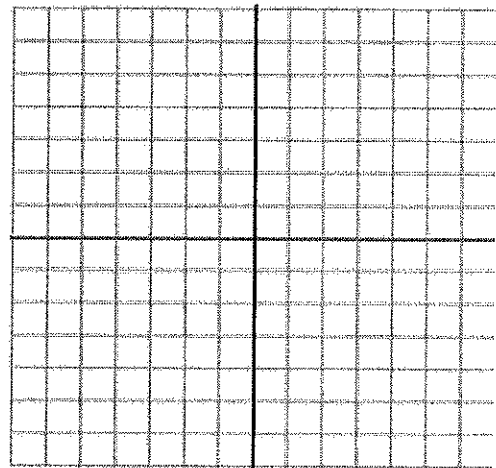


34.  $\triangle QRS$  with vertices  $Q(-9, -4)$ ,  $R(-3, -2)$ , and  $S(-6, 3)$ .



35. The image of  $A(-2, 5)$  under a reflection is  $A'(2, -5)$ . Which reflection(s) would result in the new image?

- a) Reflected over the x-axis: Yes/No
- b) Reflected over the y-axis: Yes/No
- c) Reflected over the origin: Yes/No



36. A classroom has a total of 30 desks. Six desks across the front of the room and 5 rows back. If the teacher moves Cole's seat from the first seat on the right in the second row to the last seat on the left in the last row, describe the translation. Draw and label the picture.