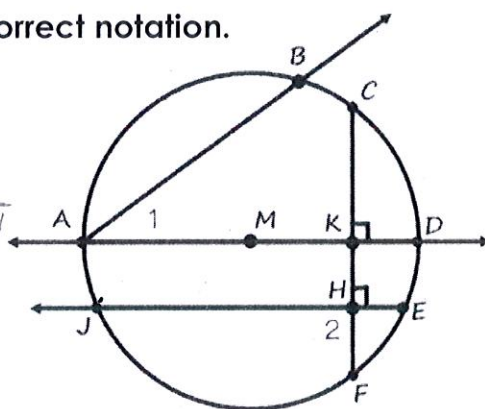


Write the correct vocabulary word next to the definition.

- Angle - formed where two lines or rays share an endpoint
- line segment - Part of a line bounded by two distinct endpoints
- point - an exact position or location in a given plane
- parallel - two lines that have unique points and never cross
- ray - a portion of a line that starts at a point and continues to infinity
- circle - the set of points on a plane at a certain distance, or radius from a single point, the center
- perpendicular lines - creates four right angles

Find each geometry term in the diagram. Label using correct notation.

- Ray: \overrightarrow{KD}
- Circle: $\odot M$
- Line: \overleftrightarrow{AM}
- Line Segment: \overline{AB}
- $\angle 1$: $\angle BAM$
- Parallel Lines: $\overline{AM} \parallel \overline{JH}$
- $\angle 2$: $\angle JHF$
- Perpendicular Lines: $\overline{HE} \perp \overline{CF}$

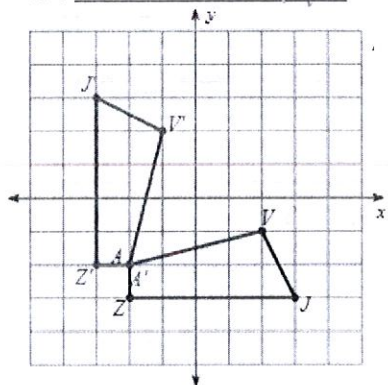


16. Use the translation $(x, y) \rightarrow (x - 4, y + 8)$ for questions a - d.

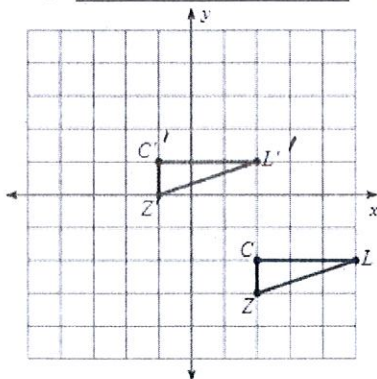
- What is the translation vector? $\langle -4, 8 \rangle$
- What is the image of A (-5, -4)? $A'(-9, 4)$
- What is the image of A'' (use part b)? $A''(-13, 12)$
- What is the pre-image of B' (14, 8)? $B(18, 0)$

Write the translation vector, line of reflection, or degree & direction of rotation for the following graphs.

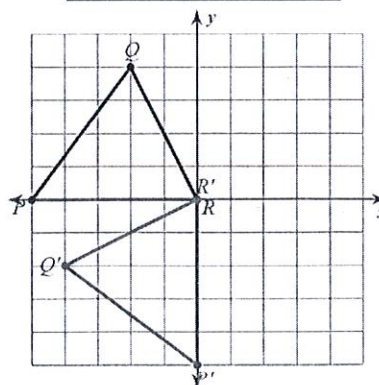
17. Reflection $y=x$



18. translation $\langle -3, 3 \rangle$



19. rotation 90° CW



20. Write your rules for the following transformations:

- a. Translation right h units and down k units: $(x, y) \rightarrow \underline{(x+h, y-k)}$
- b. Reflection over the x -axis: $(x, y) \rightarrow \underline{(x, -y)}$
- c. Reflection over the y -axis: $(x, y) \rightarrow \underline{(-x, y)}$
- d. Reflection over the line $y = x$: $(x, y) \rightarrow \underline{(y, x)}$
- e. Reflection over the line $y = -x$: $(x, y) \rightarrow \underline{(-y, -x)}$
- f. Rotation 90 degrees CW: $(x, y) \rightarrow \underline{(y, -x)}$
- g. Rotation 90 degrees CCW: $(x, y) \rightarrow \underline{(-y, x)}$
- h. Rotation 180 degrees: $(x, y) \rightarrow \underline{(-x, -y)}$

21. The vertices of $\triangle ABC$ are $A(2, -4)$, $B(0, 6)$, and $C(-5, 3)$. Find the vertices of $\triangle A'B'C'$ given the transformation rules below. These describe the transformation that occurred.

a. $(x, y) \rightarrow (x-8, y-3)$ $A' = \underline{(-6, -7)}$, $B' = \underline{(-8, 3)}$, $C' = \underline{(-13, 0)}$

Transformation: translation $\langle -8, -3 \rangle$

b. $(x, y) \rightarrow (x, -y)$ $A' = \underline{(2, 4)}$, $B' = \underline{(0, -6)}$, $C' = \underline{(-5, -3)}$

Transformation: reflection over x -axis

c. $(x, y) \rightarrow (-y, -x)$ $A' = \underline{(4, -2)}$, $B' = \underline{(-6, 0)}$, $C' = \underline{(-3, 5)}$

Transformation: reflection over $y = -x$

d. $(x, y) \rightarrow (y, x)$ $A' = \underline{(-4, 2)}$, $B' = \underline{(6, 0)}$, $C' = \underline{(3, -5)}$

Transformation: reflection over $y = x$

e. $(x, y) \rightarrow (-x, y)$ $A' = \underline{(-2, -4)}$, $B' = \underline{(0, 6)}$, $C' = \underline{(5, 3)}$

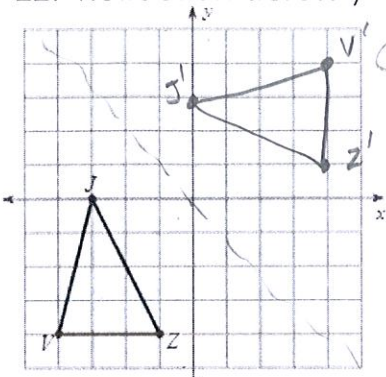
Transformation: reflection over y -axis

f. $(x, y) \rightarrow (y, -x)$ $A' = \underline{(-4, -2)}$, $B' = \underline{(6, 0)}$, $C' = \underline{(3, 5)}$

Transformation: rotation 90° CW

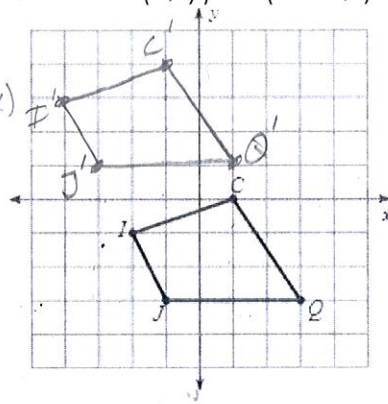
Follow the instructions for each graph.

22. Reflection across $y = -x$.

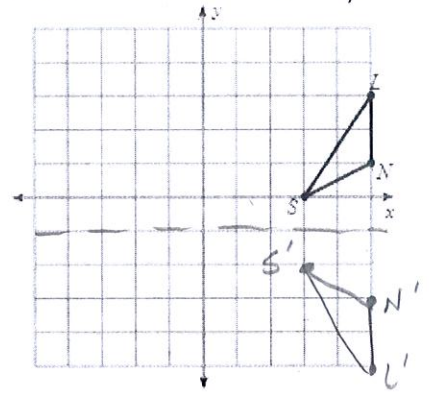


$J(-3,0)$ $J'(0,3)$
 $V(-4,-4)$ $V'(4,4)$
 $Z(-1,-4)$ $Z'(4,1)$

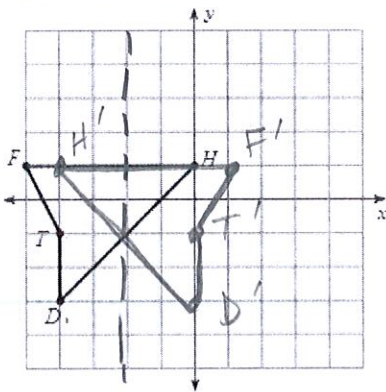
23. Rule: $(x, y) \rightarrow (x-2, y+4)$



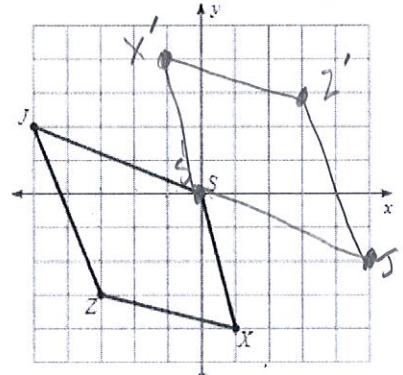
24. Reflection across $y = -1$.



25. Reflection across $x = -2$.

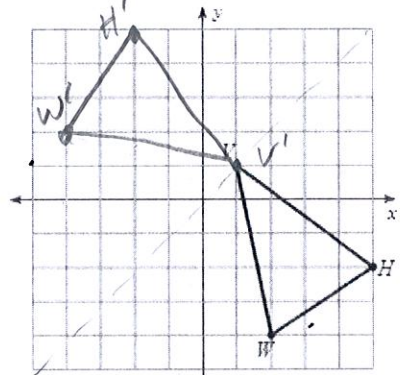


26. Rotation 180 degrees



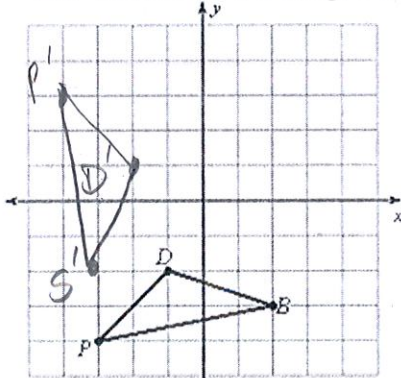
$J(-5,2)$ $J'(5,-2)$
 $Z(-3,-3)$ $Z'(3,3)$
 $X(1,-4)$ $X'(-1,4)$

27. Rule: $(x, y) \rightarrow (y, x)$



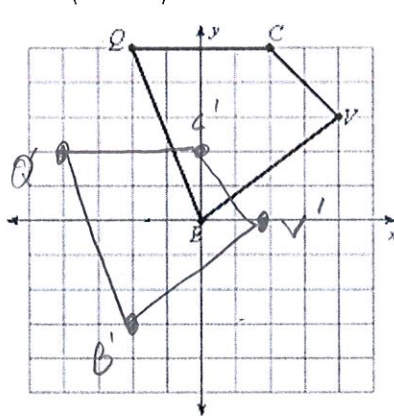
$V(1,1)$ $V'(1,1)$
 $W(2,-4)$ $W'(-4,2)$
 $H(5,-2)$ $H'(-2,5)$

28. Rotation 90 degrees CW



$D(-1,-2)$ $D'(-2,1)$
 $B(2,-3)$ $B'(-3,-2)$
 $P(-3,-4)$ $P'(-4,3)$

29. $\langle -2, -3 \rangle$



30. Rule: $(x, y) \rightarrow (-x, y)$ reflection over y-axis

