

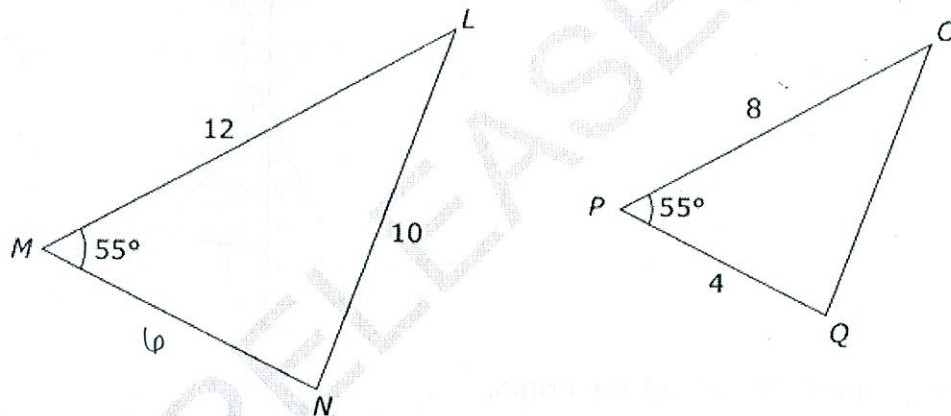
Transformations: Final Exam Prep

Math II

Name: Key

Directions: The following questions are sample items similar to those found on the EOC Exam. Answer each to the best of your ability.

1. Triangles LMN and OPQ are shown below.



What additional information is sufficient to show that $\triangle LMN$ can be transformed and mapped onto $\triangle OPQ$?

- A $OQ = 6$
 B $MN = 9$
~~C $\angle LMN \cong \angle QOP$~~
 D $\angle NLM \cong \angle QOP$

$$\frac{8}{12} = \frac{4}{x} \qquad \frac{8}{12} = \frac{b}{10}$$

$$48 = 8x$$

$$x = 6$$

2. Point $P(-3, -1)$ is transformed using the rule $(x', y') = (x - 3, y + 1)$. The image P' is then rotated clockwise 90° about the origin, resulting in point P'' . What are the coordinates of P'' ?

- A $(-6, 0)$
 B $(0, -6)$
 C $(0, 6)$
 D $(6, 0)$

$$P' = (-3-3, -1+1) = (-6, 0)$$

$$P''(y, -x) = (0, +6)$$

3. $\triangle WXY$ has vertices $W(2, 5)$, $X(6, 2)$, and $Y(2, 2)$. If $\triangle WXY$ is dilated by a factor of $\frac{1}{2}$, what are the coordinates of X' in the transformed triangle?

- A $(1, 3)$
 B $(3, 1)$
 C $(4, 12)$
 D $(12, 4)$

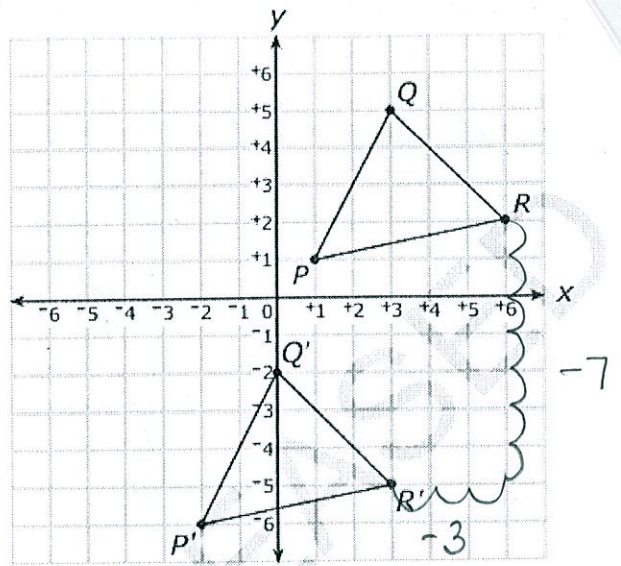
$$X' = \left(6\left(\frac{1}{2}\right), 2\left(\frac{1}{2}\right) \right)$$

$$X' = (3, 1)$$

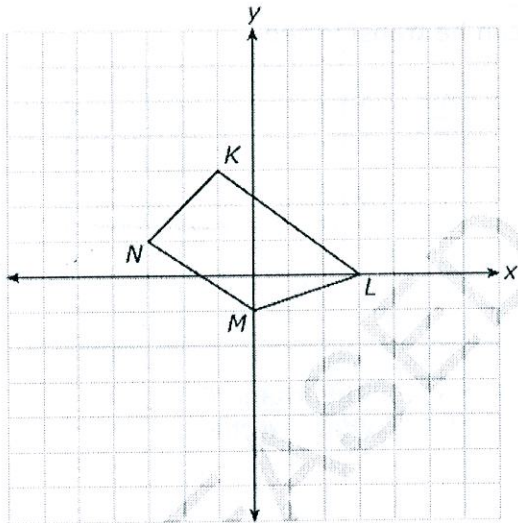
4. In the graph below, $\triangle P'Q'R'$ is the image produced by applying a transformation to $\triangle PQR$.

Which transformation was used?

- A $(x', y') = (x - 3, y - 7)$
 B $(x', y') = (x + 3, y + 7)$
 C $(x', y') = (x - 7, y - 3)$
 D $(x', y') = (x + 7, y + 3)$



5. Quadrilateral $KLMN$ will be rotated 180° about the origin.

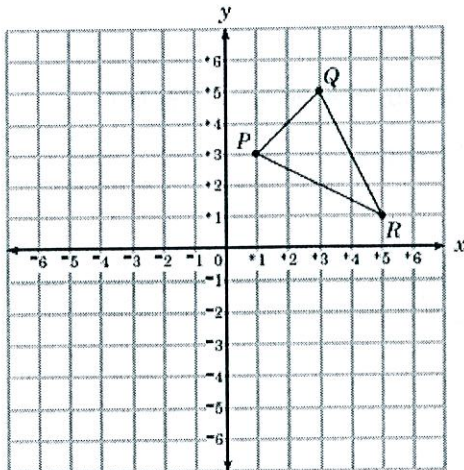


$180^\circ = (-x, -y)$

Which rule will describe the transformation?

- A $(x', y') = (x, y)$
 B $(x', y') = (-x, y)$
 C $(x', y') = (x, -y)$
 D $(x', y') = (-x, -y)$

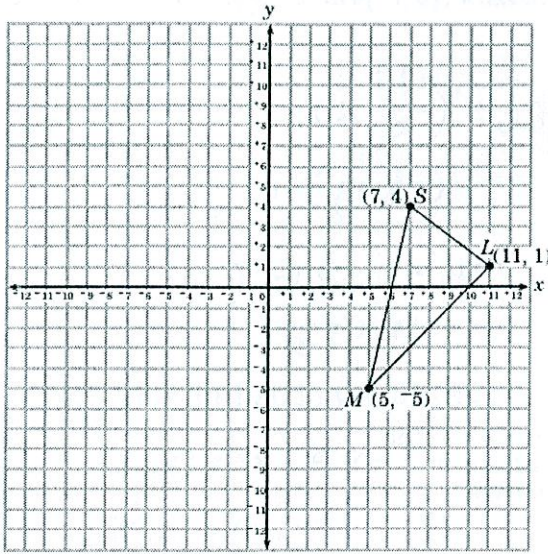
6. $\triangle PQR$, shown below, will be rotated clockwise 180° about the origin.



Which rule describes the transformation?

- A $(x', y') = (x, y)$
 B $(x', y') = (-x, y)$
 C $(x', y') = (x, -y)$
 D $(x', y') = (-x, -y)$

If $\triangle SLM$ is rotated 180° about the origin, what will be the coordinates for the image of M ?

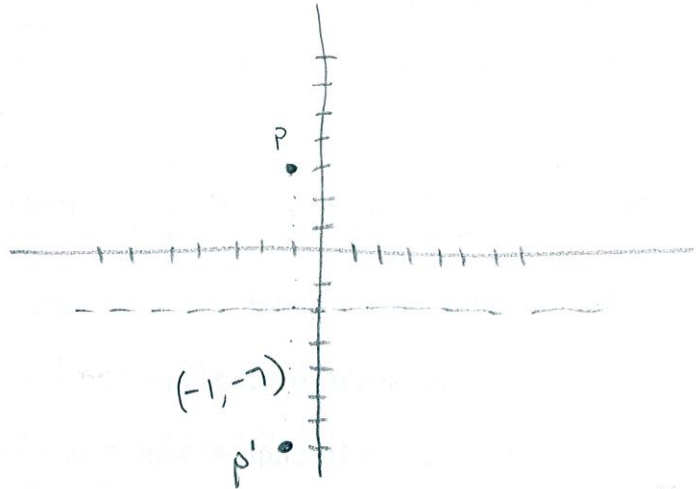


- A (5, 5)
- B (5, -5)
- C (-5, 5)
- D (-5, -5)

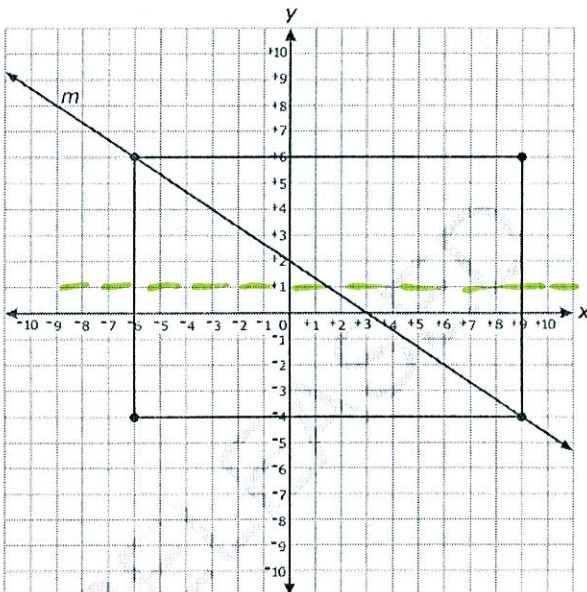
$$(5, -5) \Rightarrow (-5, 5)$$

8. Triangle PQR has vertices $P(-1, 3)$, $Q(1, 2)$, and $R(-2, -1)$. When $\triangle PQR$ is reflected over the line $y = -2$, what are the coordinates of P' ?

- A (-1, -3)
- B (-1, -7)
- C (-2, -2)
- D (-3, -3)

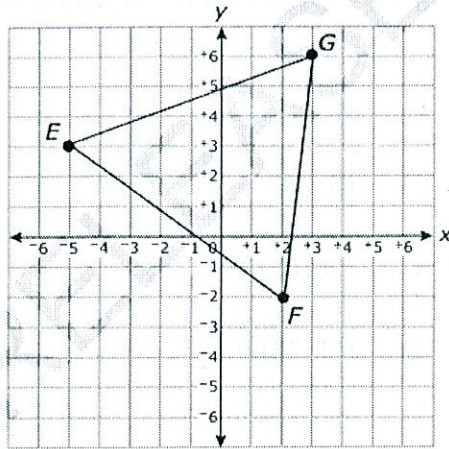


9. Which transformation will carry the rectangle shown below onto itself?



- A a reflection over line m
- B a reflection over the line $y = 1$
- C a rotation 90° counterclockwise about the origin
- D a rotation 270° counterclockwise about the origin

10. Triangle EGF is graphed below.



$$G(3, 6)$$

$$90^\circ \text{CC} = (-y, x) \quad G'(-6, 3)$$

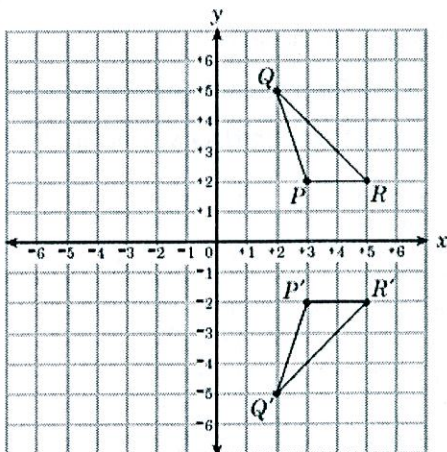
$$y\text{-axis} = (-x, y) \quad G''(6, 3)$$

$$(y, x) \rightarrow G''(3, 6)$$

switch $x \leftrightarrow y$

Triangle EGF will be rotated 90° counterclockwise around the origin and will then be reflected across the y -axis, producing an image triangle. Which additional transformation will map the image triangle back onto the original triangle?

- A rotation 270° counterclockwise around the origin
- B rotation 180° counterclockwise around the origin
- C reflection across the line $y = -x$
- D reflection across the line $y = x$
11. \overline{FG} has points $F(2, 4)$ and $G(6, 1)$. If \overline{FG} is dilated with respect to the origin by a factor of k , to produce $\overline{F'G'}$, which statement must be true?
- A The line that passes through F' and G' intersects the y -axis at $(0, 5.5 + k)$.
- B The line that passes through F' and G' intersects the y -axis at $(0, 5.5)$.
- C The line that passes through F' and G' has a slope of $\left(\frac{-3}{4}\right)k$.
- D The line that passes through F' and G' has a slope of $\frac{-3}{4}$.
12. In the graph below, $\triangle P'Q'R'$ is the image produced by applying a transformation to $\triangle PQR$.



Which rule describes the transformation?

A $(x', y') = (x, y)$

B $(x', y') = (-x, -y)$

C $(x', y') = (-x, y)$

D $(x', y') = (x, -y)$

Point P' is the image of point P after a counterclockwise rotation of 90° about the origin. If the coordinates of point P' are $(-7, 3)$, what are the coordinates of point P ?

- A $(-3, -7)$
- B $(-3, 7)$
- C $(3, -7)$
- D $(3, 7)$

$P(x, y) \Rightarrow (3, 7)$
 $P'(-7, 3) \Rightarrow (-y, x)$

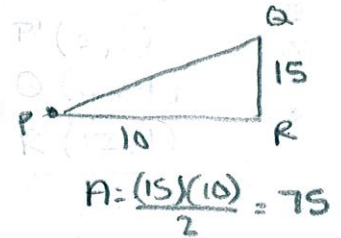
14. Which transformation will **always** produce a congruent figure?

- A $(x', y') = (x + 4, y - 3)$
- B $(x', y') = (2x, y)$
- C $(x', y') = (x + 2, 2y)$
- D $(x', y') = (4x, 4y)$

because it is an isometry (doesn't alter size or shape)

15. The vertices of triangle PQR are located at $P(2, 5)$, $Q(12, 20)$, and $R(12, 5)$. The vertices of the triangle will undergo the transformation described by the rule $(x, y) \rightarrow (x, \frac{1}{5}y)$. Which statement about the image triangle is true?

graph on the coordinate plane.



- A The perimeter of the image will be 5 times the perimeter of the preimage.
- B The area of the image will be 5 times the area of the preimage.
- C The perimeter of the image will be $\frac{1}{5}$ the perimeter of the preimage.
- D The area of the image will be $\frac{1}{5}$ the area of the preimage.

$\frac{75}{15} = 5$



16. Which rotation will carry a regular hexagon onto itself?

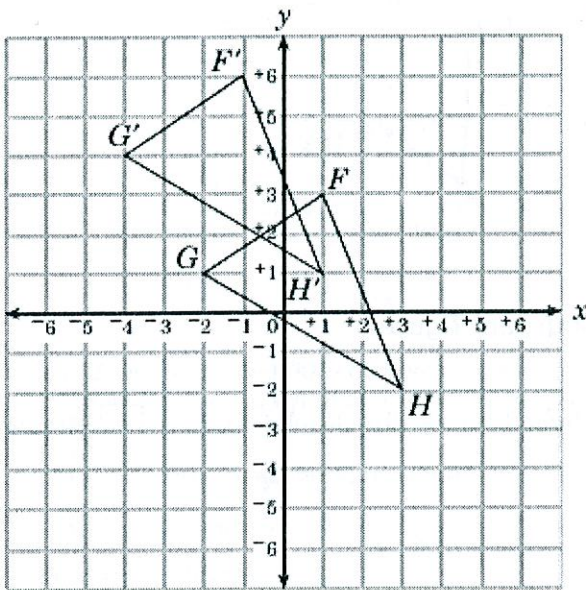
- A a 30° counterclockwise rotation
- B a 90° counterclockwise rotation
- C a 120° counterclockwise rotation
- D a 270° counterclockwise rotation

$\frac{360}{6} = 60^\circ$

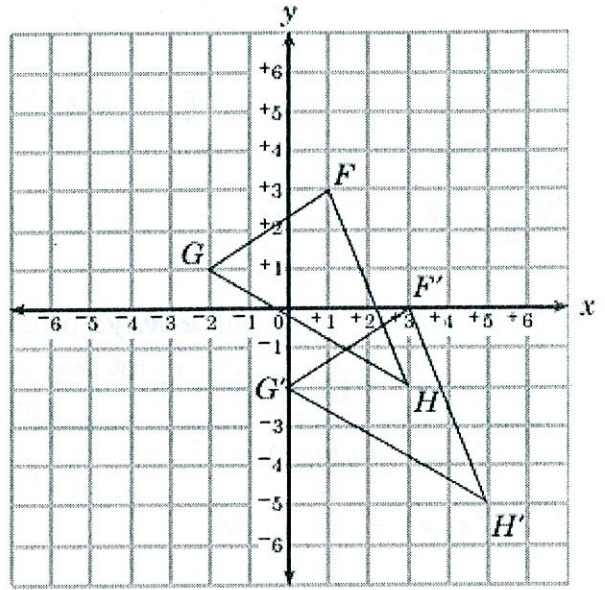
need to find a multiple of 60°

17. A translation is applied to $\triangle FGH$, forming $\triangle F'G'H'$. If the translation is described by $(x', y') = (x + 2, y - 3)$, which graph shows the translation correctly?

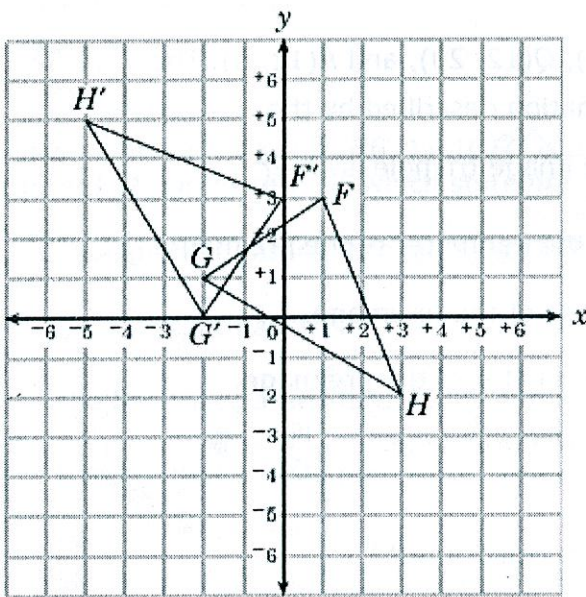
~~A~~



B



~~C~~



D

