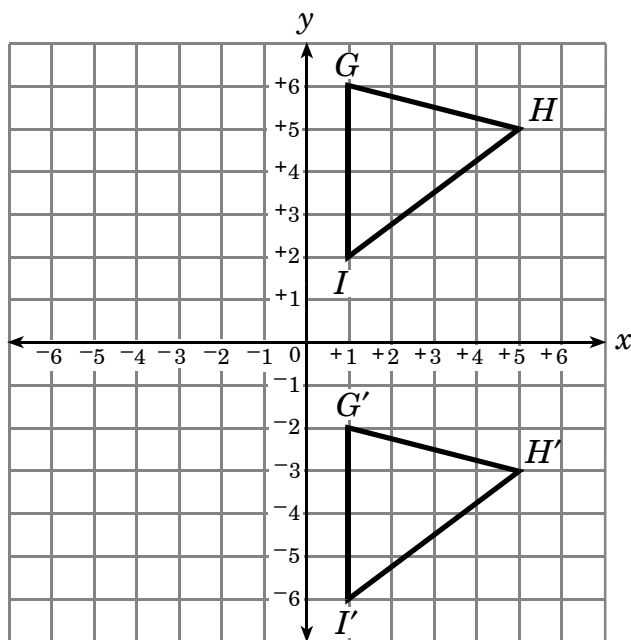


1. What is the rule for the transformation formed by a translation 2 units to the left and 3 units up followed by a  $90^\circ$  counterclockwise rotation?

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

2.  $\triangle G'H'I'$  is the image of  $\triangle GHI$  after a transformation.



Which describes the transformation shown?

- A reflection over  $x$ -axis
- B reflection over  $y$ -axis
- C  $(x', y') = (x - 8, y)$
- D  $(x', y') = (x, y - 8)$

3.  $\triangle GHJ$  with vertex matrix  $\begin{bmatrix} -2 & 3 & 3 \\ 4 & 6 & -2 \end{bmatrix}$  is dilated by a factor of  $\frac{1}{3}$ . Considering the image  $\triangle G'H'J'$ , what are the coordinates of the vertex that lies in the second quadrant?

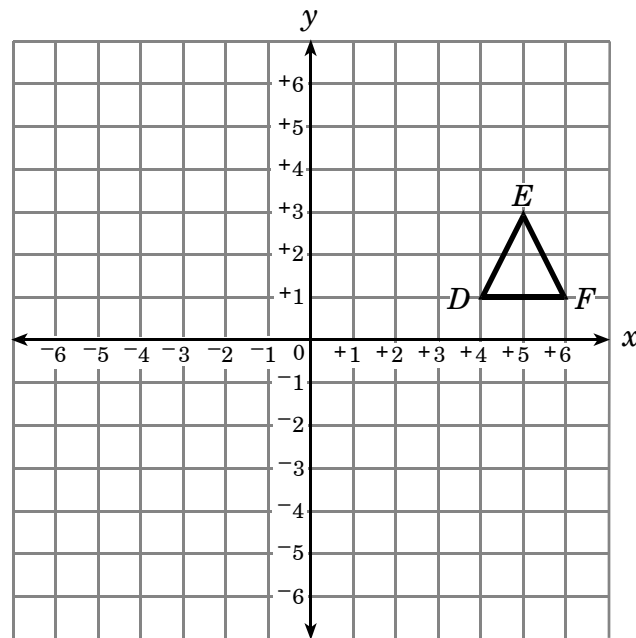
A  $\left(-\frac{7}{3}, \frac{13}{3}\right)$

B  $\left(-\frac{2}{3}, \frac{4}{3}\right)$

C  $\left(1, -\frac{2}{3}\right)$

D  $(1, 2)$

4.  $\triangle DEF$  is reflected across the line  $y = x$ .



Which matrix multiplication shows how to find  $\triangle D'E'F'$ ?

A  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 4 & 5 & 6 \\ 1 & 3 & 1 \end{bmatrix}$

B  $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} 4 & 5 & 6 \\ 1 & 3 & 1 \end{bmatrix}$

C  $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix} \begin{bmatrix} 4 & 5 & 6 \\ 1 & 3 & 1 \end{bmatrix}$

D  $\begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} 4 & 5 & 6 \\ 1 & 3 & 1 \end{bmatrix}$

## End of Goal 3 Sample Items

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## Answers to EOC Mathematics Geometry Sample Items

### Goal 3

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**1. Objective 3.01**

Describe the transformation (translation, reflection, rotation, dilation) of polygons in the coordinate plane in simple algebraic terms.

**Thinking Skill:** Generating

**Correct Answer:** C

**2. Objective 3.01**

Describe the transformation (translation, reflection, rotation, dilation) of polygons in the coordinate plane in simple algebraic terms.

**Thinking Skill:** Analyzing

**Correct Answer:** D

**3. Objective 3.02**

Use matrix operations (addition, subtraction, multiplication, scalar multiplication) to describe the transformation of polygons in the coordinate plane.

**Thinking Skill:** Analyzing

**Correct Answer:** B

**4. Objective 3.02**

Use matrix operations (addition, subtraction, multiplication, scalar multiplication) to describe the transformation of polygons in the coordinate plane.

**Thinking Skill:** Integrating

**Correct Answer:** B