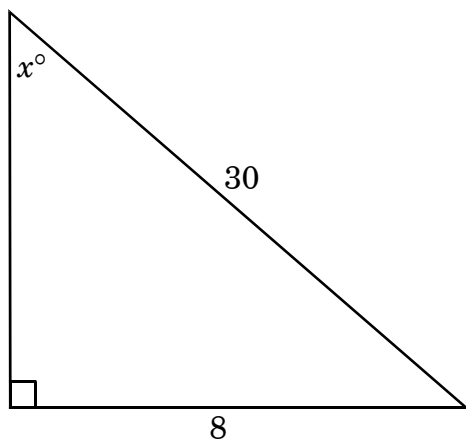


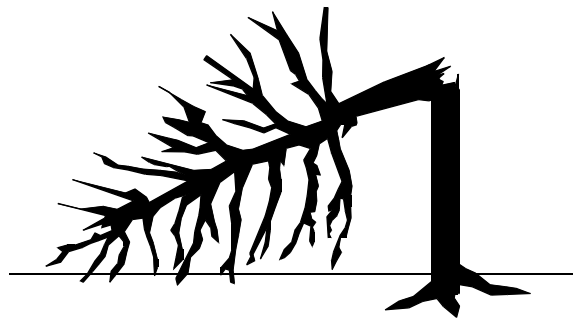
1. A right triangle is shown below.



What is the **approximate** value of  $x$ ?

- A 14.9
- B 15.5
- C 74.5
- D 75.1

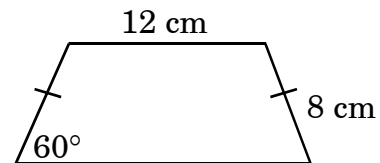
2. A dead tree was struck by lightning, causing it to fall over at a point 10 ft up from the base of the tree.



If the fallen treetop forms a  $40^\circ$  angle with the ground, **about** how tall was the tree originally?

- A 13 ft
- B 16 ft
- C 23 ft
- D 26 ft

3. What is the area of the trapezoid?

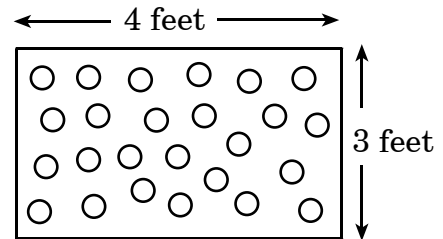


- A  $83.1 \text{ cm}^2$
- B  $110.9 \text{ cm}^2$
- C  $128.0 \text{ cm}^2$
- D  $192.0 \text{ cm}^2$

4. An inflated round balloon with radius  $r = 50$  centimeters holds approximately 523,600 cubic centimeters of air. When the balloon is contracted such that the radius is  $\frac{2}{3}$  the original size, what is the **approximate** volume of the partially deflated balloon?
- A  $1.94 \times 10^4 \text{ cm}^3$
- B  $1.55 \times 10^5 \text{ cm}^3$
- C  $1.75 \times 10^5 \text{ cm}^3$
- D  $3.49 \times 10^5 \text{ cm}^3$

5. A point is randomly selected on  $\overline{XY}$ . What is the probability that it will be closer to the midpoint of  $\overline{XY}$  than to either  $X$  or  $Y$ ?
- A  $\frac{1}{4}$
- B  $\frac{1}{3}$
- C  $\frac{1}{2}$
- D  $\frac{3}{4}$

6. To win a carnival game, Keisha must throw a dart at a board that is 4 feet by 3 feet and hit one of the 25 circles on the board. The diameter of each circle is 4 inches.



**Approximately** what percent of the time will a randomly thrown dart that hits the board also hit a circle?

- A 18%
- B 26%
- C 63%
- D 73%

## End of Goal 1 Sample Items

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# Answers to EOC Mathematics Geometry Sample Items

## Goal 1

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**1. Objective 1.01**

Use the trigonometric ratios to model and solve problems involving right triangles.

**Thinking Skill:** Applying

**Correct Answer:** B

**2. Objective 1.01**

Use the trigonometric ratios to model and solve problems involving right triangles.

**Thinking Skill:** Analyzing

**Correct Answer:** D

**3. Objective 1.02**

Use length, area, and volume of geometric figures to solve problems. Include arc length, area of sectors of circles; lateral area, surface area, and volume of three-dimensional figures; and perimeter, area, and volume of composite figures.

**Thinking Skill:** Applying

**Correct Answer:** B

**4. Objective 1.02**

Use length, area, and volume of geometric figures to solve problems. Include arc length, area of sectors of circles; lateral area, surface area, and volume of three-dimensional figures; and perimeter, area, and volume of composite figures.

**Thinking Skill:** Analyzing

**Correct Answer:** B

**5. Objective 1.03**

Use length, area, and volume to model and solve problems involving probability.

**Thinking Skill:** Analyzing

**Correct Answer:** C

**6. Objective 1.03**

Use length, area, and volume to model and solve problems involving probability.

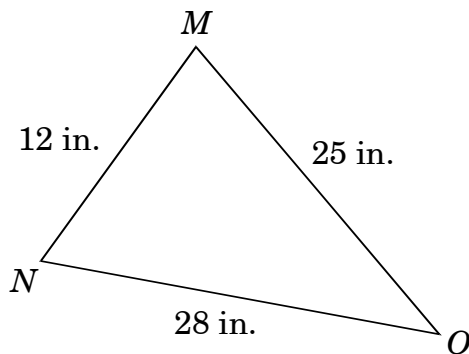
**Thinking Skill:** Integrating

**Correct Answer:** A

1. The conditional statement “all  $45^\circ$  angles are acute angles” is true. Based on the conditional statement, which of the following can be concluded from the additional statement “the measure of  $\angle A$  is  $45^\circ$ ”?

- A The complement of  $\angle A$  is not an acute angle.
- B The supplement of  $\angle A$  is not an acute angle.
- C  $\angle A$  is an acute angle.
- D  $\angle A$  is not an acute angle.

2.  $\triangle MNO$  is shown below.



Which statement about this triangle is true?

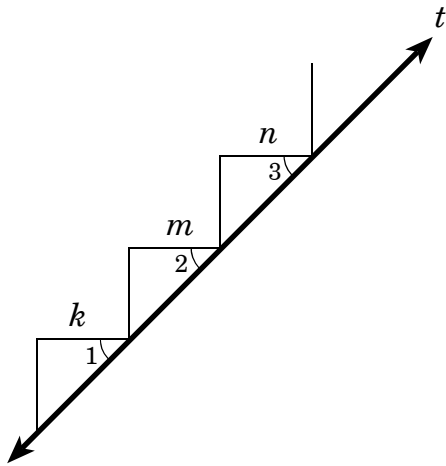
- A  $m\angle O > m\angle M$
- B  $m\angle M > m\angle N$
- C  $m\angle M < m\angle N$
- D  $m\angle N < m\angle O$

3. What is the contrapositive of the statement below?

If a triangle is isosceles, then it has two congruent sides.

- A If a triangle does not have two congruent sides, then it is not isosceles.
- B If a triangle is isosceles, then it does not have two congruent sides.
- C If a triangle has two congruent sides, then it is isosceles.
- D If a triangle is not isosceles, then it does not have two congruent sides.

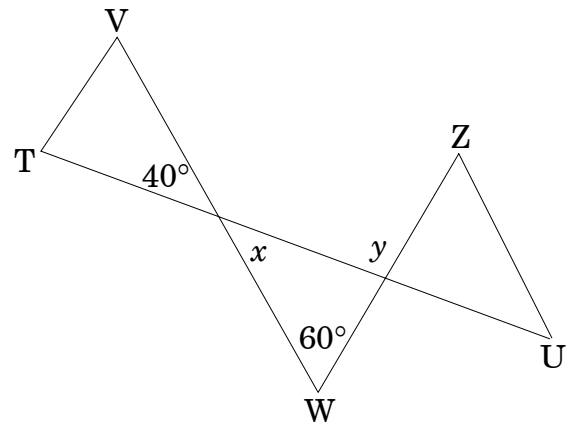
4. Given:  $k \parallel m \parallel n$



Which statement justifies the conclusion that  $\angle 1 \cong \angle 2 \cong \angle 3$ ?

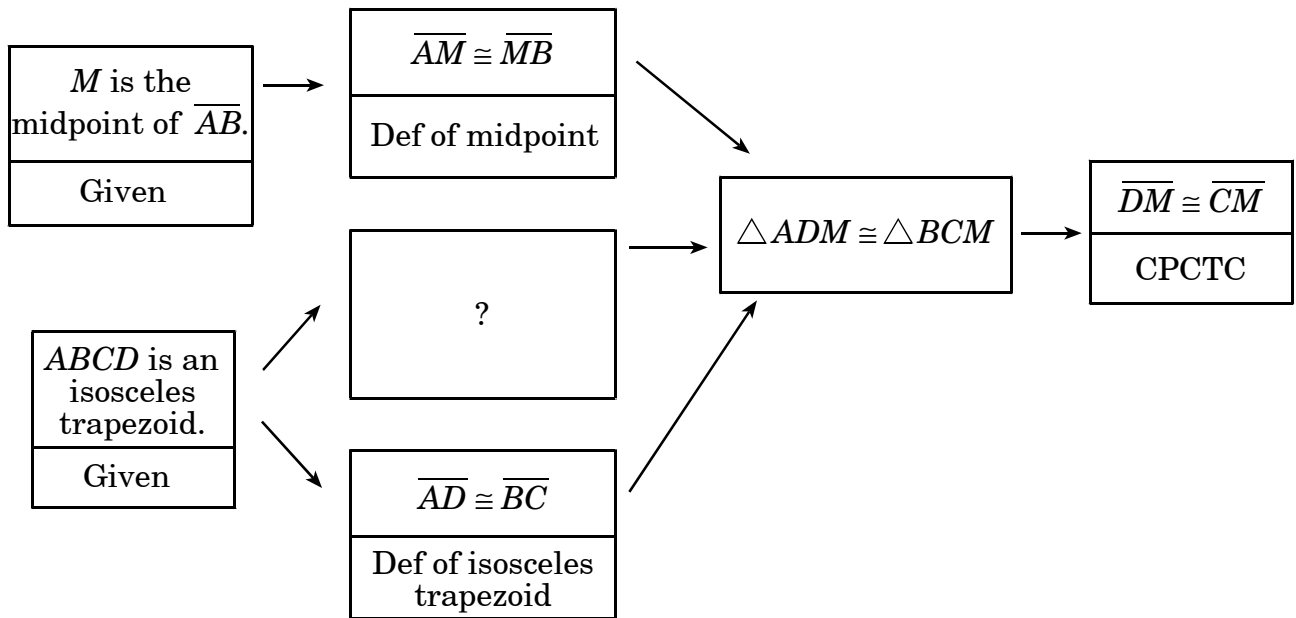
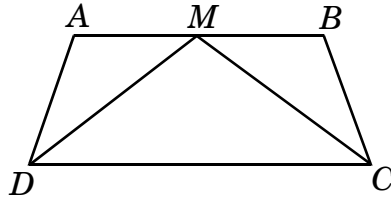
- A If  $k \parallel m \parallel n$  and are cut by transversal  $t$ , then alternate interior angles are congruent.
- B If  $k \parallel m \parallel n$  and are cut by transversal  $t$ , then vertical angles are congruent.
- C If  $k \parallel m \parallel n$  and are cut by transversal  $t$ , then alternate exterior angles are congruent.
- D If  $k \parallel m \parallel n$  and are cut by transversal  $t$ , then corresponding angles are congruent.

5. In the drawing, what is the measure of angle  $y$ ?



- A  $40^\circ$
- B  $60^\circ$
- C  $80^\circ$
- D  $100^\circ$

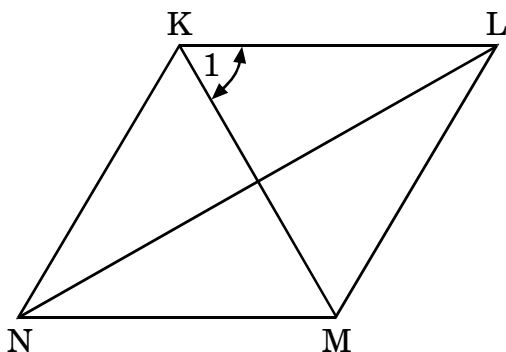
6. Given:  $ABCD$  is an isosceles trapezoid.  $M$  is the midpoint of  $\overline{AB}$ .  
 Prove:  $\overline{DM} \cong \overline{CM}$



What is the missing statement and reason that completes the proof shown above?

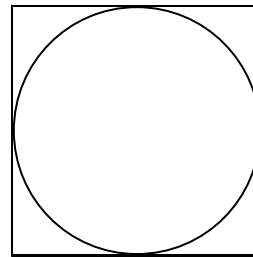
- A  $\overline{AD} \cong \overline{BC}$ ; the legs of an isosceles trapezoid are congruent.
- B  $\angle MAD \cong \angle MBC$ ; the base angles of an isosceles trapezoid are congruent.
- C  $\overline{AM} \cong \overline{BM}$ ; the corresponding parts of congruent triangles are congruent.
- D  $\angle ABC \cong \angle DAB$ ; if lines are parallel, interior angles on the same side of a transversal are supplementary.

7. If  $KLMN$  is a rhombus, and  $m\angle KLM = 80$ , what is the measure of  $\angle 1$ ?



- A  $40^\circ$   
B  $50^\circ$   
C  $80^\circ$   
D  $90^\circ$
8. The measure of each exterior angle of a regular polygon is  $45^\circ$ . How many sides does the polygon have?
- A 4  
B 5  
C 8  
D 9

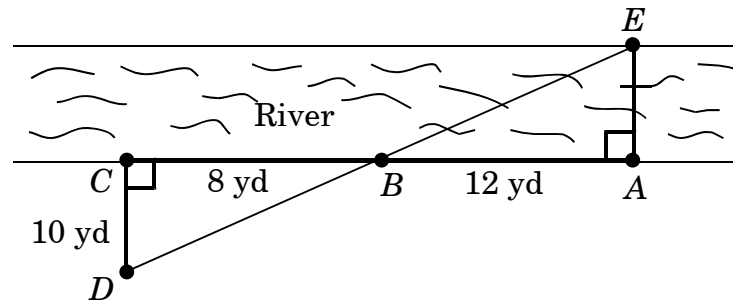
9. A gardener wants to enclose a circular garden with a square fence, as shown below.



If the circumference of the circular garden is about 48 feet, which of the following is the **best** estimate for the length of fencing needed?

- A 31 ft  
B 61 ft  
C 122 ft  
D 244 ft

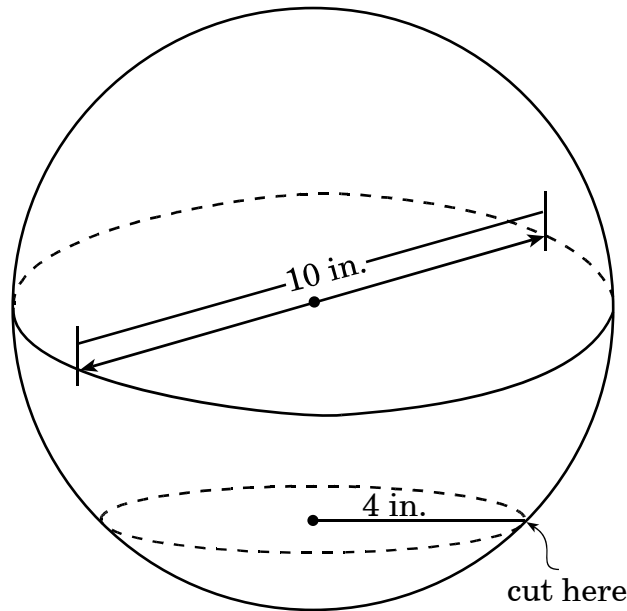
10. Jill wants to measure the width of a river. She marks distances as shown in the diagram.



Using this information, what is the **approximate** width of the river?

- A 6.6 yards
- B 10 yards
- C 12.8 yards
- D 15 yards

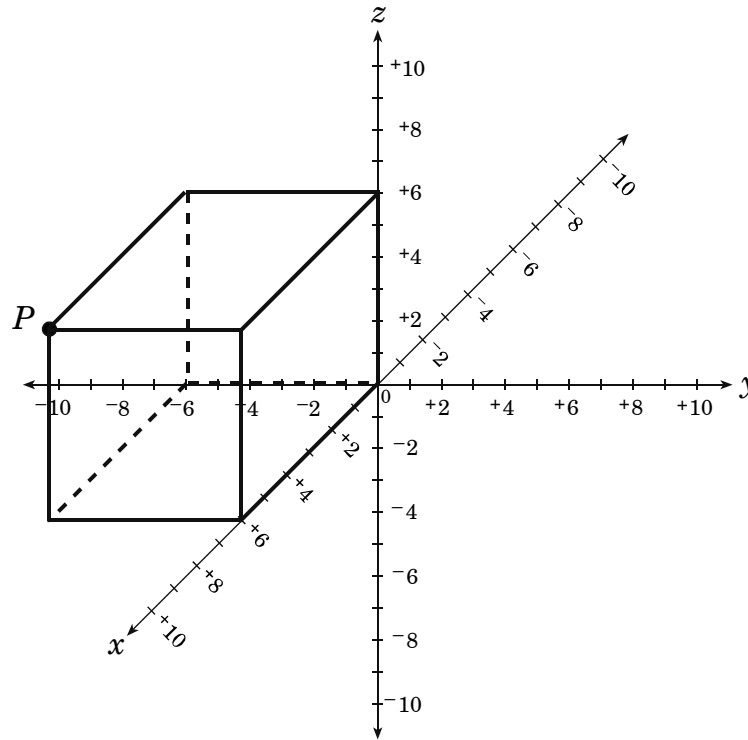
11. A spherical foam ball, 10 inches in diameter, is used to make a tabletop decoration for a party. To make the decoration sit flat on the table, a horizontal slice is removed from the bottom of the ball, as shown below.



If the radius of the flat surface formed by the cut is 4 inches, what is the height of the decoration?

- A 10 in.
- B 8 in.
- C 6 in.
- D 4 in.

12. In the picture below, what are the coordinates of  $P$ ?



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

13. What is the *approximate* surface area of a regular tetrahedron with edge length 12 cm?
- A 166.3 sq cm
- B 187.1 sq cm
- C 249.4 sq cm
- D 498.8 sq cm

### End of Goal 2 Sample Items

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## Answers to EOC Mathematics Geometry Sample Items

### Goal 2

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- 1. Objective 2.01**  
Use logic and deductive reasoning to draw conclusions and solve problems.  
**Thinking Skill:** Analyzing                      **Correct Answer:** C
- 2. Objective 2.01**  
Use logic and deductive reasoning to draw conclusions and solve problems.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 3. Objective 2.01**  
Use logic and deductive reasoning to draw conclusions and solve problems.  
**Thinking Skill:** Analyzing                      **Correct Answer:** A
- 4. Objective 2.02**  
Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.  
**Thinking Skill:** Applying                      **Correct Answer:** D
- 5. Objective 2.02**  
Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.  
**Thinking Skill:** Applying                      **Correct Answer:** D
- 6. Objective 2.02**  
Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 7. Objective 2.03**  
Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: a) Triangles b) Quadrilaterals c) Other Polygons d) Circles  
**Thinking Skill:** Analyzing                      **Correct Answer:** B
- 8. Objective 2.03**  
Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: a) Triangles b) Quadrilaterals c) Other Polygons d) Circles  
**Thinking Skill:** Analyzing                      **Correct Answer:** C

## Answers to EOC Mathematics Geometry Sample Items

### Goal 2

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**9. Objective 2.03**

Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: a) Triangles b) Quadrilaterals c) Other Polygons d) Circles

**Thinking Skill:** Applying

**Correct Answer:** B

**10. Objective 2.03**

Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs: a) Triangles b) Quadrilaterals c) Other Polygons d) Circles

**Thinking Skill:** Applying

**Correct Answer:** D

**11. Objective 2.04**

Develop and apply properties of solids to solve problems.

**Thinking Skill:** Integrating

**Correct Answer:** B

**12. Objective 2.04**

Develop and apply properties of solids to solve problems.

**Thinking Skill:** Organizing

**Correct Answer:** D

**13. Objective 2.04**

Develop and apply properties of solids to solve problems.

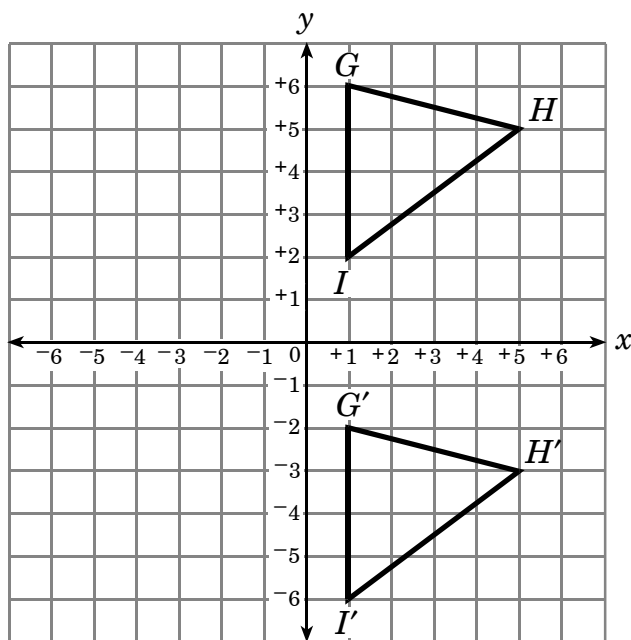
**Thinking Skill:** Applying

**Correct Answer:** C

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?

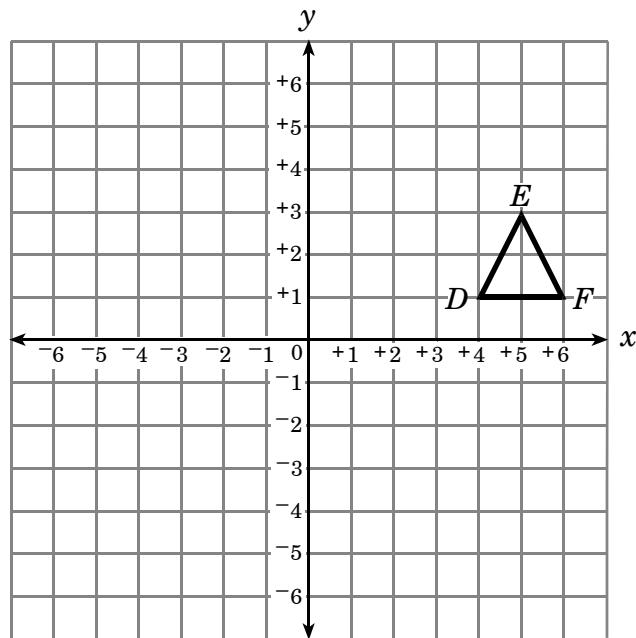
A  $\left(-\frac{7}{3}, \frac{13}{3}\right)$

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