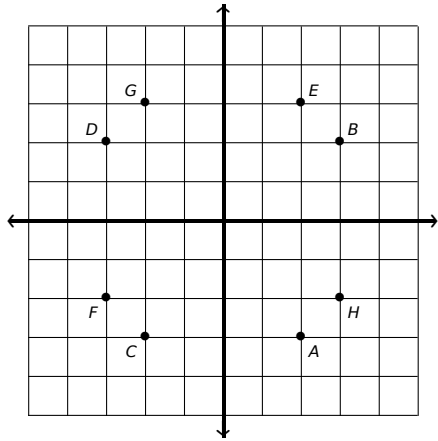# TRANSFORMATIONS 1

Name: _____   **Date:** _____

1. What is the image of point A after a rotation of $90°$ in the clockwise direction?

A. B **B.** D **C.** E **D.** F

2. What is the image of point A after a rotation of $180°$ in the counterclockwise direction?

F. C **G.** D **H.** F **J.** G

3. What is the image of $(-2, 3)$ after a rotation of $90°$ counterclockwise?

A. $(3, 2)$ **B.** $(2, 3)$

C. $(3, -2)$ **D.** $(-3, -2)$

4. What is the image of $(-4, 1)$ after a rotation of $180°$ clockwise?

F. $(1, 4)$ **G.** $(4, -1)$ **H.** $(4, 1)$ **J.** $(1, -4)$

5. Find the image of the point $(5, 3)$ after a $90°$ counterclockwise rotation.

A. $(-3, 5)$ **B.** $(-3, -5)$

C. $(3, -5)$ **D.** $(5, -3)$

6. Select the letters that would appear the same after a $180°$ rotation about the center.

I.   A

II. H

III. R

IV. S

F. I only   **G.** II only

H. I and III   **J.** II and IV

7. A point $(2, 2)$ is reflected over the y-axis. What are the coordinates of the image point?

A. $(-2, 2)$ **B.** $(2, -2)$

C. $(-2, -2)$ **D.** $(2, 0)$

8. What are the coordinates of the image of $P(3, -4)$ under a reflection in the x-axis?

F. $(3, -4)$ **G.** $(-3, 4)$ **H.** $(3, 4)$ **J.** $(-3, 4)$

9. Find Q', the image of $Q(2, -3)$, after a reflection across the line $y = x$.

A. $(-2, -3)$ **B.** $(-3, -2)$

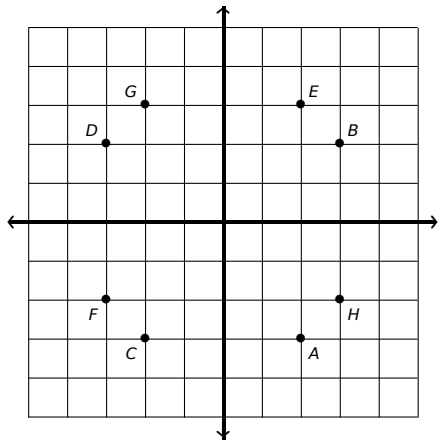**C.** $(-3, 2)$ **D.** $(3, -2)$

10. What is the image of the point $(4, -3)$ under a reflection across the origin?

F. $(-4, 3)$ **G.** $(-4, -3)$ **H.** $(3, -4)$ **J.** $(-3, 4)$

11. If $Q(4, 2)$ is reflected on the point $(0, 2)$, what are the coordinates of Q', the image of Q?

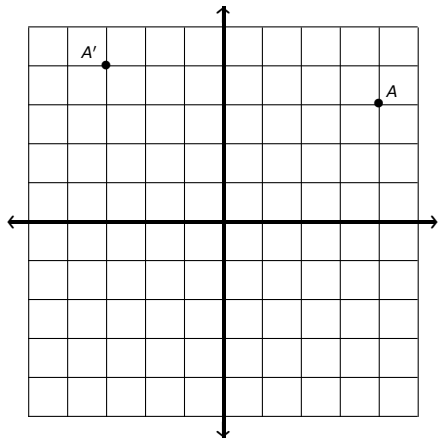**A.** $(0, -8)$ **B.** $(2, -4)$ **C.** $(-4, 2)$ **D.** $(8, 0)$

12. What is the image of point *A* after a rotation of 90° in the counterclockwise direction followed by a reflection in the *x*-axis?

F. *D*   **G.** *E*   **H.** *G*   **J.** *H*

13. *A′* is the image of *A*. Which of the following rotations could be used to perform this transformation?

    I.   90° counterclockwise

    II. 90° clockwise

    III. 270° clockwise

    IV. 270° counterclockwise

A. I only   **B.** IV only

C. I and II   **D.** I and III

14. What are the coordinates of (2, 3) after a translation down 3 units and then a rotation of 180° in a clockwise direction about (0, 0)?

F. (0, 2)   **G.** (0, −2)   **H.** (−2, 0)   **J.** (2, 0)

15. What are the coordinates of (2, 3) after a translation 2 units left and then a rotation of 90° in a counterclockwise direction about (0, 0)?

**A.** (0, 3)   **B.** (0, −2)   **C.** (−3, 0)   **D.** (3, 0)

16. Reflect the point (−1, 2) across the line *x* = 3, then translate it vertically two units in the negative direction. What are the intermediate and the final coordinates, respectively?

F. (−1, 4), (−1, 2)   **G.** (−1, 4), (−3, 4)

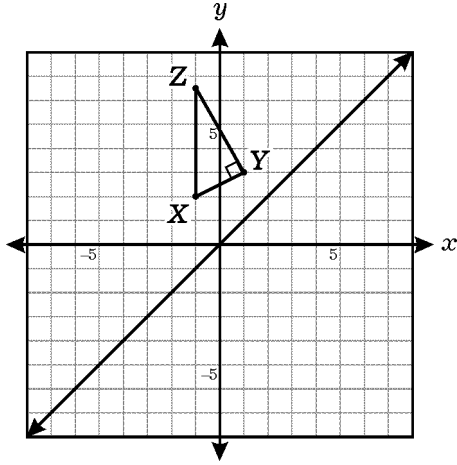**H.** (5, 2), (5, 0)   **J.** (7, 2), (7, 0)

17. What is the image of point *A*(2, −3) after these three transformations?

    I.   a translation 2 units to the left and 5 units up;

    II. A reflection in the *x*-axis; and

    III. A 180° clockwise rotation about the origin
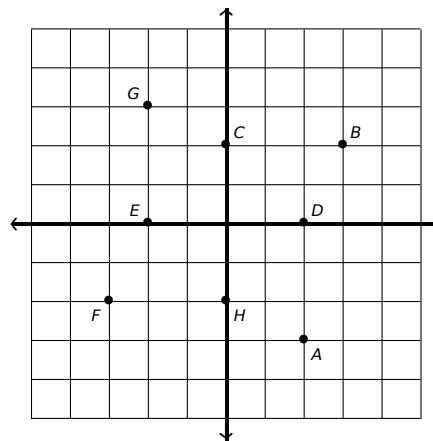
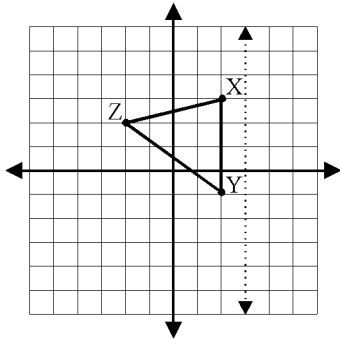**A.** *C*   **B.** *E*   **C.** *G*   **D.** *H*

18. In the coordinate plane, right triangle *XYZ* is reflected over the line $y = x$.

If the reflected image is triangle *X'Y'Z'*, what are the coordinates of right angle *Y'*?

F. $(3, 1)$ **G.** $(3, 0)$ **H.** $(1, -3)$ **J.** $(1, -2)$

19. If the triangle *XYZ* is reflected about the vertical line $x = 3$, what are the new coordinates for *Z'*?

A. $(2, -2)$

B. $(2, 2)$
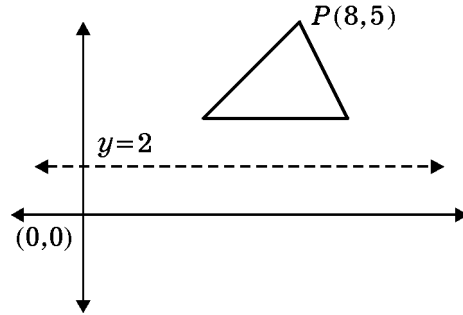
C. $(8, -2)$

D. $(8, 2)$

20. If the trapezoid *ABCD* is reflected about the dashed line, what are the new coordinates for *D'*?
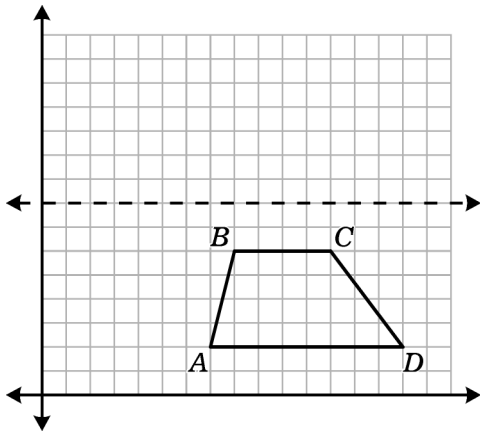
F. $(7, -2)$ **G.** $(7, 14)$ **H.** $(15, -2)$ **J.** $(15, 14)$

21. A machinist cutting a metal die wants to reflect triangle *PQR* across the dotted line to form triangle *P'Q'R'*. What will be the coordinates of *P'*?

A. $(8, -1)$ **B.** $(5, -1)$ **C.** $(8, -2)$ **D.** $(8, -5)$

22. Jasmine is going to rotate the triangle one-quarter turn clockwise (90°), rotating about point *D*. What is the new coordinate for point *E'*?

F. $(2, 3)$

G. $(5, -5)$

H. $(6, 2)$

J. $(-5, 5)$
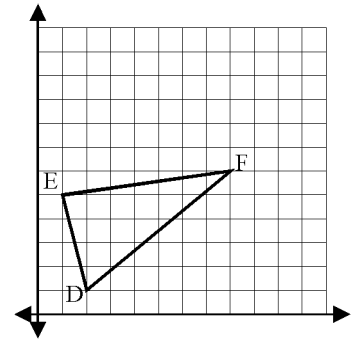
23.
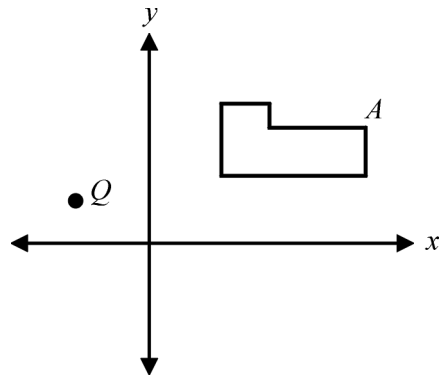
A figure lies on a coordinate plane with point *A* located at $(4, 3)$. The figure is rotated 270° clockwise around a point *Q*, which is located at $(-2, 2)$. What will be the coordinates of *A'*?

A. $(-3, 4)$ **B.** $(-3, 8)$ **C.** $(6, 1)$ **D.** $(-1, 6)$

TRANSFORMATIONS 1

24. $\triangle ABC$, with vertices $A(2, 0)$, $B(3, 2)$ and $C(3, -1)$, is rotated $90°$ clockwise about the origin. What are the coordinates of the vertices of the rotated triangle?

F. $A'(0, 2)$, $B'(2, 3)$, $C'(-1, 3)$

G. $A'(0, 2)$, $B'(-2, -3)$, $C'(1, -3)$

H. $A'(0, -2)$, $B'(2, -3)$, $C'(-1, -3)$

J. $A'(0, -2)$, $B'(-2, 3)$, $C'(1, 3)$

25. Which set of coordinates provide the vertices for a $90°$ rotation of $\triangle ABC$ about point A?

A. $A(-3, 2)$, $B(-1, 2)$, $C(1, 1)$

B. $A(-3, 2)$, $B(-3, 0)$, $C(0, 0)$

C. $A(-3, -2)$, $B(-1, -2)$, $C(-1, 1)$

D. $A(-1, 4)$, $B(-1, 2)$, $C(2, 2)$

26. A triangle is in the first quadrant of an *x-y* coordinate system, as shown here:

The triangle is reflected across the *x*-axis, then it is reflected across the *y*-axis. Which of these transformations will put it back in its original position (with the same orientation it had originally)?

   I.   a reflection across the line $y = -x$

   II. a reflection across the *y*-axis, then a clockwise rotation of $90°$ about the origin

   III. a reflection across the *x*-axis, then a reflection across the *y*-axis

F. I only   **G.** III only

H. II and III only   **J.** I and III only

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1.
Answer: D
Objective: G.CO.2

2.
Answer: J
Objective: G.CO.2

3.
Answer: D
Objective: G.CO.2

4.
Answer: G
Objective: G.CO.2

5.
Answer: A
Objective: G.CO.2

6.
Answer: J
Objective: G.CO.2

7.
Answer: A
Objective: G.CO.2

8.
Answer: H
Objective: G.CO.2

9.
Answer: C
Objective: G.CO.2

10.
Answer: F
Objective: G.CO.2

11.
Answer: C
Objective: G.CO.2

12.
Answer: J
Objective: G.CO.2

13.
Answer: D
Objective: G.CO.2

14.
Answer: H
Objective: G.CO.2

15.
Answer: C
Objective: G.CO.2

16.
Answer: J
Objective: G.CO.2

17.
Answer: A
Objective: G.CO.2

18.
Answer: F
Objective: G.CO.2

19.
Answer: D
Objective: G.CO.2

20.
Answer: J
Objective: G.CO.2

21.
Answer: A
Objective: G.CO.2

22.
Answer: H
Objective: G.CO.2

23.
Answer: B
Objective: G.CO.2

24.
Answer: H
Objective: G.CO.2

25.
Answer: B
Objective: G.CO.2

26.
Answer: G
Objective: G.CO.5