

TEST NAME: **G4**
TEST ID: **379768**
GRADE: **08**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student: _____

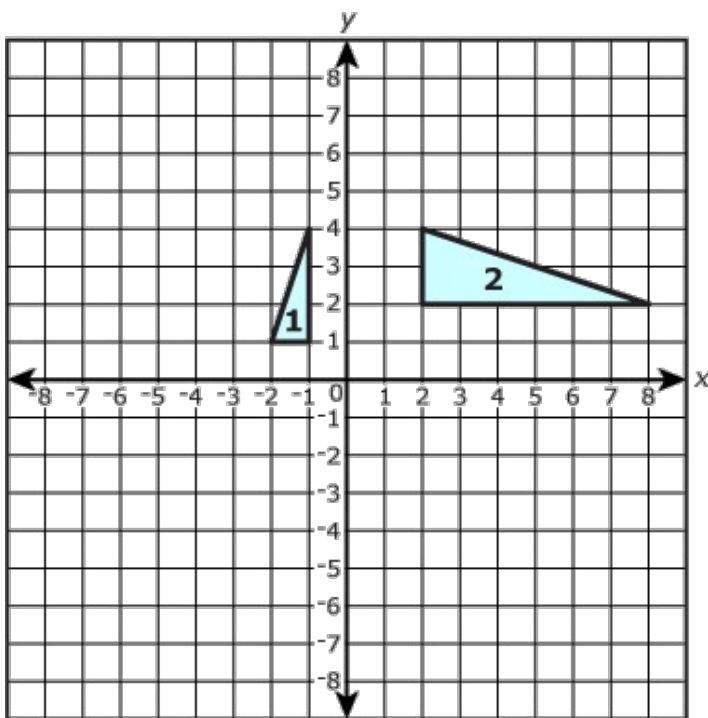
Class: _____

Date: _____

1. A figure is dilated with the center at the origin and a scale factor of $\frac{1}{4}$. Which statement is true?

- A. The coordinates are decreased by 4.
- B. The coordinates are increased by 4.
- C. The coordinates are multiplied by 4.
- D. The coordinates are divided by 4.

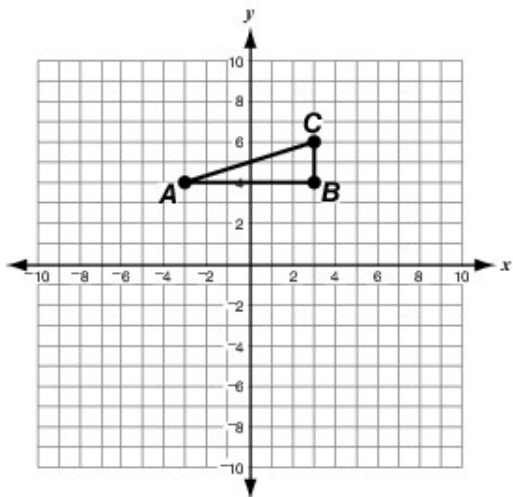
2. Figure 2 is a transformation of figure 1.



Which description shows the sequence of transformations?

- A. clockwise rotation around the origin of 90° followed by a dilation with a scale factor of $\frac{1}{2}$
- B. clockwise rotation around the origin of 90° followed by a dilation with a scale factor of 2
- C. reflection over the y -axis followed by a dilation with a scale factor of $\frac{1}{2}$
- D. reflection over the y -axis followed by a dilation with a scale factor of 2

3. Triangle ABC is shown below.



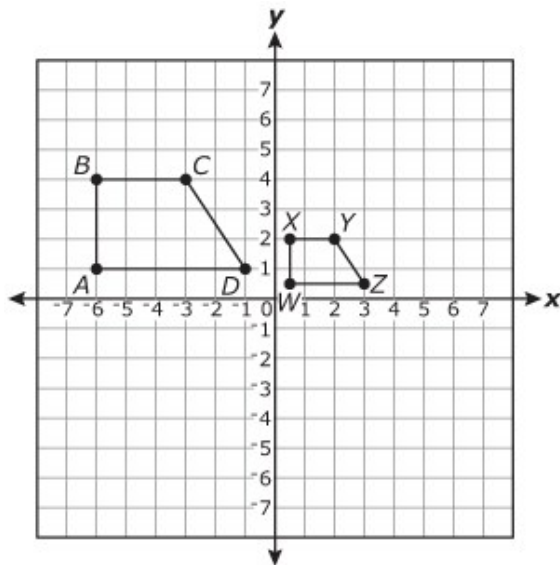
Another triangle, $A'B'C'$, has the coordinates $A'(10, 8)$, $B'(-2, 8)$, and $C'(-2, 12)$.

Part A. What is the relationship of triangle $A'B'C'$ and triangle ABC ?

Part B. Write a series of transformations that proves your answer in part A.

Use words, numbers, and/or pictures to show your work.

4. Trapezoid $ABCD$ is similar to Trapezoid $WXYZ$.

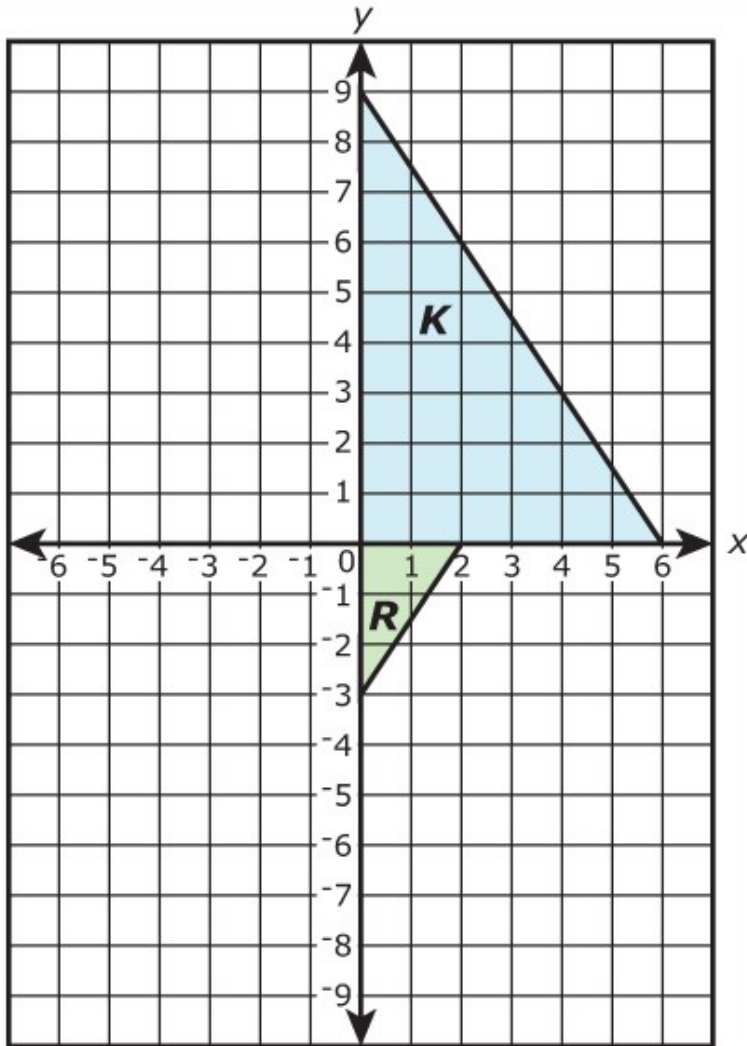


Which sequence of transformations exhibits the similarity between Trapezoid $ABCD$ and Trapezoid $WXYZ$?

- A. Dilate Trapezoid $ABCD$ by a scale factor of $\frac{1}{2}$ centered at the origin, then translate the resulting figure 7 units to the right.
- B. Dilate Trapezoid $ABCD$ by a scale factor of 2 centered at the origin, then translate the resulting figure 7 units to the right.
- C. Translate Trapezoid $ABCD$ 7 units to the right, then dilate the resulting figure by a scale factor of $\frac{1}{2}$ centered at the origin.
- D. Translate Trapezoid $ABCD$ 7 units to the right, then dilate the resulting figure by a scale factor of 2 centered at the origin.

5. Polygons $ABCD$ and $A'B'C'D'$ have the following coordinates:
 $A(0, 2), B(6, 0), C(0, -2), D(-6, 0)$ and $A'(1, 0), B'(0, -3), C'(-1, 0), D'(0, 3)$. Which series of transformations prove that the polygons $ABCD$ and $A'B'C'D'$ are similar?
- A dilating $ABCD$ with a scale factor of 2 and then rotating 90° clockwise
 - B dilating $ABCD$ with a scale factor of $\frac{1}{2}$ and then rotating 90° clockwise
 - C dilating $ABCD$ with a scale factor of 2 and then rotating 180° clockwise
 - D dilating $ABCD$ with a scale factor of $\frac{1}{2}$ and then rotating 180° clockwise
6. The vertices of Figure A are located at $(-9, 4), (-3, 6), (-2, 3)$, and $(-8, 1)$ on a coordinate plane. Figure A is transformed to Figure B by rotating the figure 90° clockwise about the origin, translating it 8 units left and 4 units down, and then dilating from the origin by a scale factor of 2. Which ordered pair will be a vertex on Figure B?
- A $(-8, 10)$
 - B $\left(-2, \frac{5}{2}\right)$
 - C $\left(-\frac{9}{2}, -6\right)$
 - D $(-22, -12)$

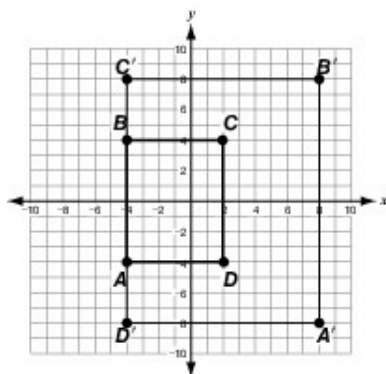
7. Triangle K and Triangle R are graphed on the coordinate plane.



What sequence of transformations maps Triangle K to Triangle R ?

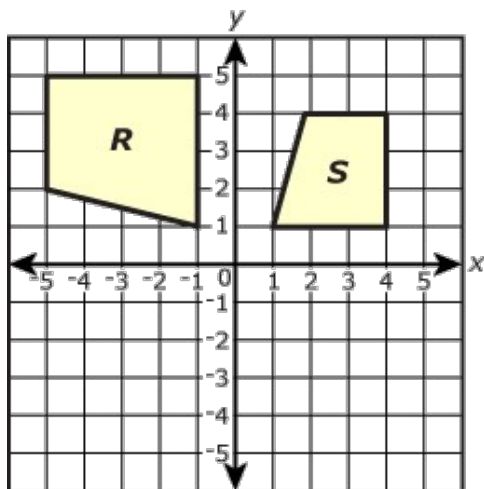
- A. rotation of 90° clockwise around the origin and a dilation with the center at the origin and a scale factor of 3
- B. rotation of 90° clockwise around the origin and a dilation with the center at the origin and a scale factor of $\frac{1}{3}$
- C. reflection over the x -axis and a dilation with the center at the origin and a scale factor of $\frac{1}{3}$
- D. reflection over the x -axis and a dilation with the center at the origin and a scale factor of 3

8. Which sequence exhibits the similarity between rectangles $ABCD$ and $A'B'C'D'$ shown in the coordinate plane below?



- A. Rectangle $ABCD$ is reflected across the x -axis and then dilated by a scale factor of 2 with the center at the origin to obtain rectangle $A'B'C'D'$.
- B. Rectangle $ABCD$ is reflected across the y -axis and then dilated by a scale factor of 2 with the center at the origin to obtain rectangle $A'B'C'D'$.
- C. Rectangle $ABCD$ is reflected across the x -axis and then translated 4 units to the right and 4 units down to obtain rectangle $A'B'C'D'$.
- D. Rectangle $ABCD$ is reflected across the y -axis and then translated 4 units to the right and 4 units up to obtain rectangle $A'B'C'D'$.

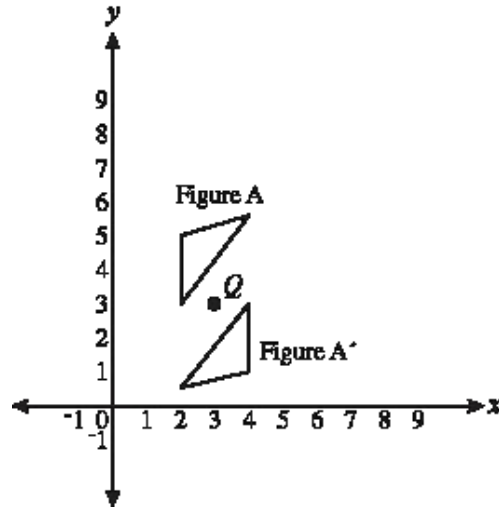
9. In the coordinate grid, figure S is a transformation of figure R.



Which scale factor was used in the transformation?

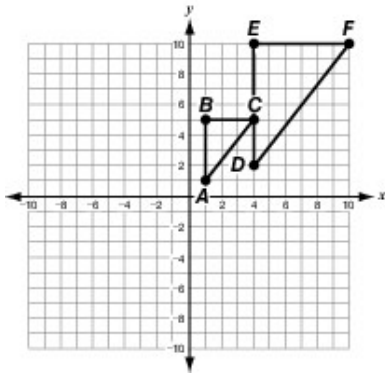
- A. $\frac{1}{4}$
- B. $\frac{3}{4}$
- C. $\frac{4}{3}$
- D. 4

10. Which single transformation performed on Figure A results in Figure A'?



- A. Rotation about point Q
- B. Reflection across point Q
- C. Translation with a midpoint at point Q
- D. Dilation with a positive scale, with center of dilation at point Q

11. Use the image to answer the questions below.



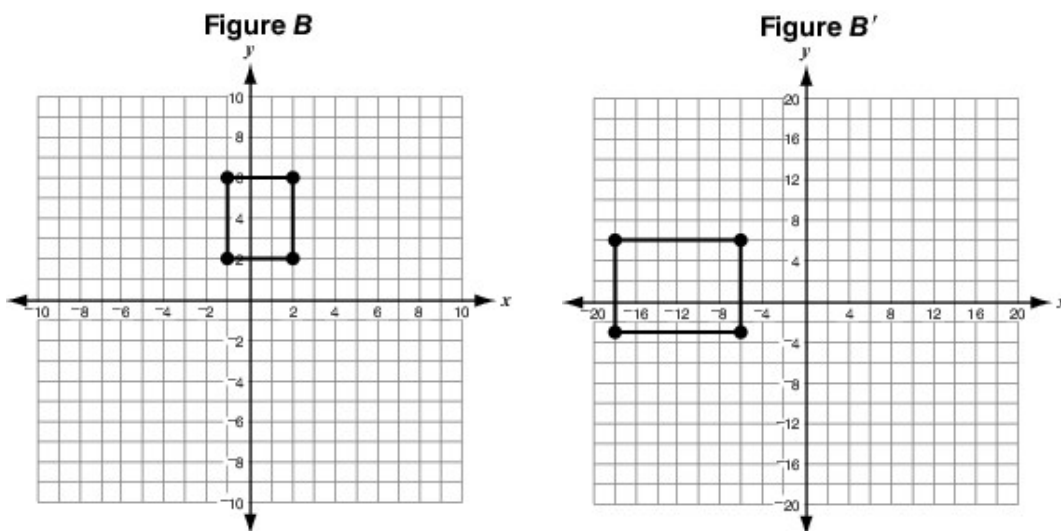
Part A. Describe the sequence of transformations on triangle ABC that results in triangle DEF .

Part B. Is $\triangle ABC \sim \triangle DEF$? Verify your answer by checking the proportionality of their side lengths.

Part C. Draw a triangle, XYZ , that lies in Quadrant IV and is similar but not congruent to the triangle ABC and describe the transformations that resulted in XYZ .

Use words, numbers, and/or pictures to show your work.

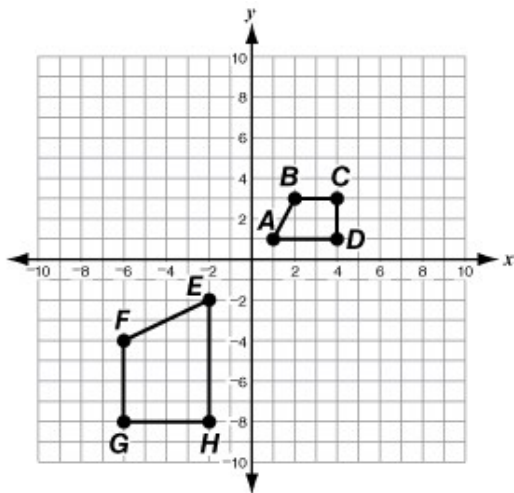
12. A dilation and a rotation of figure B resulted in figure B' shown below.



Which of these statements is **true**?

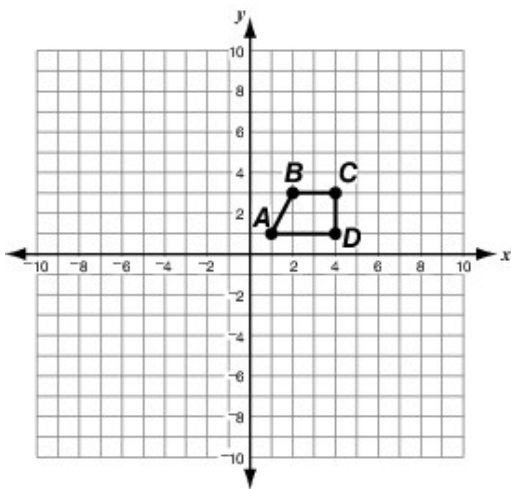
- A. Figure B' is similar and congruent to figure B .
- B. Figure B' is similar but not congruent to figure B .
- C. Figure B' is congruent but not similar to figure B .
- D. Figure B' is neither similar nor congruent to figure B .

13. Part A. Polygon $ABCD$ and polygon $EFGH$ are shown on the coordinate grid below. What sequence of transformations produces polygon $EFGH$ from polygon $ABCD$?



Part B. Are polygon $EFGH$ and polygon $ABCD$ similar? Explain why or why not.

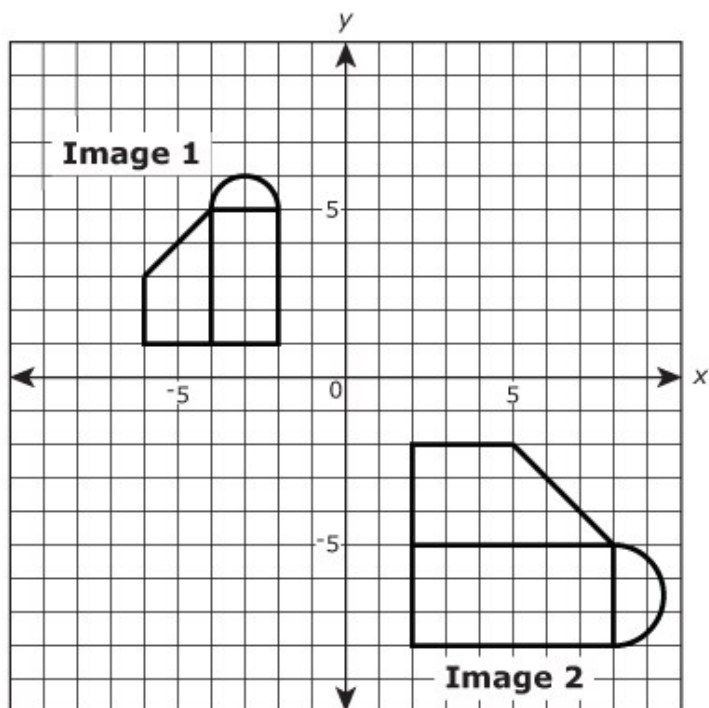
Part C. Polygon $ABCD$ is rotated 90° clockwise about the origin, translated 4 units left, and then reflected across the x -axis to produce polygon $PQRS$. Draw polygon $PQRS$ on the coordinate plane below.



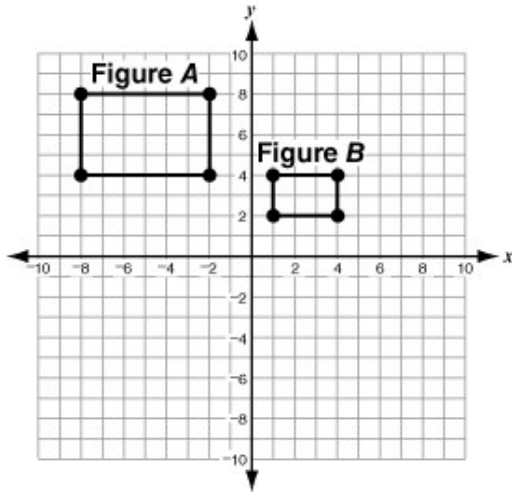
Part D. Are polygon $PQRS$ and polygon $ABCD$ similar? Explain why or why not.

Use words, numbers, and/or pictures to show your work.

14. Describe a sequence of transformations (translations, rotations, reflections, and dilations) that shows Image 1 is similar to Image 2.

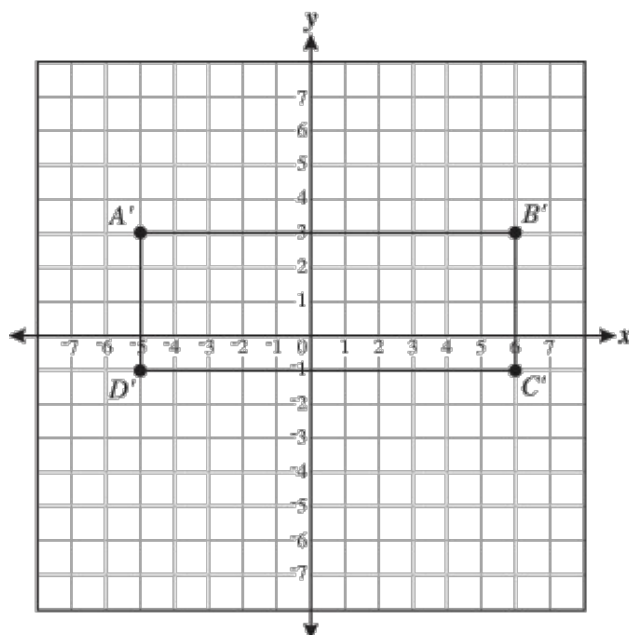


15. Which sequence of transformations can be used to prove that the rectangle in figure A is similar to the rectangle in figure B in the coordinate plane below?



- A. dilation by a scale factor of 2 from the origin and translation 4 units to the left
- B. dilation by a scale factor of 2 from the origin and reflection across the y -axis
- C. dilation by a scale factor of 0.5 from the origin and translation 2 units to the right
- D. dilation by a scale factor of 0.5 from the origin and reflection across the y -axis

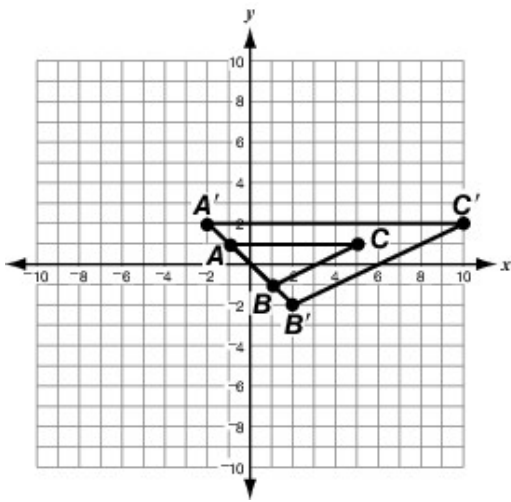
16. Rectangle $ABCD$, in the x - y coordinate plane, is rotated 45 degrees counter-clockwise about the origin and then dilated by a factor of 2, centered at the origin. The resulting rectangle, Rectangle $A'B'C'D'$, is shown below.



Which whole number represents the area, in square units, of Rectangle $ABCD$?

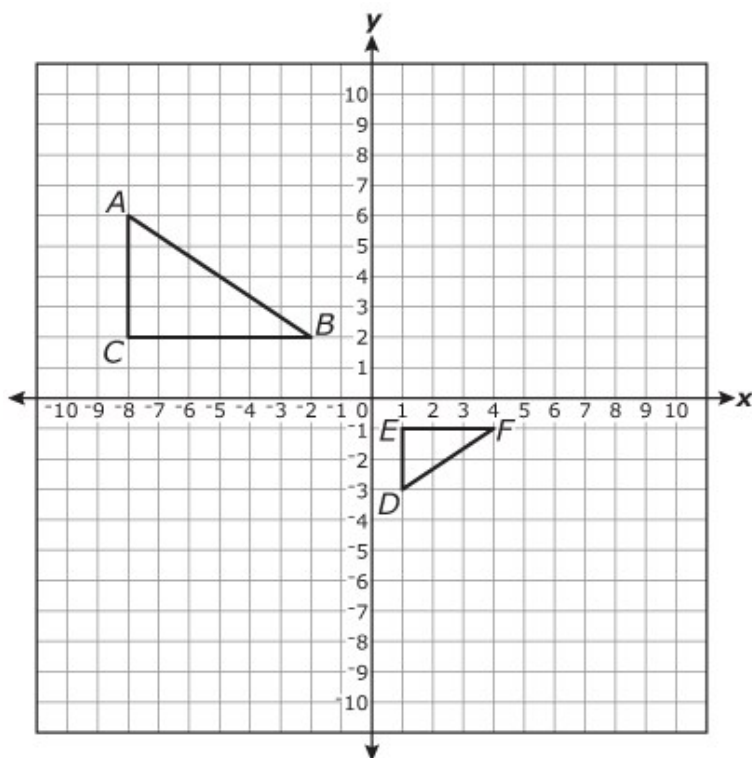
- A. 11
 - B. 22
 - C. 44
 - D. 88
17. The vertices of a triangle are $A(3, 6)$, $B(6, 9)$, and $C(9, 3)$. The triangle is dilated about the origin by a scale factor of $\frac{1}{3}$, and then translated 2 units left and 3 units down. What are the coordinates of the similar triangle $A'B'C'$ that is created through this series of transformations?
- A. $A'(-2, 0)$, $B'(-1, -1)$, and $C'(0, -1)$
 - B. $A'(-1, -1)$, $B'(0, 0)$, and $C'(1, -2)$
 - C. $A'(1, 2)$, $B'(2, 3)$, and $C'(3, 1)$
 - D. $A'(1, 3)$, $B'(4, 6)$, and $C'(7, 0)$

18. Which transformation exhibits the similarity of triangles ABC and $A'B'C'$ shown below?



- A. Triangle $A'B'C'$ is the dilated image of triangle ABC .
- B. Triangle $A'B'C'$ is the rotated image of triangle ABC .
- C. Triangle $A'B'C'$ is the reflected image of triangle ABC .
- D. Triangle $A'B'C'$ is the translated image of triangle ABC .

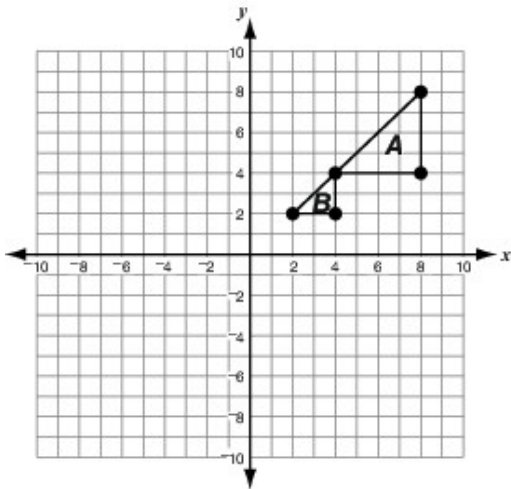
19. $\triangle ABC$ and $\triangle DEF$ are shown on the coordinate grid below.



Which series of transformations describes one way that $\triangle DEF$ could be transformed to produce $\triangle ABC$?

- A. a dilation from the origin using a scale factor of 2, a reflection across the x -axis, and then a translation 10 units to the left
- B. a dilation from the origin using a scale factor of 3, a reflection across the x -axis, and then a translation 10 units to the left
- C. a dilation from the origin using a scale factor of 2, a reflection across the y -axis, and then a translation 4 units up
- D. a dilation from the origin using a scale factor of 3, a reflection across the y -axis, and then a translation 4 units up

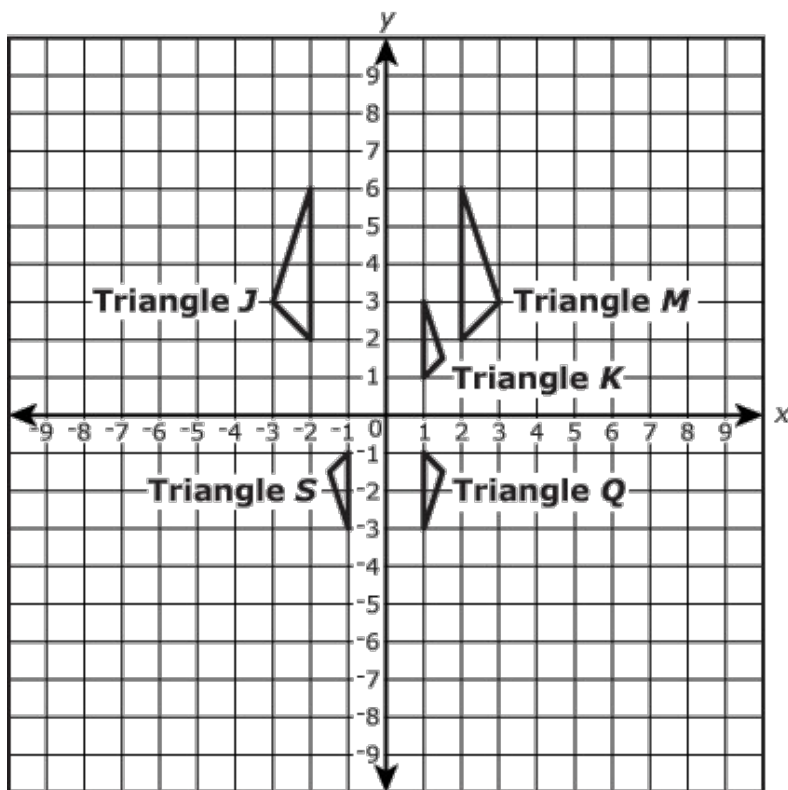
20. The vertices of figure *A* are $(-1, -1)$, $(-4, -2)$, $(-3, -4)$, $(-1, -3)$ and the vertices of figure *B* are $(4, 4)$, $(8, 16)$, $(16, 12)$, $(12, 4)$. Which sequence of transformations produces figure *B* from figure *A*?
- A. reflect across the y -axis, rotate 90° clockwise about the origin, and then dilate by a scale factor of $\frac{1}{4}$ centered at the origin
- B. dilate by a scale factor of $\frac{1}{4}$ centered at the origin, reflect across the x -axis, and then rotate 90° clockwise about the origin
- C. reflect across the x -axis, rotate 90° counterclockwise about the origin, and then dilate by a scale factor of 4 centered at the origin
- D. dilate by a scale factor of 4 centered at the origin, reflect across the y -axis, and then rotate 90° counterclockwise about the origin
21. Which statement can be used to prove that triangle *A* is similar to triangle *B*, shown on the coordinate plane below?



- A. Triangle *A* is dilated from the origin by a scale factor of 2 to obtain triangle *B*.
- B. Triangle *A* is dilated from the origin by a scale factor of $\frac{1}{2}$ to obtain triangle *B*.
- C. Triangle *A* is reflected across the line $y = -x + 4$ to obtain triangle *B*.
- D. Triangle *A* is translated 4 units left and 4 units down to obtain triangle *B*.

22. The image of triangle PQR is dilated with the center at the origin and a scale factor of $\frac{1}{2}$. Which statement is true?
- A. The corresponding angles are congruent, but the corresponding sides of the image are $\frac{2}{3}$ times as long as the original triangle.
 - B. The corresponding angles of the image are $\frac{2}{3}$ as large as the original triangle, but the corresponding sides are congruent.
 - C. The corresponding angles are congruent, but the corresponding sides of the image are $\frac{1}{2}$ times as long as the original triangle.
 - D. The corresponding angles of the image are $\frac{1}{2}$ times as large as the original triangle, and the corresponding sides of the image are $\frac{1}{2}$ times as long as the original triangle.

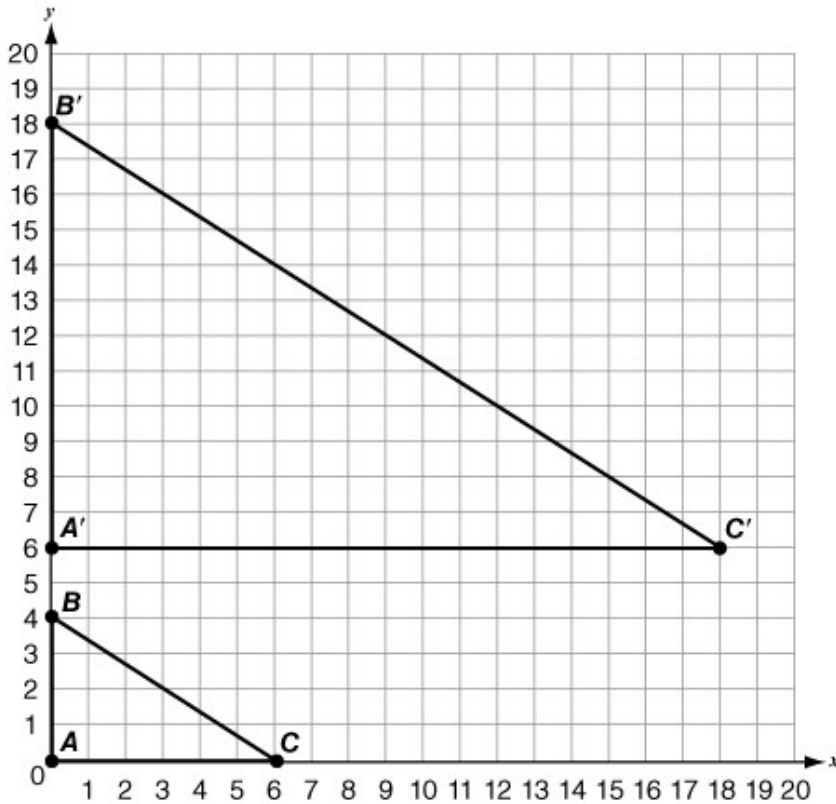
23. In the grid, Triangle *J* is reflected over the *y*-axis and dilated with a scale factor of $\frac{1}{2}$.



Which triangle could be the image of Triangle *J*?

- A. Triangle *K*
- B. Triangle *M*
- C. Triangle *Q*
- D. Triangle *S*

24. Triangle ABC and triangle $A'B'C'$ are shown on the coordinate grid below.



Which statement is **true** of triangles ABC and $A'B'C'$?

- A. The triangles are congruent because triangle $A'B'C'$ can be obtained by translating triangle ABC up 3 units and dilating it by a scale factor of 2 centered at the origin.
- B. The triangles are congruent because triangle $A'B'C'$ can be obtained by translating triangle ABC up 2 units and dilating it by a scale factor of 3 centered at the origin.
- C. The triangles are similar because triangle $A'B'C'$ can be obtained by translating triangle ABC up 3 units and dilating it by a scale factor of 2 centered at the origin.
- D. The triangles are similar because triangle $A'B'C'$ can be obtained by translating triangle ABC up 2 units and dilating it by a scale factor of 3 centered at the origin.