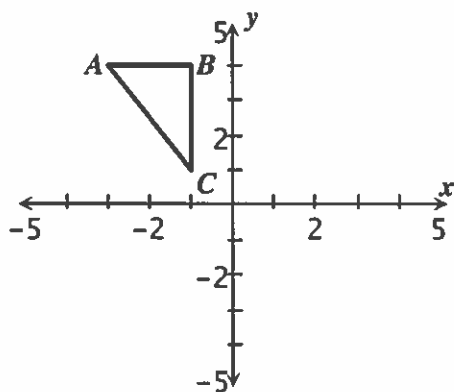


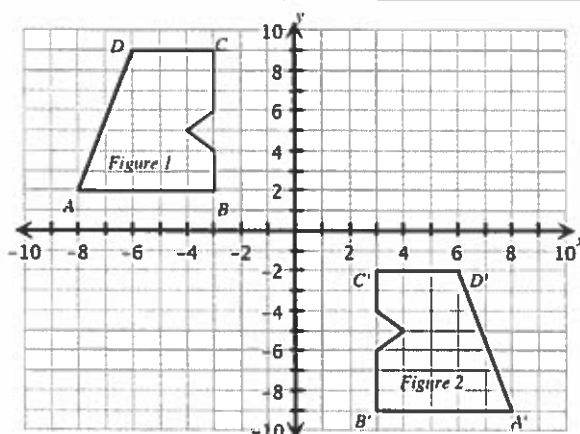
1. The figure above shows a line segment. The line segment is reflected over the  $y$ -axis. What are the coordinates of the endpoints after the reflection?

A.  $(-4, -1)$  &  $(-4, -5)$       B.  $(0, -1)$  &  $(0, -5)$   
C.  $(4, 1)$  &  $(4, 5)$       D.  $(1, 4)$  &  $(5, 4)$

2. Right triangle  $ABC$  is rotated around point  $B$  so that the coordinates of point  $C$  are now  $(2, 4)$ . What are the new coordinates of point  $A$ ?

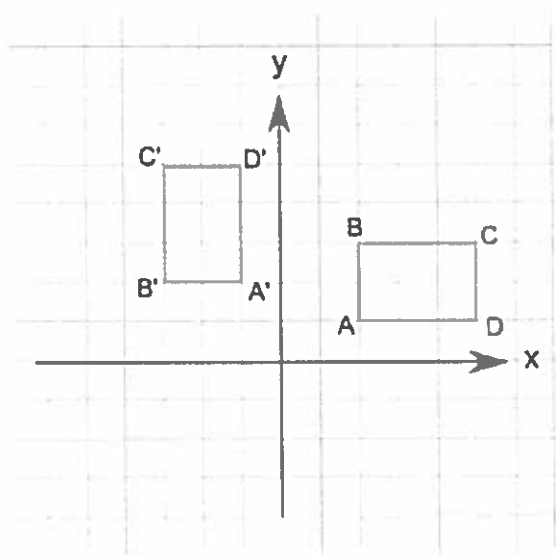


A.  $(-1, 2)$       B.  $(2, 3)$   
C.  $(0, 2)$       D.  $(2, 1)$



3. On the coordinate grid shown above, which two transformations could be used to move *Figure 1* to *Figure 2*?

A. Rotated about vertex  $A$ , then translated down 2 units  
B. Translated down 2 units, then reflected across the  $y$ -axis  
C. Reflected across the  $x$ -axis, then reflected across the  $y$ -axis  
D. Translated down 11 units, then reflected across the  $y$ -axis



4. Rectangle A'B'C'D' is the image of rectangle ABCD after which of the rotations below?
- A. 45 degrees counter clockwise about the origin
  - B. 90 degrees clockwise about the origin
  - C. 180 degrees clockwise about the origin
  - D. 270 degrees clockwise about the origin

**Constructed Response Item. Use the figure below to answer question 5.**

5. Linda graphed a square with an area of 100 square units. He then applied transformations to graph an image square with an area of 49 square units. Could he have used translations, reflections, and rotations to get this image? Justify your response.

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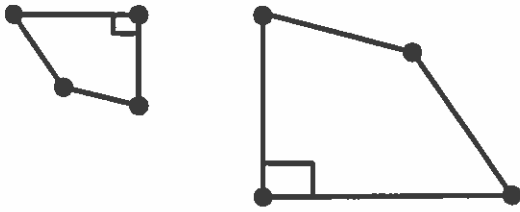
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18



1. The figure above shows two quadrilaterals. Which shows one possible sequence of transformations that would demonstrate the similarity between the two quadrilaterals?

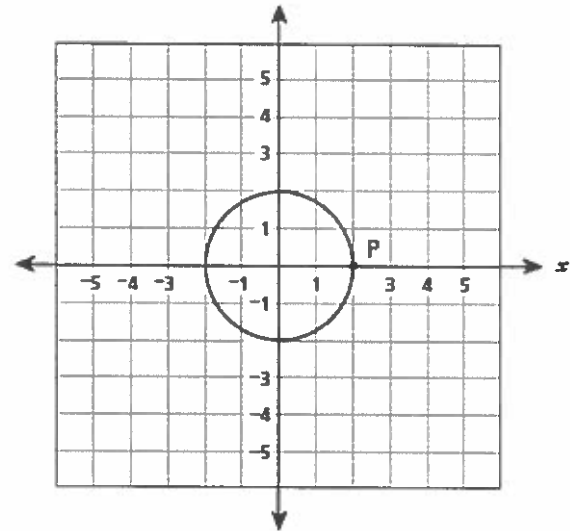
- A. a rotation and a reflection
- B. a reflection and a dilation
- C. a rotation and a dilation
- D. a translation and a reflection

2. Trapezoid ABCD undergoes a dilation by a scale factor of  $\frac{3}{4}$ , followed by a reflection over the y-axis, resulting in trapezoid A'B'C'D'. Which statement about the two rectangles is true?

- A. They are similar and congruent
- B. They are similar but not congruent
- C. They are congruent but not similar
- D. They are neither similar nor congruent

Use the figure below to answer questions 3 & 4

The circle below is centered at the origin & passes through point P at (0, 2)



3. The circle is translated 5 units up and 2 units to the right. What are the coordinates of the image of P?

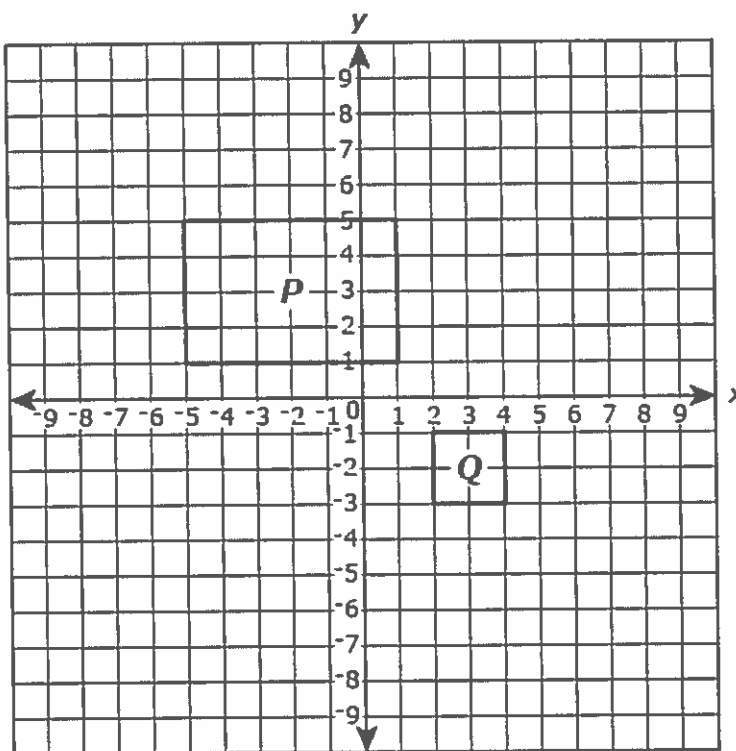
- A. (2, 5)
- B. (5, 0)
- C. (5, 2)
- D. (4, 5)

4. The circle is dilated by a scale factor of 3 with a center of dilation at the origin and then translated 3 units to the left. What are the coordinates of the image of P?

- A. (0, 2)
- B. (0, 3)
- C. (0, 6)
- D. (3, 3)

**Constructed Response Item.** Use the figure below to answer question 5.

Rectangle P and Rectangle Q are graphed on the coordinate grid below.



**Part A:** Describe a sequence of at least 2 transformations to prove or disprove the rectangle P and rectangle Q are similar.

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**Part B:** Rectangle Q is dilated by a scale factor of 4 to form rectangle M. What are the coordinates of the vertices of rectangle M?

**Part C:** The vertices of Rectangle C is (4, 0), (4, 6), (-1, 0), & (-4, 6). Is rectangle C congruent to rectangle P? Explain your answer.

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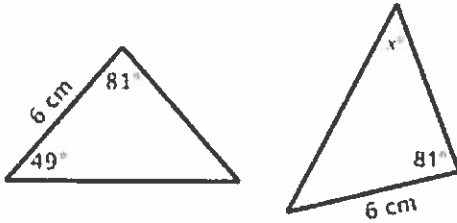
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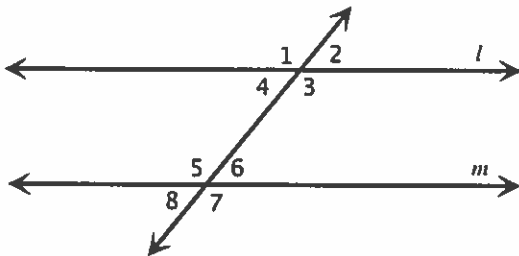




1. The triangles shown above are congruent. The measures of some of the sides and angles are given. What is the value of  $x$ ?

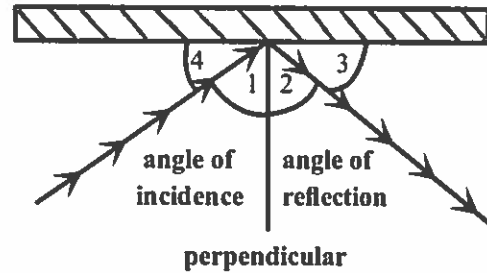
A.  $50^\circ$   
 B.  $49^\circ$   
 C.  $180^\circ$   
 D.  $6^\circ$

In this figure,  $l$  and  $m$  are parallel. Use the figure to answer question 2.

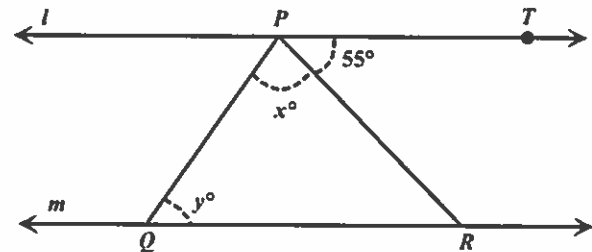


2. Of the following, which pair of angles has the sum of  $180^\circ$ ?
- A.  $\angle 5$  and  $\angle 7$   
 B.  $\angle 3$  and  $\angle 6$   
 C.  $\angle 1$  and  $\angle 7$   
 D.  $\angle 2$  and  $\angle 8$

3. When a ray of light strikes a mirror, the angle of incidence is equal to the angle of reflection, as shown in the diagram. Which angles are complementary angles?



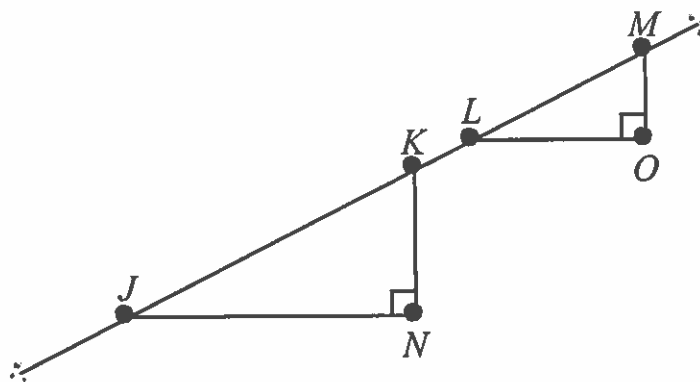
- A.  $\angle 1$  and  $\angle 2$   
 B.  $\angle 3$  and  $\angle 4$   
 C.  $\angle 1$  and  $\angle 4$   
 D.  $\angle 2$  and  $\angle 1$



4. In this figure, line  $l$  is parallel to line  $m$ . The measure of angle  $TPR$  is  $55^\circ$ . What is the value of  $x + y$ ?
- A. 55  
 B. 110  
 C. 125  
 D. 135

**Constructed Response Item.** Use the figure below to answer question 5.

5. In the figure,  $\overline{JN}$  and  $\overline{LO}$  are parallel



Explain why  $\triangle JKN$  and  $\triangle LMO$  are similar triangles.

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