

8.G.4 UNDERSTAND THAT A TWO-DIMENSIONAL FIGURE IS SIMILAR TO ANOTHER IF THE SECOND CAN BE OBTAINED FROM THE FIRST BY A SEQUENCE OF ROTATIONS, REFLECTIONS, TRANSLATIONS, AND DILATIONS. GIVEN TWO SIMILAR FIGURES, DESCRIBE A SEQUENCE THAT EXHIBITS THE SIMILARITY BETWEEN THEM.

Susan has two boxes. Each is 12 cm high, 12 cm long, and 12 cm wide. Which statement describes Susan's boxes?

- A) The boxes are congruent, but not similar.
- B) The boxes are similar, but not congruent.
- C) The boxes are similar and congruent.
- D) The boxes are only similar.

In a coordinate plane, triangle ABC has vertices: A (1, 1), B (1, 5), and C (5, 1).

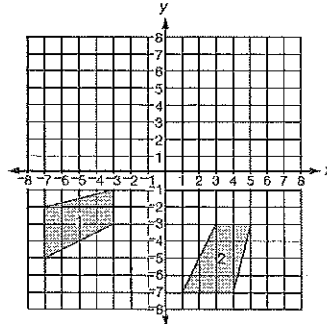
Triangle A'B'C' is then dilated by a scale factor of 2 with the origin at the center of dilation, resulting in triangle A'B'C'.

What is the length, in units, of segment A'B'?

- A) 2
- B) 4
- C) 6
- D) 8

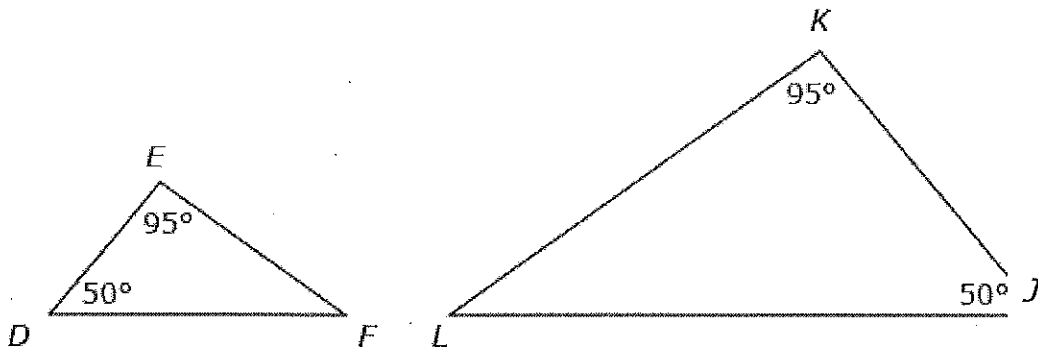
A sequence of transformations is applied to a polygon. Select ALL statements which indicate a sequence of transformations where the resulting polygon has an area greater than the original polygon.

- Reflect over the x-axis, dilate about the origin by a scale factor of  $\frac{1}{2}$ , translate up 5 units.
- Rotate 90° counterclockwise around the origin, dilate about the origin by a scale factor of  $\frac{3}{2}$ .
- Dilate about the origin by a scale factor of  $\frac{2}{3}$ , rotate 180° clockwise around the origin, translate down 2 units.
- Dilate about the origin by a scale factor of 2, reflect over the y-axis, dilate about the origin by a scale factor of  $\frac{2}{3}$ .



Which sequence describes the transformation of figure 1 to figure 2?

- A. Reflect it over the line  $y=-3$ , then rotate it 90° CCW about the origin.
- B. Reflect it over the x-axis, then rotate it 180° about the origin
- C. Rotate it 90° CCW about point (-3,-3), then reflect it over the y axis



Part A: What information is provided to show triangle DEF is similar to triangle JKL?

Since  $\angle D$  is congruent to  $\angle J$  &  $\angle E$  is congruent to  $\angle K$ ,  $\angle F$  must be congruent to  $\angle L$ . Since the angles are congruent, the figures are similar.

Part B: What series of transformations could be used to obtain triangle JKL from DEF?

A reflection & a dilation with a scale factor greater than 1. (enlarged)

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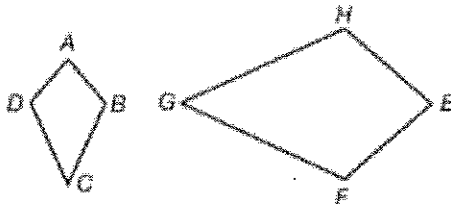
Rectangle R undergoes a dilation with a scale factor of 0.5 and then a reflection over the y-axis. The resulting image is rectangle S. Which statement about rectangles R and S is true?

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

Roger has a 3-inch by 5-inch photograph. He is a good painter and wants to make a painting that looks exactly like the photograph but larger. Which one of the following canvases should he buy for this painting?

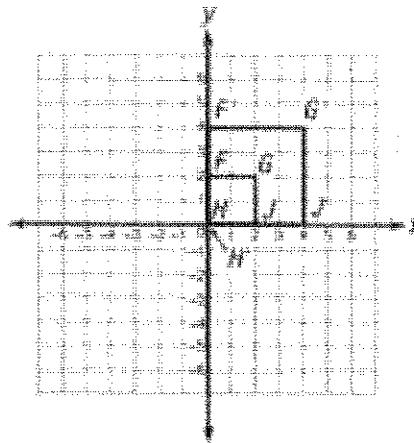
- (A.) 15 inches by 45 inches
- (B.) 18 inches by 20 inches
- (C.) 24 inches by 40 inches
- (D.) 30 inches by 75 inches

Which rigid and non-rigid motions could be performed on kite ABCD to produce kite EFGH?



- (A.) Rotate  $90^\circ$ , then dilate with a scale factor of 2.
- (B.) Rotate  $90^\circ$ , then dilate with a scale factor of  $1/2$ .
- (C.) Translate to the left, then dilate with a scale factor of 2.
- (D.) Translate to the right, then dilate with a scale factor of  $1/2$ .

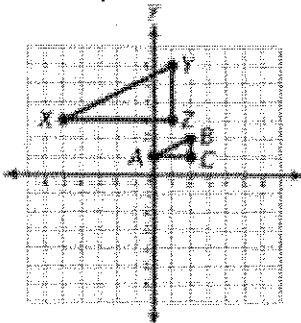
Square FGHI was dilated to form square F'G'H'I'. The center of dilation was at the origin.



What scale factor was used?

- A.  $\frac{1}{2}$
- B.  $\frac{1}{4}$
- (C.) 2
- D. 4

Which sequence of transformations can be used to show that  $\triangle ABC$  is similar to  $\triangle XYZ$ ?



- (A.) dilation of  $\triangle ABC$  by a factor of 2 followed by a translation 5 units to the right
- (B.) dilation of  $\triangle ABC$  by a factor of 3 followed by a translation 5 units to the left
- (C.) dilation of  $\triangle ABC$  by a factor of 2 followed by a translation 2 units up