

Geometry · Dilations and Similarity

Transformations · Test

Common Core G-SRT.A.1, G-SRT.A.2, G-SRT.A.3 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This 45-minute test covers dilations and similarity transformations (G-SRT.A.1 to A.3). It includes scale factors, dilations on the coordinate plane, a similarity sequence and the AA criterion. Write each image point and show your reasoning. The test is worth 20 points.

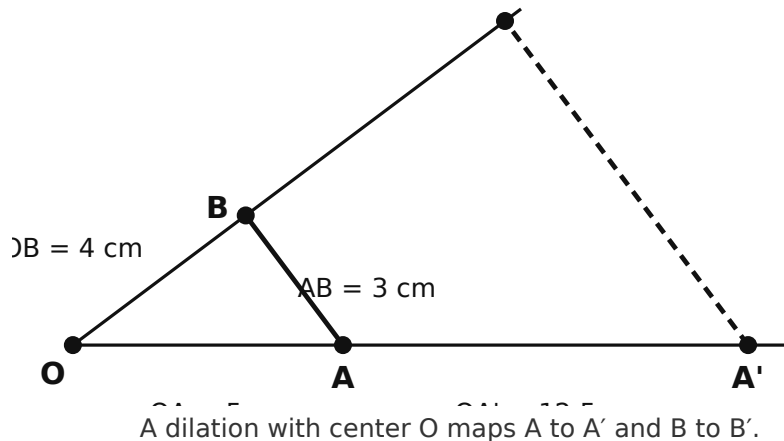
Test information

- **Grade:** Geometry
- **Chapter:** Dilations and Similarity Transformations
- **Common Core:** G-SRT.A.1, G-SRT.A.2, G-SRT.A.3
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 2 pts; Question 5: 2 pts; Question 6: 3 pts; Question 7: 3 pts; Question 8: 2 pts; Question 9: 1 pt)

Question 1: Scale factor and image lengths (2 points)

A dilation with center O maps A to A' and B to B' . In the figure, $OA = 5$ cm, $OA' = 12.5$ cm, $OB = 4$ cm and $AB = 3$ cm.

- Find the scale factor. (1 point)
- Find $A'B'$. (1 point)



Question 2: Dilate points about the origin (2 points)

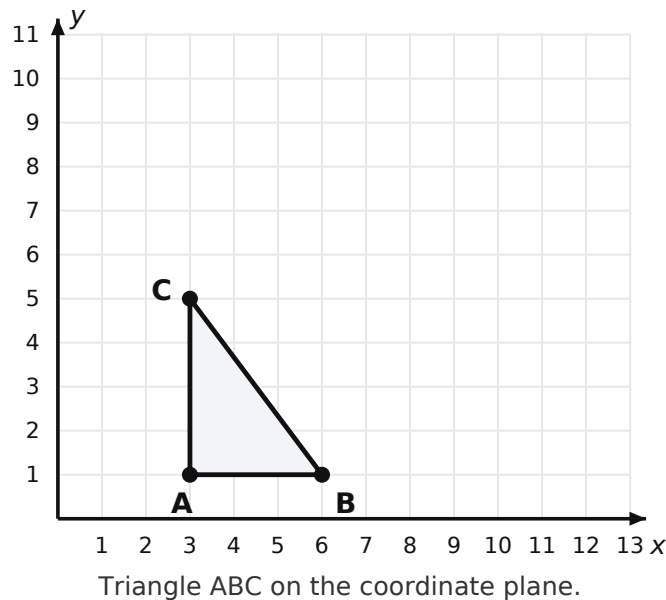
Dilate each point about the origin with the given scale factor and write the image.

- a. $P(4, -6)$, $k = \frac{3}{2}$ (1 point)
- b. $Q(-10, 15)$, $k = 0.4$ (1 point)

Question 3: Dilate a triangle on the plane (3 points)

Triangle ABC is graphed. It is dilated about the origin with scale factor 2 to form $A'B'C'$.

- a. Find the coordinates of the three image vertices. (1 point)
- b. Find BC and $B'C'$. (1 point)
- c. Show that BC and $B'C'$ are parallel. (1 point)



Question 4: Dilating a line (2 points)

Both lines are dilated about the origin with scale factor 4. Write an equation of each image.

- a. $y = -2x + 3$ (1 point)
- b. $y = 3x$ (1 point)

Question 5: Center other than the origin (2 points)

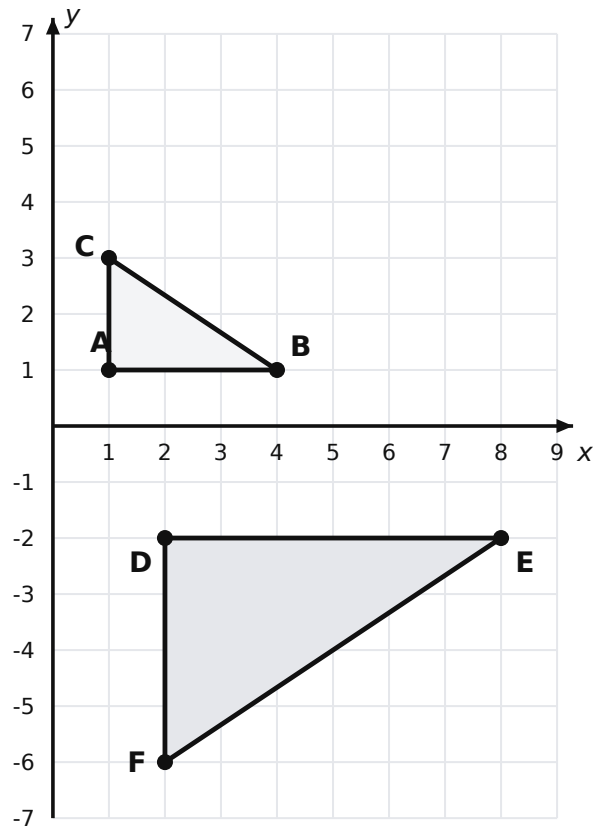
A dilation has center $C(2, 1)$ and scale factor 3. Find the image of each point.

- a. $A(4, 3)$ (1 point)
- b. $B(-1, 0)$ (1 point)

Question 6: Describe a similarity transformation (3 points)

Triangle DEF is the image of triangle ABC under a sequence of transformations.

- Find the scale factor relating DE to AB . (1 point)
- Describe a sequence of a dilation and a rigid motion that maps ABC onto DEF. (1 point)
- Use your sequence to show where C goes. (1 point)

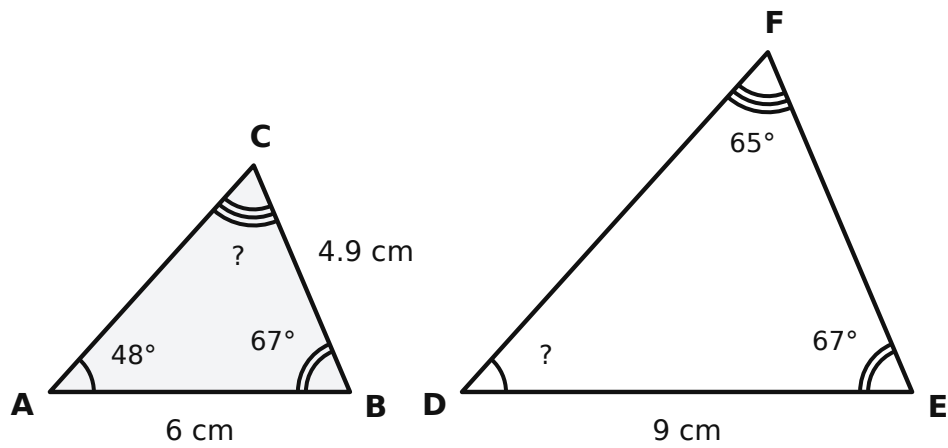


Triangles ABC and DEF on the coordinate plane.

Question 7: AA similarity and a missing side (3 points)

Use the figure.

- Find $m\angle C$ and $m\angle D$. (1 point)
- Are the triangles similar? Name the criterion and write a similarity statement. (1 point)
- Find EF . (1 point)



Triangles ABC and DEF.

Question 8: Poster dilation (2 points)

Sofia enlarges a 5 inch by 7 inch photo into a poster that is 30 inches wide.

- Find the scale factor and the height the poster needs for it to be a dilation of the photo. (1 point)
- The print shop delivers a poster that is 30 inches by 40 inches. Is it a dilation of the photo? Explain. (1 point)

Question 9: Perimeter after a dilation (1 point)

A triangle with sides 5 cm, 12 cm and 13 cm is dilated with scale factor $\frac{2}{5}$. Find the perimeter of the image.