LESSON MAKER PRO

Scale It Up

Dilate polygons from the origin.

GRADE 7 · 7.MG.4

7.MG.4 "The student will apply dilations of polygons in the coordinate plane. Given a preimage in the coordinate plane, identify the coordinates of the image of a polygon that has been dilated. Scale factors are limited to 14, 12, 2, 3, or 4..."

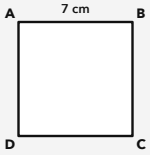
NAME _____ DATE _____

DILATION RULE

A dilation centered at the origin multiplies each x-coordinate and each y-coordinate by the scale factor. A factor greater than 1 enlarges a figure, and a factor between 0 and 1 reduces it.

WORKED EXAMPLE

The square shown is dilated by a scale factor of 2. Find the side length of the image.



1. The preimage side is 7 cm.
2. Multiply 7 by 2.
3. 7 × 2 = 14.

Answer: 14 cm

PRACTICE 4 problems

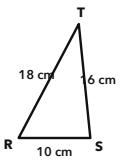
1 Point P(3, -5) is dilated by a scale factor of 3 about the origin. Find P'.

ANSWER _____

2 Point Q(-12, 8) is dilated by a scale factor of 1/4 about the origin. Find Q'.

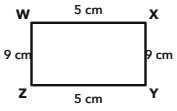
ANSWER _____

3 The triangle shown is dilated by a scale factor of 1/2. What is the image length of the side labeled 16 cm?



ANSWER _____

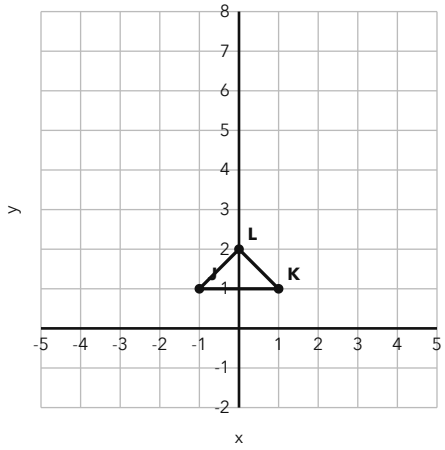
4 The rectangle shown is dilated by a scale factor of 4. Find the perimeter of the image.



ANSWER _____

APPLY IT Show your work

1 A design app enlarges the triangle shown by a scale factor of 3 about the origin. Give the coordinates of J', K', and L'.



ANSWER _____

2 A skateboard ramp plan is a 1/4-scale drawing. The real platform is 36 ft by 20 ft. What are the plan dimensions?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Polygon ABC is dilated about the origin. A(-6, 4) maps to A'(-3, 2). Vertex C is (8, 6). What is the scale factor, and what are the coordinates of C'? Explain briefly.

WORK SPACE AND ANSWER

ANSWER KEY

Scale It Up

GRADE 7 · 7.MG.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Point P(3, -5) is dilated by a scale factor of 3 about the origin. Find P'.	**P'(9, -15)**
2	Point Q(-12, 8) is dilated by a scale factor of 1/4 about the origin. Find Q'.	**Q'(-3, 2)**
3	The triangle shown is dilated by a scale factor of 1/2. What is the image length of the side labeled 16 cm?	**8 cm**
4	The rectangle shown is dilated by a scale factor of 4. Find the perimeter of the image.	**112 cm**

PART 2 · APPLY IT

1. **J'(-3, 3), K'(3, 3), L'(0, 6)** Multiply each coordinate in the shown triangle by 3.
2. **9 ft by 5 ft** Multiply each real dimension by 1/4.

CHALLENGE

Scale factor: 1/2. C'(4, 3). Each coordinate of A' is half the matching coordinate of A, so multiply C by 1/2.

Accept ordered pairs with parentheses and a comma. For the challenge, accept any correct explanation that shows the coordinates are multiplied by 1/2.