LESSON MAKER PRO

Scale It Up

Track lengths and areas through dilations.

GRADE 8 · TEKS 8.10.D

8.10.D "model the effect on linear and area measurements of dilated two-dimensional shapes."

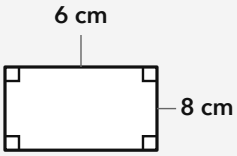
NAME _____ DATE _____

LENGTH AND AREA RULES

In a dilation with scale factor k, multiply every length by k. Multiply every area by k^2, because both dimensions are scaled.

WORKED EXAMPLE

The rectangle in the figure is dilated by a scale factor of 5/2. Find the area of the image.



1. Original area = 6 x 8 = 48 cm^2.
2. Area factor = $(5/2)^2$ = 25/4.
3. Image area = 48 x 25/4 = 300 cm^2.

Answer: 300 cm^2

PRACTICE 4 problems

1 A segment is 9 cm long. It is dilated by a scale factor of 3. Find the image length.

ANSWER _____

2 A figure has area 20 square units. It is dilated by a scale factor of 1/4. Find the image area.

ANSWER _____

3 A shape has area 11 cm^2. It is enlarged by a scale factor of 7. Find the new area.

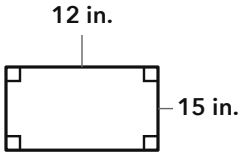
ANSWER _____

4 An image segment is 15 units long after a dilation with scale factor 1/3. Find the original length.

ANSWER _____

APPLY IT Show your work

1 A gaming club enlarges the rectangular logo in the figure by a scale factor of 3/2. What is the new area?



ANSWER _____

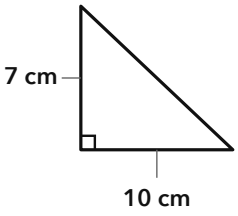
2 A phone wallpaper has an area of 300 cm^2. A mini version uses a scale factor of 1/5. What is the area of the mini wallpaper?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The right triangle in the figure has an image area of 560 cm^2. Find the scale factor, then explain what happens to the 7 cm leg.



WORK SPACE AND ANSWER

ANSWER KEY # Scale It Up

GRADE 8 · TEKS 8.10.D

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A segment is 9 cm long. It is dilated by a scale factor of 3. Find the image length.	**27 cm**
2	A figure has area 20 square units. It is dilated by a scale factor of 1/4. Find the image area.	**5/4 square units**
3	A shape has area 11 cm^2. It is enlarged by a scale factor of 7. Find the new area.	**539 cm^2**
4	An image segment is 15 units long after a dilation with scale factor 1/3. Find the original length.	**45 units**

PART 2 · APPLY IT

1. **405 in^2** The original area is 12 x 15 = 180 in^2. Multiply by $(3/2)^2$ = 9/4 to get 405 in^2.
2. **12 cm^2** The area factor is $(1/5)^2$ = 1/25. Multiply 300 by 1/25.

CHALLENGE

Scale factor 4. The 7 cm leg becomes 28 cm because each length is multiplied by 4.

Accept equivalent numerical forms, such as 1.25 square units for 5/4 square units. Require squared units for all area answers.