LESSON MAKER PRO

Scale It Up

Find scale factors and compare scaled figures.

GRADE 7 · 7.GM.4.1

7.GM.4.1 "Describe the properties of similarity, compare geometric figures for similarity, and determine scale factors resulting from dilations."

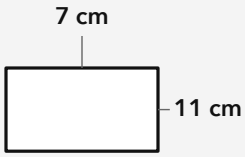
NAME _____ DATE _____

THE BIG IDEA

A dilation makes a figure larger or smaller. Divide an image side length by its matching original side length to find the scale factor. Matching sides of similar figures all have the same scale factor.

WORKED EXAMPLE

The shorter side shown becomes 21 cm. Find the scale factor and the new length of the longer side.



1. 21 / 7 = 3, so the scale factor is 3.
2. 11 × 3 = 33 cm.

Answer: Scale factor: 3; new length: 33 cm

PRACTICE 4 problems

1 A dilation changes a length from 8 cm to 16 cm. Find the scale factor.

ANSWER _____

2 A dilation changes a length from 25 cm to 15 cm. Find the scale factor.

ANSWER _____

3 A length of 13 cm is dilated by a scale factor of 2. Find its image length.

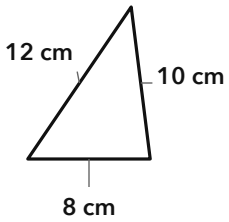
ANSWER _____

4 Matching side lengths are 12 cm and 16 cm in one pair, then 18 cm and 24 cm in another. Are the figures similar? Give the scale factor from the first figure to the second.

ANSWER _____

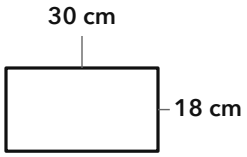
APPLY IT Show your work

1 You enlarge the triangle shown for a game icon. Its shortest side becomes 24 cm. What is its new longest side?



ANSWER _____

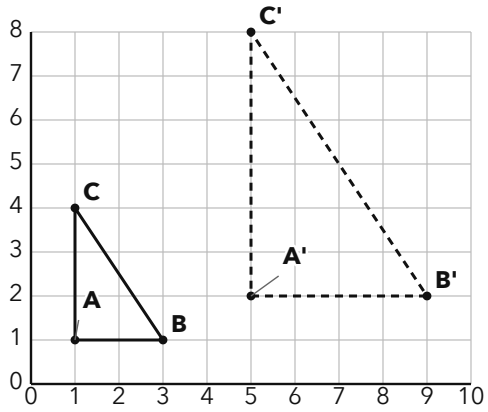
2 You shrink the poster shown for your locker. Its longer side becomes 15 cm. What is its new shorter side?



ANSWER _____

CHALLENGE One step up

The dashed triangle is a scaled copy of the solid triangle. Find the scale factor. Could a dilation centered at (0, 0) map the solid triangle to the dashed triangle? Explain.



WORK SPACE AND ANSWER

ANSWER KEY

Scale It Up

GRADE 7 · 7.GM.4.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A dilation changes a length from 8 cm to 16 cm. Find the scale factor.	**2**
2	A dilation changes a length from 25 cm to 15 cm. Find the scale factor.	**3/5**
3	A length of 13 cm is dilated by a scale factor of 2. Find its image length.	**26 cm**
4	Matching side lengths are 12 cm and 16 cm in one pair, then 18 cm and 24 cm in another. Are the figures similar? Give the scale factor from the first figure to the second.	**Yes; the scale factor is 4/3.**

PART 2 · APPLY IT

1. **36 cm** The scale factor is 24 / 8 = 3. Multiply the longest side by 3: 12 × 3 = 36 cm.
2. **9 cm** The scale factor is 15 / 30 = 1/2. Multiply the shorter side by 1/2: 18 × 1/2 = 9 cm.

CHALLENGE

The scale factor is 2. No. A dilation centered at (0, 0) with scale factor 2 would map A at (1, 1) to (2, 2), not to A' at (5, 2).

Accept equivalent fractions for scale factors. For the challenge, accept any correct matching vertex that shows the dashed triangle is not the image under a dilation centered at (0, 0).