LESSON MAKER PRO

Scale It Up

Find lengths and areas in similar figures.

GRADE 7 · 7.GM.4.2

7.GM.4.2 "Apply proportions, ratios, and scale factors to solve problems involving scale drawings and to determine side lengths and areas of similar triangles and rectangles."

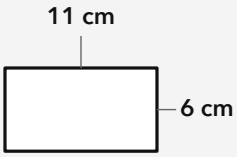
NAME _____ DATE _____

THE BIG IDEA

Similar figures have matching sides in the same ratio. Multiply a side length by the scale factor to find its new length. To find a new area, multiply the original area by the scale factor twice.

WORKED EXAMPLE

The rectangle shown is enlarged by a scale factor of 3. What is the new length of its shorter side?

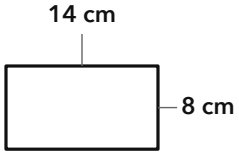


1. The shorter side is 6 cm.
2. Multiply by the scale factor: 6 x 3 = 18.

Answer: 18 cm

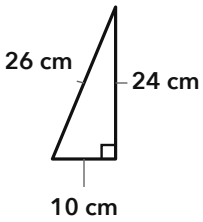
PRACTICE 6 problems

1 The rectangle shown is enlarged by a scale factor of 2. What is the new length of its longer side?



ANSWER _____

2 The triangle shown is reduced by a scale factor of 1/2. What is the new length of the side labeled 24 cm?



ANSWER _____

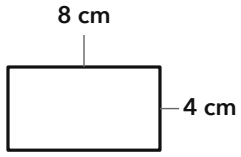
3 The table shows the scale for a trail map. How long is the trail in real life?

TRAIL MAP SCALE

Map distance	Real distance
1 cm	25 m
7 cm	?

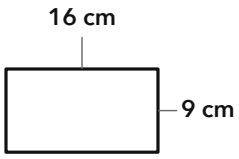
ANSWER _____

4 The rectangle shown is reduced by a scale factor of 1/2. What is the area of the smaller rectangle?



ANSWER _____

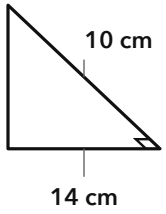
5 The rectangle shown is enlarged until its shorter side is 36 cm. What is the scale factor, and how long is its new longer side?



ANSWER _____

_____

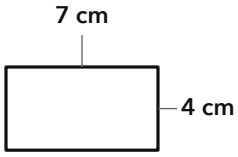
6 The right triangle shown is enlarged by a scale factor of 2. What is the area of the larger triangle?



ANSWER _____

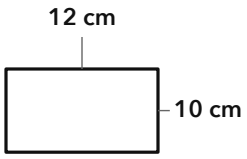
APPLY IT Show your work

1 A school club draws the gaming lounge shown on a floor plan. On the plan, 1 cm represents 2 m. What are the lounge's real side lengths?



ANSWER _____

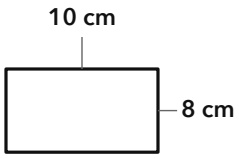
2 A student designs the team logo shown for a T-shirt. The printer makes a similar logo with side lengths 1/2 as long. What is the area of the printed logo?



ANSWER _____

CHALLENGE One step up

The rectangle shown is enlarged to a similar rectangle with an area of 320 cm^2. What is the perimeter of the enlarged rectangle? Explain how you found the scale factor.



WORK SPACE AND ANSWER

ANSWER KEY # Scale It Up

GRADE 7 · 7.GM.4.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The rectangle shown is enlarged by a scale factor of 2. What is the new length of its longer side?	**28 cm**
2	The triangle shown is reduced by a scale factor of 1/2. What is the new length of the side labeled 24 cm?	**12 cm**
3	The table shows the scale for a trail map. How long is the trail in real life?	**175 m**
4	The rectangle shown is reduced by a scale factor of 1/2. What is the area of the smaller rectangle?	**8 cm^2**
5	The rectangle shown is enlarged until its shorter side is 36 cm. What is the scale factor, and how long is its new longer side?	**Scale factor: 4; longer side: 64 cm**
6	The right triangle shown is enlarged by a scale factor of 2. What is the area of the larger triangle?	**280 cm^2**

PART 2 · APPLY IT

1. **14 m and 8 m** Multiply each plan length by 2 m per centimeter: 7 x 2 = 14 and 4 x 2 = 8.
2. **30 cm^2** The new sides are 6 cm and 5 cm, so the area is 6 x 5 = 30 cm^2.

CHALLENGE

The original area is 80 cm^2, and 320 / 80 = 4. Since 2 x 2 = 4, the side-length scale factor is 2. The new sides are 20 cm and 16 cm, so the perimeter is 72 cm.

For the challenge, accept any explanation that finds the side-length scale factor of 2 from the area factor of 4 and gives a perimeter of 72 cm.