LESSON MAKER PRO

Scale It Up

Use scale factors to find real lengths and areas.

GRADE 7 · MA.7.GR.1.5

MA.7.GR.1.5 "Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors."

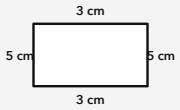
NAME _____ DATE _____

SCALE AND AREA

A scale factor multiplies every length by the same number. When lengths are multiplied by k, area is multiplied by k^2, because both length and width change.

WORKED EXAMPLE

The rectangle is a scale drawing. Its scale factor is 8. Find the actual area.



1. Find actual length: 3 x 8 = 24 cm.
2. Find actual width: 5 x 8 = 40 cm.
3. Multiply: 24 x 40 = 960 cm^2.
4. The actual area is 960 cm^2.

Answer: 960 cm^2

PRACTICE 4 problems

1 A patio drawing is 9 cm by 2 cm. Its scale factor is 6. Find the actual area.

ANSWER _____

2 A 77 m by 66 m field is reduced using 1 cm for every 11 m. Find the area of the drawing.

ANSWER _____

3 A square drawing has a side length of 11 cm. Its scale factor is 2. Find the actual area.

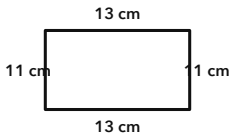
ANSWER _____

4 A logo has an area of 45 cm^2. A new logo is made with a scale factor of 4. Find the new area.

ANSWER _____

APPLY IT Show your work

1 The art club is making a backdrop from the rectangle in the figure. The figure is a scale drawing with a scale factor of 2. How much fabric area is needed?



ANSWER _____

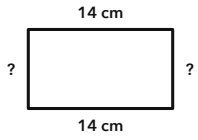
2 In a strategy game, 1 cm on a map represents 4 km. A triangular region has a base of 15 cm and a height of 12 cm on the map. What is the actual area of the region?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The rectangle in the figure is a scale drawing of a mural. The actual mural has an area of 4,536 cm^2, and the scale factor is 6. Find the missing drawing side. Show why your answer works.



WORK SPACE AND ANSWER

ANSWER KEY

Scale It Up

GRADE 7 · MA.7.GR.1.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A patio drawing is 9 cm by 2 cm. Its scale factor is 6. Find the actual area.	**648 cm^2**
2	A 77 m by 66 m field is reduced using 1 cm for every 11 m. Find the area of the drawing.	**42 cm^2**
3	A square drawing has a side length of 11 cm. Its scale factor is 2. Find the actual area.	**484 cm^2**
4	A logo has an area of 45 cm^2. A new logo is made with a scale factor of 4. Find the new area.	**720 cm^2**

PART 2 · APPLY IT

1. **572 cm^2** The actual dimensions are 26 cm and 22 cm. Multiply 26 x 22 to get 572 cm^2.
2. **1,440 km^2** The actual base is 60 km and the actual height is 48 km. Use 1/2 x 60 x 48.

CHALLENGE

9 cm. The actual sides are 84 cm and 54 cm, and 84 x 54 = 4,536.

Accept equivalent multiplication work and correct square units. In the challenge, accept 9 cm only when the student shows that the actual dimensions produce the given area.