LESSON MAKER PRO

Scale It Up

Use a scale to find real measurements and redraw figures.

GRADE 7 · 7.G.A.1

CCSS.Math.Content.7.G.A.1 "Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale."

NAME _____ DATE _____

READ THE SCALE

A scale compares a length on a drawing to the real length. To find an actual length, multiply the drawing length by the scale. To redraw at a new scale, find the actual length first, then divide by the new scale.

WORKED EXAMPLE

Each inch on a theater floor plan represents 11 feet. A rectangular lounge measures 4 in by 3 in on the plan. Find its actual dimensions and area.

1. Actual length: 4 x 11 = 44 ft.
2. Actual width: 3 x 11 = 33 ft.
3. Area: 44 x 33 = 1,452 ft^2.

Answer: Actual dimensions: 44 ft by 33 ft; actual area: 1,452 ft^2.

PRACTICE 6 problems

1 On a trail map, 1 cm represents 5 m. A path measures 7 cm on the map. How long is the actual path?

ANSWER _____

2 A model uses the scale 1 cm = 8 m. A real wall is 56 m long. How long should the wall be on the model?

ANSWER _____

3 A rectangular garden is 6 cm by 9 cm on a drawing. The scale is 1 cm = 2 m. What is the actual area of the garden?

ANSWER _____

4 A square plaza has an actual side length of 63 m. On a map, 1 cm represents 9 m. What is the side length of the square on the map?

ANSWER _____

5 A rectangle is 10 cm by 14 cm on a drawing with the scale 1 cm = 7 m. The rectangle is redrawn using the scale 1 cm = 14 m. What are the new drawing dimensions?

ANSWER _____

6 A triangular banner has a base of 12 cm and a height of 5 cm on a scale drawing. The scale is 1 cm = 6 ft. What is the actual area of the banner?

ANSWER _____

APPLY IT Show your work

1 A skate park designer draws a rectangular practice zone that is 8 cm long and 6 cm wide. The scale is 1 cm = 12 ft. What are the actual dimensions and actual area of the practice zone?

WORK SPACE

ANSWER _____

2 The drama club makes a scale drawing of a rectangular performance stage. The stage is 9 cm by 7 cm on the drawing, and the scale is 1 cm = 16 ft. What are the actual area and perimeter of the stage?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A park map uses the scale 1 cm = 15 m. A triangular plaza has a base of 12 cm and a height of 8 cm on the map. The map is redrawn using the scale 1 cm = 20 m. What will the base and height be on the new map? What is the actual area of the plaza? Explain why the actual area does not change.

_____

_____

ANSWER KEY

Scale It Up

GRADE 7 · 7.G.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	On a trail map, 1 cm represents 5 m. A path measures 7 cm on the map. How long is the actual path?	**35 m**
2	A model uses the scale 1 cm = 8 m. A real wall is 56 m long. How long should the wall be on the model?	**7 cm**
3	A rectangular garden is 6 cm by 9 cm on a drawing. The scale is 1 cm = 2 m. What is the actual area of the garden?	**216 m^2**
4	A square plaza has an actual side length of 63 m. On a map, 1 cm represents 9 m. What is the side length of the square on the map?	**7 cm**
5	A rectangle is 10 cm by 14 cm on a drawing with the scale 1 cm = 7 m. The rectangle is redrawn using the scale 1 cm = 14 m. What are the new drawing dimensions?	**5 cm by 7 cm**
6	A triangular banner has a base of 12 cm and a height of 5 cm on a scale drawing. The scale is 1 cm = 6 ft. What is the actual area of the banner?	**1,080 ft^2**

PART 2 · APPLY IT

1. **Actual dimensions: 96 ft by 72 ft; actual area: 6,912 ft^2.** Multiply each drawing dimension by 12 to get 96 ft and 72 ft. Multiply the actual dimensions to find 6,912 ft^2.
2. **Actual area: 16,128 ft^2; actual perimeter: 512 ft.** The actual dimensions are 144 ft by 112 ft. Use length x width for area and 2 x (length + width) for perimeter.

CHALLENGE

New map base: 9 cm; new map height: 6 cm; actual area: 10,800 m^2. The actual plaza stays the same size, so changing the map scale changes only the drawing measurements, not the actual area.

Accept equivalent unit notation, such as sq m or m². For redraw problems, accept answers with dimensions in either order when the figure is a rectangle.