

Scale It Up

Use scales to measure real spaces and redraw plans.

GRADE 7 • 7.PAR.4.6

7.PAR.4.6 "Solve everyday 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 _____

SCALE DRAWING RULES

A scale compares a length on a drawing to the matching actual length. Multiply a drawing length by the scale to find an actual length, and divide an actual length by the scale to find a drawing length. For actual area, find both actual side lengths first, then multiply them.

WORKED EXAMPLE

A field map uses the scale $1 \text{ cm} = 11 \text{ m}$. A rectangular field measures 5 cm by 7 cm on the map. What is the actual area of the field?

1. $5 \times 11 = 55$, so one actual side is 55 m .

2. $7 \times 11 = 77$, so the other actual side is 77 m .

3. $55 \times 77 = 4,235$.

Answer: $4,235 \text{ m}^2$

PRACTICE 6 problems

- 1** A park path is 8 cm long on a drawing. The scale is $1 \text{ cm} = 6 \text{ m}$. How long is the actual path?

ANSWER _____

- 2** An actual hiking trail is 72 km long. A map uses the scale $1 \text{ cm} = 9 \text{ km}$. How long should the trail be on the map?

ANSWER _____

- 3** A rectangular pool is 6 cm by 2 cm on a drawing. The scale is $1 \text{ cm} = 12 \text{ m}$. What is the actual area of the pool?

ANSWER _____

- 4** A rectangular recreation center is 80 m long and 20 m wide. A plan uses the scale $1 \text{ cm} = 10 \text{ m}$. What dimensions should the recreation center have on the plan?

ANSWER _____

- 5** A road is 12 cm long on a map with the scale $1 \text{ cm} = 3 \text{ km}$. You redraw the map using the scale $1 \text{ cm} = 9 \text{ km}$. How long should the road be on the new map?

ANSWER _____

- 6** A rectangular dog park is 6 cm by 2 cm on a plan. The scale is $1 \text{ cm} = 13 \text{ ft}$. What is the actual perimeter of the dog park?

ANSWER _____

APPLY IT Show your work

- 1** The robotics club is planning an activity room. Their floor plan uses the scale $1 \text{ cm} = 15 \text{ ft}$, and the rectangular room measures 9 cm by 6 cm on the plan. What is the actual area of the room?

WORK SPACE

ANSWER _____

- 2** A student is making a bike-course map for a school event. A straight route measures 8 cm on a map with the scale $1 \text{ cm} = 12 \text{ m}$. For a flyer, the student redraws the map using the scale $1 \text{ cm} = 6 \text{ m}$. How long is the route on the flyer map?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangular community garden is 18 m by 12 m. A plan using the scale $1 \text{ cm} = 3 \text{ m}$ is redrawn using the scale $1 \text{ cm} = 2 \text{ m}$. Find the area of each drawing and explain how much larger the new drawing is.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A park path is 8 cm long on a drawing. The scale is 1 cm = 6 m. How long is the actual path?	48 m
2	An actual hiking trail is 72 km long. A map uses the scale 1 cm = 9 km. How long should the trail be on the map?	8 cm
3	A rectangular pool is 6 cm by 2 cm on a drawing. The scale is 1 cm = 12 m. What is the actual area of the pool?	1,728 m²
4	A rectangular recreation center is 80 m long and 20 m wide. A plan uses the scale 1 cm = 10 m. What dimensions should the recreation center have on the plan?	8 cm by 2 cm
5	A road is 12 cm long on a map with the scale 1 cm = 3 km. You redraw the map using the scale 1 cm = 9 km. How long should the road be on the new map?	4 cm
6	A rectangular dog park is 6 cm by 2 cm on a plan. The scale is 1 cm = 13 ft. What is the actual perimeter of the dog park?	208 ft

PART 2 • APPLY IT

- 12,150 ft²** Multiply each drawing length by 15 to get 135 ft and 90 ft. Then multiply 135 x 90.
- 16 cm** The actual route is $8 \times 12 = 96$ m. Divide 96 by 6 to find the length on the flyer map.

CHALLENGE

First drawing: 24 cm². New drawing: 54 cm². The new drawing is 30 cm² larger.

Accept equivalent unit notation, such as square meters for m². For the challenge, students may show the drawing dimensions before finding each area.