

Scale Drawings

Fractions, Decimals & % · Grade 7

Score: _____ / 15

★ Hard · 15 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

1. A map scale is 1 : 250,000. Two towns are 4.8 cm apart on the map. Find the real distance in km.

Answer: _____

2. A scale drawing of a triangular plot has sides 5 cm, 7 cm, and 8 cm with scale 1 : 500. Find the real perimeter in metres.

Answer: _____

3. A rectangular swimming pool on a plan is $12\text{ cm} \times 5\text{ cm}$ at scale $1 : 400$. Find the real area in m^2 .

Answer: _____

4. On a map, the distance between two towns is 5.5 cm . The real distance is 110 km . What is the scale?

Answer: _____

5. A model of a skyscraper is 35 cm tall at scale $1 : 500$. Another building is 180 m tall. Which is taller and by how much?

Answer: _____

6. A floor plan uses scale 1 cm : 2 m. A kitchen is 4.5 cm × 3 cm on the plan. Tiles cost \$25/m². Find the cost to tile the kitchen.

Answer: _____

7. Two maps show the same region. Map A has scale 1:50,000 and Map B has scale 1:100,000. A road is 6 cm on Map A. How long is it on Map B?

Answer: _____

8. A scale drawing has scale 1 : 20. The drawing shows a circle with diameter 6 cm. Find the real circumference and area of the circle. ($\pi \approx 3.14$)

Answer: _____

9. A map shows a mountain trail as a zigzag of 3 segments: 4 cm, 6 cm, and 5 cm. The scale is 1 cm : 2.5 km. Find the total trail length.

Answer: _____

10. A scale model of a bridge is 1 : 200. The model is 2.4 m long and 8 cm wide. Find the real length and width.

Answer: _____

11. A rectangular garden on a scale drawing is 9 cm × 6 cm at scale 1 cm : 5 m. Fencing costs \$12 per metre. Find the cost to fence the garden.

Answer: _____

- 12.** A map at scale 1:500,000 shows a forest as a shape with area 8 cm^2 . What is the real area of the forest in km^2 ?

Answer: _____

- 13.** Two scale drawings of the same building use scales 1:50 and 1:75. A window is 3 cm wide on the 1:50 drawing. How wide is it on the 1:75 drawing?

Answer: _____

- 14.** A city planner uses scale 1:2,000. She needs to place two parks 800 m apart. How far apart should she draw them on the plan?

Answer: _____

- 15.** On a map with scale 1 cm : 50 km, two cities are 7.2 cm apart.
Find the real distance between them in km.

Answer: _____

Answer Key

Scale Drawings — Hard

1. 12 km

$4.8 \times 250,000 = 1,200,000 \text{ cm} = 12,000 \text{ m} = 12 \text{ km}.$

2. 100 m

Real sides: 25 m, 35 m, 40 m. Perimeter = 100 m.

3. 960 m²

Real dims: $12 \times 400 = 4,800 \text{ cm} = 48 \text{ m}$; $5 \times 400 = 2,000 \text{ cm} = 20 \text{ m}$. Area = $48 \times 20 = 960 \text{ m}^2$.

4. 1 : 2,000,000

$110 \text{ km} = 11,000,000 \text{ cm}$. Scale = $5.5 : 11,000,000 = 1 : 2,000,000$.

5. Real building from model: 175 m. The 180 m building is taller by 5 m.

Model height: $35 \times 500 = 17,500 \text{ cm} = 175 \text{ m}$. $180 - 175 = 5 \text{ m}$ taller.

6. \$1,350

Real dims: $4.5 \times 2 = 9 \text{ m}$; $3 \times 2 = 6 \text{ m}$. Area = 54 m^2 . Cost = $54 \times \$25 = \$1,350$.

7. 3 cm

Real length: $6 \times 50,000 = 300,000 \text{ cm}$. On Map B: $300,000 \div 100,000 = 3 \text{ cm}$.

8. Real diameter=120 cm=1.2 m. Circumference≈376.8 cm. Area≈11,304 cm².

Real diameter = $6 \times 20 = 120 \text{ cm}$. $C = \pi d = 3.14 \times 120 = 376.8 \text{ cm}$. $A = \pi r^2 = 3.14 \times 3,600 = 11,304 \text{ cm}^2$.

9. 37.5 km

Total on map: $4 + 6 + 5 = 15 \text{ cm}$. Real: $15 \times 2.5 = 37.5 \text{ km}$.

10. Length: 480 m; Width: 16 m

Length: $2.4 \text{ m} = 240 \text{ cm}$. $240 \times 200 = 48,000 \text{ cm} = 480 \text{ m}$. Width: $8 \times 200 = 1,600 \text{ cm} = 16 \text{ m}$.

11. \$1,800

Real: $45\text{ m} \times 30\text{ m}$. Perimeter $= 2(45+30)=150\text{ m}$. Cost $= 150 \times \$12 = \$1,800$.

12. 200 km²

Scale $1:500,000 \rightarrow 1\text{ cm} = 5\text{ km}$. Area scale: $1\text{ cm}^2 = 5^2 = 25\text{ km}^2$. Real area $= 8 \times 25 = 200\text{ km}^2$.

13. 2 cm

Real width: $3 \times 50 = 150\text{ cm}$. On $1:75$ drawing: $150 \div 75 = 2\text{ cm}$.

14. 40 cm

$800\text{ m} = 80,000\text{ cm}$. $80,000 \div 2,000 = 40\text{ cm}$.

15. 360 km

Real distance $= 7.2 \times 50 = 360\text{ km}$.
