

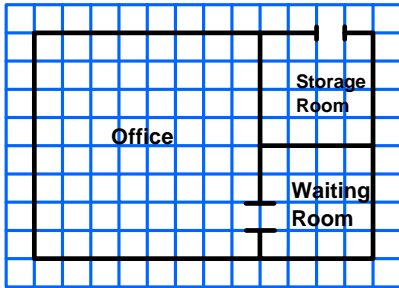
## Ratio: Skill 5 - 25E

**Scale Drawings**

A scale drawing is a drawing of a real object. A scale drawing is either reduced from the actual size or enlarged. The scale of a drawing is the ratio of the size of the drawing to the actual size of the object.

**Example**

What is the actual width of the office in the scale drawing?



Scale: 1 cm = 5 m

- Write the scale as a ratio in fraction form.  $\frac{1 \text{ cm}}{5 \text{ m}}$
- The width of the office on the scale drawing is 8 cm. (each square on the grid = 1 cm<sup>2</sup>).  $\frac{1 \text{ cm}}{5 \text{ m}} = \frac{8 \text{ cm}}{n}$
- Write an equivalent ratio to find the actual width.
 
$$\frac{1 \text{ cm} \times 8}{5 \text{ m} \times 8} = \frac{8}{40} \qquad n = 40 \text{ meters}$$

The actual width of the office is 40 meters.

**Example:** Use the scale drawing above to answer the question.

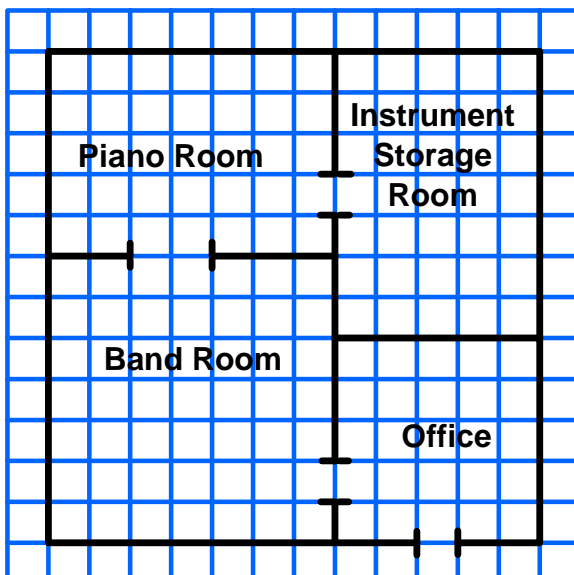
What is the actual size of the waiting room?

- Write the scale as a ratio in fraction form.  $\frac{1 \text{ cm}}{5 \text{ m}}$

- Write an equivalent ratio to find the actual size.  $\frac{1 \text{ cm} \times 4}{5 \text{ m} \times 4} = \frac{4}{20}$

The actual size of the waiting room is 20 meters by 20 meters.

**Each square on the grid = 1 cm<sup>2</sup>**



Scale: 1 cm = 3 m

- What is the actual size of the office?

- Find the perimeter of the piano room in actual size. (add the lengths of each side)

- Find the perimeter of the office in actual size.

Ratio: Skill 5 - 25E

**Scale Drawings**

**Directions:** Use the scale drawing to answer the questions.

**Each square = 1 cm<sup>2</sup>**

**Scale: 1 cm = 2 m**

4. What is the actual size of the office?
5. What is the actual width of the hall?
6. Find the perimeter of classroom 1 in actual size.
7. Find the perimeter of the office in actual size.
8. What is the actual size of the supply room?

**Directions:** Complete the ratio tables. The first one is done for you.

9.

Scale Length (cm)	1	2	4	6	8
Actual Length (m)	50	100	200	300	400

10.

Scale Length (cm)	1		5		
Actual Length (m)	75	225		525	600

11.

Scale Length (cm)	1	2		4	5
Actual Length (m)	1.5		4.5		

12.

Scale Length (cm)	1		6.2	7.5	8
Actual Length (m)	100	300			

13.

Scale Length (cm)	1	2.5	5		
Actual Length (m)	20			130	150

14.

Scale Length (cm)	2		6		
Actual Length (m)	12	48		90	102

15.

Scale Length (in.)	1	3	7		
Actual Length (ft)	3.5			28	31.5

16.

Scale Length (in.)	1	2.8	3.8		
Actual Length (ft)	25			120	145

## Ratio: Skill 5 - 25E

**Scale Drawings****Directions:** Find the scale

16. Jason drew a scale drawing of a park. The width of the park entrance on his drawing is 5 inches. The actual park entrance is 25 yards wide. What scale did Jason use in his drawing?

Write the ratio of the entrance in the drawing to the actual entrance in fraction form.  $\frac{5 \text{ in.}}{25 \text{ yd}}$

Simplify the fraction.  $\frac{5 \text{ in.} \div 5}{25 \text{ yd} \div 5} = \frac{1 \text{ in.}}{5 \text{ yd}}$

**Answer:** The scale of the drawing is 1 in. = 5 yd

17. A map has a scale of 1 centimeter = 3 kilometers. On the map it is 4.5 centimeters from Main Street to City Hall. What is the actual distance?
18. Maria drew a scale drawing of a classroom. She used the scale 1 inch = 6 feet. The actual width of the classroom is 36 feet. How wide is the classroom in the drawing?
19. Mike drew a scale drawing of a parking lot. The width of the parking lot is 12 centimeters in the drawing. The actual width is 48 meters. What is the scale of the drawing?
20. Sarah drew a scale drawing of a water park. She used the scale 1 centimeter = 4 meters. The length of the water slide in the drawing is 8 centimeters. What is the length of the actual waterslide?
21. Laura drew a scale drawing of airplane. The wingspan of the airplane is 4.5 inches in the drawing. The actual wingspan is 27 feet. What scale did Laura use?

1.  $\frac{1 \text{ cm}}{3 \text{ m}} \quad \frac{1 \text{ cm}}{3 \text{ m}} = \frac{5 \text{ cm}}{n} \quad \frac{1 \text{ cm} \times 5}{3 \text{ m} \times 5} = \frac{5}{15} \quad n = 15 \text{ meters}$

The actual size of the office is 15 meters by 15 meters.

2.  $21 + 21 + 15 + 15 = 72 \text{ meters}$       3.  $15 + 15 + 15 + 15 = 60 \text{ meters}$

4.  $\frac{1 \text{ cm}}{2 \text{ m}} \quad \frac{1 \text{ cm}}{2 \text{ m}} = \frac{4 \text{ cm}}{n} \quad \frac{1 \text{ cm} \times 4}{2 \text{ m} \times 4} = \frac{4}{8} \quad n = 8 \text{ meters}$

The actual size of the office is 8 meters by 8 meters.

5.  $\frac{1 \text{ cm}}{2 \text{ m}} \quad \frac{1 \text{ cm}}{2 \text{ m}} = \frac{4 \text{ cm}}{n} \quad \frac{1 \text{ cm} \times 2}{2 \text{ m} \times 2} = \frac{2}{4} \quad n = 4 \text{ meters}$

The actual width of the hall is 4 meters.

6.  $12 \text{ m} + 12 \text{ m} + 10 \text{ m} + 10 \text{ m} = 44 \text{ meters}$       7.  $8 \text{ m} + 8 \text{ m} + 8 \text{ m} + 8 \text{ m} = 32 \text{ meters}$

8.  $\frac{1 \text{ cm}}{2 \text{ m}} \quad \frac{1 \text{ cm}}{2 \text{ m}} = \frac{4 \text{ cm}}{n} \quad \frac{1 \text{ cm} \times 4}{2 \text{ m} \times 4} = \frac{4}{8} \quad n = 8 \text{ meters}$

$\frac{1 \text{ cm}}{2 \text{ m}} \quad \frac{1 \text{ cm}}{2 \text{ m}} = \frac{6 \text{ cm}}{b} \quad \frac{1 \text{ cm} \times 6}{2 \text{ m} \times 6} = \frac{6}{12} \quad b = 12 \text{ meters}$

The actual size of the supply room is 8 meters by 12 meters.

9. 

Scale Length (cm)	1	2	4	6	8
Actual Length (m)	50	100	200	300	400

      10. 

Scale Length (cm)	1	3	5	7	8
Actual Length (m)	75	225	375	525	600

11. 

Scale Length (cm)	1	2	3	4	5
Actual Length (m)	1.5	3	4.5	6	7.5

      12. 

Scale Length (cm)	1	3	6.2	7.5	8
Actual Length (m)	100	300	620	750	800

13. 

Scale Length (cm)	1	2.5	5	6.5	7.5
Actual Length (m)	20	50	120	130	150

      14. 

Scale Length (cm)	2	4	6	7.5	8.5
Actual Length (m)	12	48	72	90	102

15.

Scale Length (cm)	1	3	7	8	9
Actual Length (m)	3.5	10.5	24.5	28	31.5

16.

Scale Length (cm)	1	2.8	3.8	4.8	5.8
Actual Length (m)	25	70	95	120	145

17. Write the scale as a ratio in fraction form.  $\frac{1 \text{ cm}}{3 \text{ km}}$

Write an equivalent fraction with 4.5 centimeters as the numerator.  $\frac{1 \text{ cm} \times 4.5}{3 \text{ km} \times 4.5} = \frac{4.5 \text{ cm}}{13.5 \text{ km}}$

The actual distance is 13.5 kilometers.

18. Write the scale as a ratio in fraction form.  $\frac{1 \text{ in.}}{6 \text{ ft}}$

Write an equivalent fraction.  $\frac{1 \text{ in.} \times 6}{6 \text{ ft} \times 6} = \frac{6 \text{ in.}}{36 \text{ ft}}$

The width of the classroom in the drawing is 6 inches.

19. Write the ratio of the width of the parking lot in the drawing to the width of the actual parking lot. Write the ratio in fraction form  $\frac{12 \text{ cm}}{48 \text{ m}}$  simplify the fraction  $\frac{12 \text{ cm} \div 12}{48 \text{ m} \div 12} = \frac{1 \text{ cm}}{4 \text{ m}}$

The scale of the drawing is 1 cm = 4 m.

20. Write the scale as a ratio in fraction form.  $\frac{1 \text{ cm}}{4 \text{ m}}$

Write an equivalent fraction with 8 centimeters as the numerator.  $\frac{1 \text{ cm} \times 8}{4 \text{ m} \times 8} = \frac{8 \text{ cm}}{48 \text{ m}}$

The actual waterslide is 48 meters in length.

21. Write the ratio of the wingspan in the drawing to the actual wingspan.  $\frac{4.5 \text{ in.}}{27 \text{ ft}}$

simplify the fraction  $\frac{4.5 \text{ in.} \div 4.5}{27 \text{ ft} \div 4.5} = \frac{1 \text{ in.}}{6 \text{ ft}}$

The scale of the drawing is 1 in. = 6 ft