



Scale Drawing Exam Practice

Q1. On a scale map, the villages of Aberton and Benton are 5.5 cm apart. The scale on the map is 1 cm = 2 km. Work out how far the villages are apart in real life.

$$\begin{array}{l} \times 5.5 \left(\begin{array}{l} 1 \text{ cm} = 2 \text{ km} \\ 5.5 \text{ cm} = 11 \text{ km} \end{array} \right) \times 5.5 \end{array}$$

Answer: 11 km
(2 marks)

Q2. On a floor plan of a church, which is drawn to scale, the length of main hall is 6.5 inches. The scale on the plan is 2 inches = 8 metres. Work out the actual length of the hall.

$$\begin{array}{l} \times 3.25 \left(\begin{array}{l} 2 \text{ in} = 8 \text{ m} \\ 6.5 \text{ in} = 18.75 \text{ m} \end{array} \right) \times 3.25 \end{array}$$

Answer: 18.75m
(2 marks)



Q3. On a town plan, the theatre is 4 cm away from the bus station.
If the plan is drawn to scale, and the scale is 1 : 3000, work out the actual distance between the theatre and the bus station.
State your answer using suitable units.

• Here, 1 : 3000 means 1 cm represents 3000 cm
4 cm represents 12000 cm

• 1 m = 100 cm

$$\Rightarrow \text{Actual distance} = \frac{12000}{100} = 120 \text{ m}$$

Answer: 120 m
(2 marks)

Q4. A bird flies the direct distance from a church tower to a water tank.
The two locations are shown 14 cm apart on the map. If the scale of the map is 1 : 40000, work out the distance travelled by the bird, using sensible units.

• 1 cm is represented by 40000 cm

\Rightarrow 14 cm is represented by 560,000 cm

• \Rightarrow 5600 m

\Rightarrow 5.6 km

Answer: 5.6 km
(2 marks)



Q5. The towns of Blanton and Ryling are 33 miles apart. They are shown on a scale map which uses the scale, 1 cm = 6 miles. Work out how far they are apart on the map.

- $1 \text{ cm} = 6 \text{ miles}$
 $? = 33 \text{ miles}$

$\Rightarrow \frac{33}{6} = 5.5, \text{ so}$

$\times 5.5 \left(\begin{array}{l} 1 \text{ cm} = 6 \text{ miles} \\ 5.5 \text{ cm} = 33 \text{ miles} \end{array} \right) \times 5.5$

Answer: 5.5 cm
(2 marks)

Q6. Marston and Melville are 80 km apart. They are shown on a scale map which uses the scale, 1 : 400,000. Work out how far they are apart on the map.

- $1 : 400,000$ means 1 cm on the map = 400,000 cm in life

- $80 \text{ km} = 80,000 \text{ m} \quad (\times 1000)$
 $= 8,000,000 \text{ cm} \quad (\times 100)$

- $8,000,000 \div 400,000 = 20 \text{ cm}$

$\Rightarrow 20 \text{ cm on the map}$

Answer: 20 cm
(3 marks)



Q7. In a club-house, the length of the main room is 8 feet 9 inches.
A floor plan of the building uses the scale, 1 : 70.
work out how long the building is drawn on the floor plan.

$$\begin{aligned} \cdot \quad 8 \text{ feet } 9 \text{ in} &= 8 \times 12 + 9 \text{ inches} \\ &= 105 \text{ inches.} \end{aligned}$$

$$\cdot \quad \begin{array}{l} \text{1 inch on the plan} = 70 \text{ inches in the room} \\ \times 1.5 \left(\begin{array}{l} \text{1.5 inches} \\ \text{= 105 inches} \end{array} \right) \times 1.5 \end{array}$$

Answer: 1.5 inches
(2 marks)

Q8. On a scale drawing of a new model of car, the scale used is 4 : 150.
If the length of the car on the drawing is 11 cm, work out the length
of the actual car. Give your answer in metres, correct to 2 decimal places.

$$\times 2.75 \left(\begin{array}{l} 4 \text{ cm on drawing} = 150 \text{ cm on the car} \\ 11 \text{ cm} = 412.5 \text{ cm} \end{array} \right) \times 2.75$$

$$\begin{aligned} \Rightarrow \text{ actual car is } & \frac{412.5}{100} \text{ m} \\ &= 4.125 \text{ m} \\ &= \underline{4.13 \text{ m}} \end{aligned}$$

Answer: 4.13 m
(2 marks)



Problem Questions:

Q9. Here is a scale drawing of a pick-up truck.

- a) Estimate the length of the truck in real life, giving your answer in metres, correct to 1 decimal place.



Scale
1 cm : 0.55 m

- Truck measures approx 5.4 cm on drawing.
- ⇒ actual length is approx 5.4×0.55
 $= 2.97 \text{ m}$

Answer: 2.97 m
(2 marks)

- b) Bill wishes to park the truck inside his garage whose ceiling is 1 metre 90 cm high. Will this be possible? You must explain your answer.

- Truck has height 3.6 cm on the drawing.
- ⇒ height of actual truck = 3.6×0.55
 $= 1.98 \text{ m}$
- ⇒ His truck is too high, so not possible.

Answer: not possible
(2 marks)



Q10. A rectangular field is drawn on a local plan of the area. The length measures 12 cm and the width is 5 cm. The scale used is 1 : 500. Work out the actual area of the field, giving your answer in sensible units.

• Dimensions of actual field are :

$$12 \times 500 \text{ cm by } 5 \times 500 \text{ cm}$$

$$= 6000 \text{ cm by } 2500 \text{ cm}$$

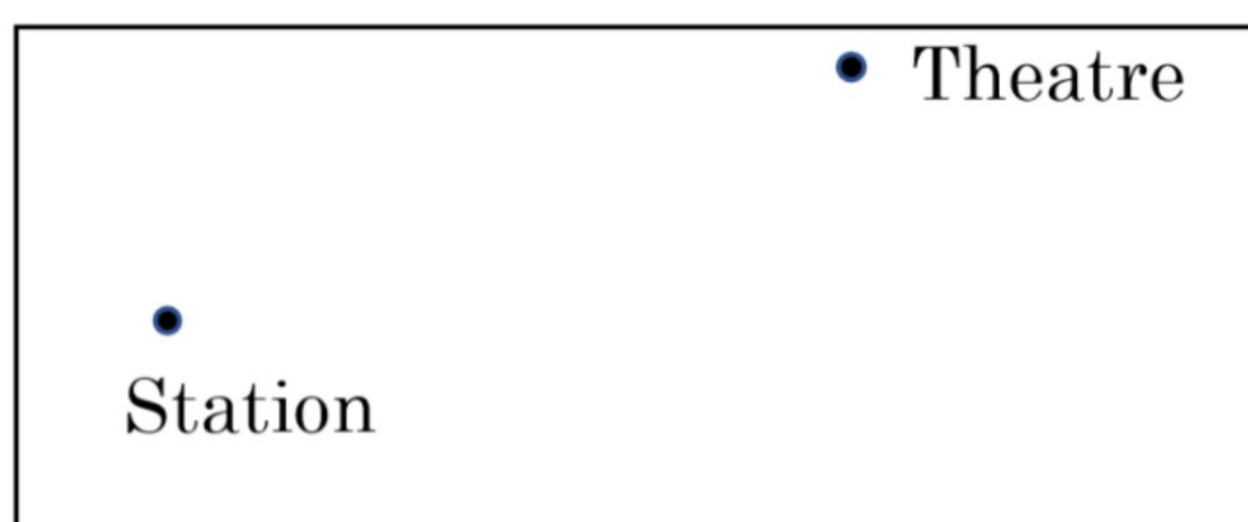
$$= 60 \text{ m by } 25 \text{ m } (\div 100, \text{ as } 1 \text{ m} = 100 \text{ cm})$$

$$\begin{aligned} \text{Area of field} &= 60 \times 25 \\ &= 1500 \text{ m}^2 \end{aligned}$$

Answer: 1500 m²
(4 marks)



Q11. The map below uses the scale $8 \text{ cm} = 1 \text{ km}$.



(a) Write this scale as a ratio in its simplest form, independent of units.

$$\begin{aligned} & \cdot 1 \text{ km} = 1000 \text{ m} \\ & \quad = 100,000 \text{ cm} \\ & \cdot 8 : 100,000 \\ & \quad = 1 : 12500 \end{aligned}$$

Answer: 1 : 12500
(2 marks)

(b) Estimate the distance between the station and the theatre in metres.

$$\begin{aligned} & \cdot \text{Distance on the map is approx } 4.8 \text{ cm} \\ & \cdot 8 \text{ cm} = 1 \text{ km} \\ & \Rightarrow 1 \text{ cm} = 0.125 \text{ km} \\ & \Rightarrow 4.8 \text{ cm} = 0.6 \text{ km} \end{aligned}$$

Answer: 0.6 km
(2 marks)



Q12. A map uses the scale 1 cm = 60 metres. Circle the ratio which is equivalent to this:

1 : 60 1 : 600 **1 : 6000** 1 : 60000 1 : 600000 1 : 6000000

$$\begin{aligned} \cdot 60 \text{ m} &= 60 \times 100 \text{ cm} \\ &= 6000 \text{ cm} \end{aligned}$$

$$\cdot 1 : 6000$$

Answer: 1 : 6000
(2 marks)

Q13. Here is a scale drawing of adult human standing next to an ornamental tower in a garden.

a) Estimate the height of the tower in metres.



- Assume Adult = 1.8 m tall
 - The adult is 0.9 cm, the tower is 5.8 cm
- $$\frac{1.8}{0.9} = 2, \Rightarrow \text{tower is } 5.8 \times 2 = 11.6 \text{ m}$$
- \Rightarrow height of the tower is approx. 11.6 m

Answer: 11.6 m
(2 marks)

b) Add a suitable scale to the map in the form 1 : n where n is a number.

$$\begin{aligned} 0.9 \text{ cm} &= 1.8 \text{ m} \\ \Rightarrow \left(\begin{array}{l} 0.9 \text{ cm} = 180 \text{ cm} \\ \div 0.9 \end{array} \right) &\div 0.9 \\ &1 : 200 \end{aligned}$$

Answer: 1 : 200
(2 marks)