



3.11D Scale Drawings: Fluency and Exam Drill

EDEXCEL 1MA1 · Calculator allowed · about 45 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** On a map the scale is 1:50 000. How many kilometres does 3 cm on the map represent?

(Total for Question 1 is 1 mark)

- 2** A map scale is 1:25 000. A straight road between two villages is 7.5 km in reality. What is the length of this road on the map, in centimetres?

(Total for Question 2 is 2 marks)

- 3** A scale drawing uses 1 cm to represent 2 m. On the drawing a fence is 9.5 cm long. Work out the actual length of the fence in metres.

(Total for Question 3 is 1 mark)

- 4** Write 1:125 as a statement giving how many metres 1 cm on the drawing represents.

(Total for Question 4 is 1 mark)

- 5** On a map with scale 1:40 000, the distance between two stations is 4.8 cm on the map. Work out the real distance in kilometres, giving your answer to 2 significant figures.

(Total for Question 5 is 2 marks)

- 6** A model car is made to a scale of 1:18. The real car is 4.2 m long. Calculate the length of the model to 3 significant figures, in centimetres.

(Total for Question 6 is 2 marks)

- 7** A rectangular field measures 180 m by 120 m in reality. A plan is drawn to scale 1:600. Work out the length and width of the field on the plan, giving your answers in centimetres.

(Total for Question 7 is 3 marks)

- 8** A map is at scale 1:100 000. A straight railway line between two cities is 72 km in reality. What is the length of this railway on the map, in millimetres?

(Total for Question 8 is 2 marks)

- 9** On a map with scale 1:5000 a small building is shown with dimensions 3.6 cm by 2.4 cm. Calculate the actual area of the building in square metres.

(Total for Question 9 is 3 marks)

- 10** A road on a map with scale 1:20 000 measures 12 cm between two villages. If the speed limit on this road is 30 km/h, calculate how long, to the nearest minute, it takes to drive from one village to the other at the speed limit.

(Total for Question 10 is 3 marks)

- 11** A triangular feature on a site has side lengths 6 m, 8 m and 10 m in reality. A scale drawing is required at scale 1:200. Work out the lengths of the three sides on the drawing, giving your answers in centimetres.

(Total for Question 11 is 3 marks)

- 12** A large rectangular plot is shown on a plan at scale 1 cm: 250 m. The plot measures 6.4 cm by 3.75 cm on the plan. A diagonal path across the plot will be surfaced with gravel at a cost of £12 per metre. Calculate the total cost to the nearest pound.

(Total for Question 12 is 5 marks)

Mark scheme · 3.11D Scale Drawings: Fluency and Exam Drill

Question 1

- **B1** 1.5 km cao
- **Answer: 1.5 km (1500 m).** Use: $1:50\,000 \Rightarrow 1\text{ cm} = 500\text{ m}$, so $3\text{ cm} = 1500\text{ m} = 1.5\text{ km}$ (cao).

Question 2

- **M1** Convert 7.5 km to metres and divide by 250 m per cm ($1:25\,000 \Rightarrow 1\text{ cm} = 250\text{ m}$) or equivalent method
- **A1** 30 cm cao
- **Answer: 30 cm**

Question 3

- **B1** 19 m cao
- **Answer: 19 m**

Question 4

- **B1** 1.25 m cao
- **Answer: 1.25 m**

Question 5

- **M1** Multiply 4.8 cm by 400 m per cm to get 1920 m (or convert to km 1.92 km)
- **A1** 1.9 km awrt (2 significant figures) cao
- **Answer: 1.9 km**

Question 6

- **M1** Convert 4.2 m to 420 cm then divide by 18 (or use equivalent)
- **A1** 23.3 cm awrt cao
- **Answer: 23.3 cm**

Question 7

- **M1** Use $1:600 \Rightarrow 1\text{ cm} = 6\text{ m}$ (or divide metres by 6 to get cm on plan) or equivalent method
- **A1** 30 cm for the length cao
- **A1** 20 cm for the width cao
- **Answer: 30 cm by 20 cm**

Question 8

- **M1** Convert 72 km to mm and divide by 100 000, or use $1\text{ mm} = 100\text{ m}$ so divide 72 000 m by 100 to get 720 mm
- **A1** 720 mm cao
- **Answer: 720 mm**

Question 9

- **M1** Convert map lengths to real lengths: $1:5000 \Rightarrow 1\text{ cm} = 50\text{ m}$, so $3.6\text{ cm} \rightarrow 180\text{ m}$ and $2.4\text{ cm} \rightarrow 120\text{ m}$
- **M1** Use $\text{area} = \text{length} \times \text{width}$ with converted values
- **A1** 21600 m^2 cao
- **Answer: 21600 m^2**

Question 10

- **M1** Convert 12 cm on map to real distance: $1:20\,000 \Rightarrow 1\text{ cm} = 200\text{ m}$, so $12\text{ cm} = 2400\text{ m} = 2.4\text{ km}$
- **M1** Use $\text{time} = \text{distance}/\text{speed}$ in hours: $2.4/30 = 0.08$ hours
- **A1** 5 minutes cao ($0.08\text{ h} \times 60 = 4.8$ minutes, rounds to 5 minutes)
- **Answer: 5 minutes**

Question 11

- **B1** 6 m $\rightarrow$ 600 cm real, then map length = $600/200 = 3$ cm cao
- **B1** 8 m $\rightarrow$ 800 cm real, map length = $800/200 = 4$ cm cao
- **B1** 10 m $\rightarrow$ 1000 cm real, map length = $1000/200 = 5$ cm cao
- **Answer: 3 cm, 4 cm, 5 cm**

Question 12

- **M1** Convert map measurements to real lengths: $6.4 \text{ cm} \times 250 = 1600 \text{ m}$, $3.75 \text{ cm} \times 250 = 937.5 \text{ m}$
- **M1** State and use Pythagoras for diagonal d: $d^2 = 1600^2 + 937.5^2$
- **M1** Calculate diagonal length approx 1854.43 m (correct to at least 3 significant figures) ft
- **M1** Multiply length by cost per metre: $1854.42878... \times 12 = 22253.14536...$
- **A1** £22,253 cao (to the nearest pound)
- **Answer: £22,253**