

Scale drawings and maps

Exam questions

Foundation and Higher tiers

Please write clearly in block capitals.

Name

Class **Teacher**

Time allowed: 90 minutes

Materials

For this booklet you need a black pen, a pencil, a ruler, a rubber and a calculator for Section B.

Instructions

- Use black ink or black ballpoint pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions in the spaces provided.
- **Section A** (questions 1 to 14): you must not use a calculator.
- **Section B** (questions 15 to 26): you may use a calculator.
- Do all rough work in this booklet. Cross through any work you do not want marked.

Information

- The marks for each question are shown in brackets.
- The maximum mark for this booklet is 81.

Advice

- Read each question carefully.
- In all calculations, show clearly how you work out your answer.

For teacher's use

Q	Mark	Q	Mark
1		14	
2		15	
3		16	
4		17	
5		18	
6		19	
7		20	
8		21	
9		22	
10		23	
11		24	
12		25	
13		26	
TOTAL			

Section A**You must not use a calculator**Do not
write
outside
the box

- 1** **(a)** Here is a line AB.



Measure the length of AB.
Give your answer in centimetres.

Answer _____ cm

[1 mark]

- (b)** The line AB is a scale drawing of a fence.
1 cm represents 2 m

Work out the real length of the fence.

Answer _____ m

[1 mark]

2 A model of a fishing boat is made to a scale of 1 : 40

- (a) The model is 28 cm long.
Work out the length of the real boat.
Give your answer in metres.

Answer _____ m

[2 marks]

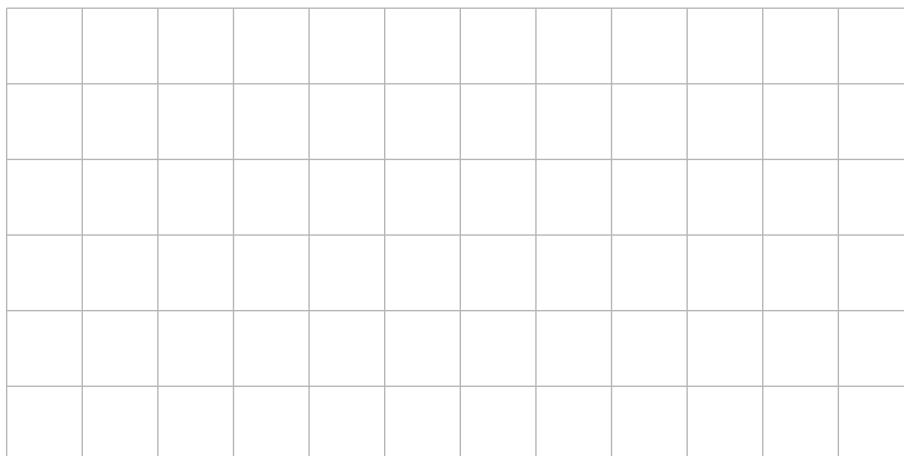
- (b) The mast of the real boat is 9.2 m tall.
Work out the height of the mast on the model.
Give your answer in centimetres.

Answer _____ cm

[2 marks]

3 A rectangular patio is 6 m long and 4.5 m wide.

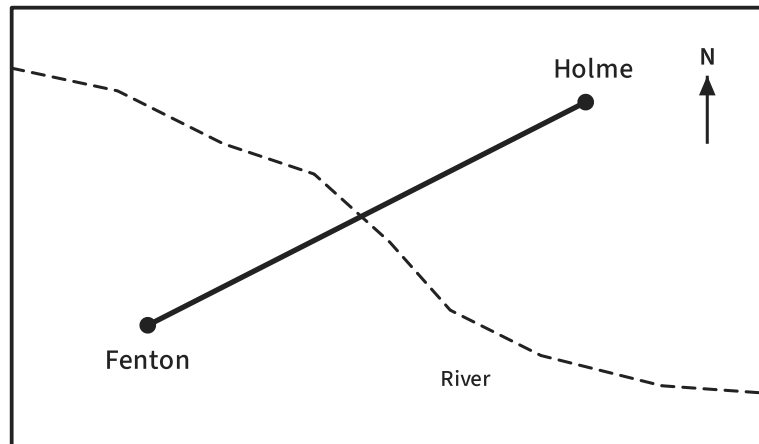
On the centimetre grid, make a scale drawing of the patio.
Use a scale of 1 cm to 1.5 m



[2 marks]

- 4** The map shows a straight road from Fenton to Holme.
The map is drawn accurately.
Scale: 1 cm represents 2 km

Do not
write
outside
the box



- (a)** Use the map to work out the real distance from Fenton to Holme.

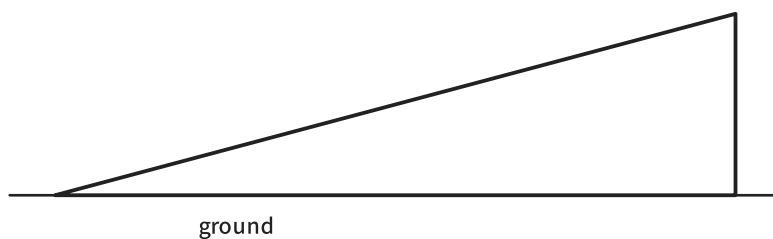
Answer _____ km

[2 marks]

- (b)** A bus stop is on the road, 5 km from Fenton.
Mark the position of the bus stop on the map with a cross (×).

[1 mark]

- 5** The diagram is an accurate scale drawing of the side view of a ramp.
Scale: 1 cm represents 50 cm



- (a)** Work out the real length of the sloping surface of the ramp.
Give your answer in metres.

Answer _____ m

[2 marks]

- (b)** Write down the real angle between the sloping surface and the ground.

Answer _____ degrees

[1 mark]

- 6** A plan of a park has a scale of 1 : 500
Kai says,
“On the plan, 1 cm represents 500 m.”

- (a)** Explain why Kai is wrong.

[1 mark]

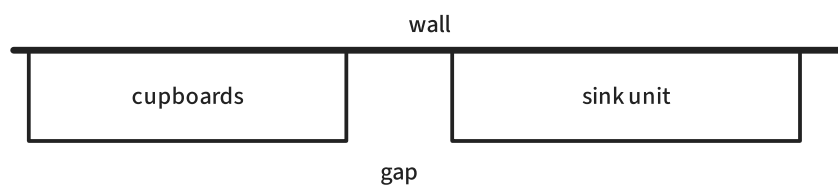
- (b)** What does 1 cm on the plan represent?
Give your answer in metres.

Answer _____ m

[1 mark]

7

The plan shows a row of kitchen units with a gap between them.
The plan is drawn accurately.
Scale 1 : 50



A fridge is 62 cm wide.
Will the fridge fit in the gap?
You must show your working.

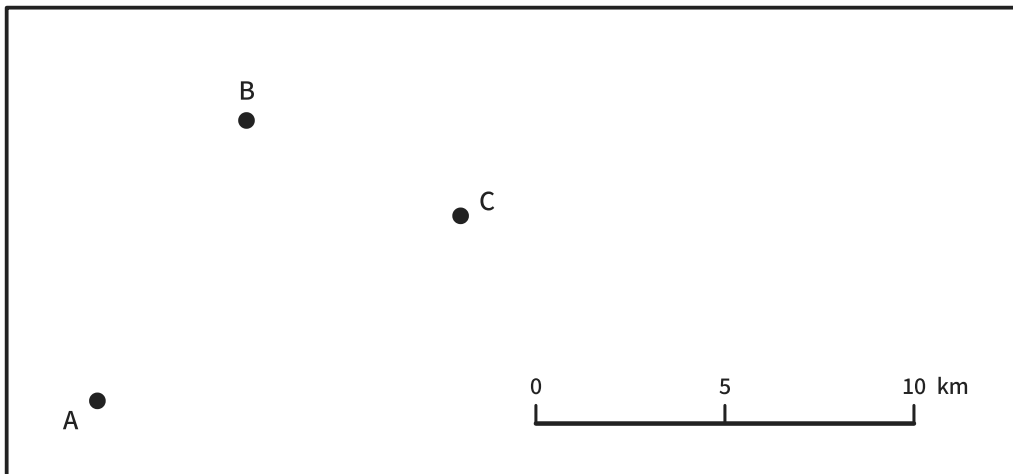
Do not
write
outside
the box

[2 marks]

8

The map shows three villages, A, B and C.
The map is drawn accurately.

Do not
write
outside
the box



A drone flies in a straight line from A to B.
It then flies in a straight line from B to C.

Use the map to work out the total distance the drone flies.

Answer _____ km

[3 marks]

9 On a map, 4 cm represents 1 km

(a) Write the scale of the map in the form 1 : n

Answer _____

[2 marks]

(b) A lake is 2.6 km long.
How long is the lake on the map?

Answer _____ cm

[1 mark]

10 Two villages are shown on two different maps.

Map A	Map B
Scale 1 : 50 000	1 cm represents 2.5 km

On Map A the villages are 6 cm apart.

How far apart are the villages on Map B?

Answer _____ cm

[3 marks]

- 11** Lily wants to draw a plan of her school field on a sheet of paper.
The field is 140 m long.
The sheet of paper is 29.7 cm long.
She will draw the length of the field along the length of the paper.
She can use one of these scales.

1 : 200 1 : 500 1 : 1000

Which scale should she use to make the plan as large as possible?
You must show your working.

Answer _____

[3 marks]

- 12** A nature reserve has an area of 0.72 km^2
It is shown on a map with a scale of 1 : 40 000

Work out the area of the nature reserve on the map.

Answer _____ cm^2

[3 marks]

- 13** The same field is shown on two maps.

	Scale	Area of the field on the map
Map P	1 : 25 000	8 cm ²
Map Q	1 : n	2 cm ²

Work out the value of n .

$n =$ _____ [3 marks]

- 14** A farmer has a grain silo that holds 750 m³
 A model of the silo holds 6 litres.
 The model and the silo are mathematically similar.
 1 m³ = 1000 litres
 The scale of the model is 1 : n
 Work out the value of n .

$n =$ _____ [3 marks]

Section B



You may use a calculator

Do not
write
outside
the box

- 15** A map has a scale of 1 : 25 000
On the map, a walking trail is 18.6 cm long.
Hana walks the whole trail.
She says,
"I walked more than 5 km."
- Is Hana correct?
You must show your working.

[3 marks]

- 16** A doll's house is a model of a real house.
The scale of the model is 1 : 12
- (a)** The real sofa is 1.89 m long.
Work out the length of the model sofa.
Give your answer in centimetres.

Answer _____ cm

[2 marks]

- (b)** The front door of the model is 16.8 cm tall.
Ivan is 2.03 m tall.
Can Ivan walk through the real front door without bending down?
You must show your working.

[2 marks]

17

A plan of a garden has a scale of 1 : 120

On the plan, a rectangular pond is 3.65 cm long and 2.4 cm wide.

A net to cover the pond must reach 30 cm past the edge of the pond on every side.

Pond nets are sold in these sizes.

4 m by 3 m 5 m by 4 m 6 m by 5 m

Which is the smallest net that is big enough?

You must show your working.

[3 marks]**18**

A plan of a field has a scale of 1 : 2500

On the plan, the field is a rectangle 6.4 cm long and 3.8 cm wide.

1 hectare = 10 000 m²

A farmer says the field has an area of more than 1.5 hectares.

Is the farmer correct?

You must show your working.

[3 marks]

- 19** A ferry route is 7.5 cm long on a map with scale 1 : 200 000
The ferry travels at an average speed of 24 km/h
How many minutes does the ferry take for the route?

Answer _____ minutes
[3 marks]

- 20** A real train engine is 21.3 m long.
A model of the engine is 24.2 cm long.
Work out the scale of the model in the form 1 : n
Give n to the nearest whole number.

Answer _____
[2 marks]

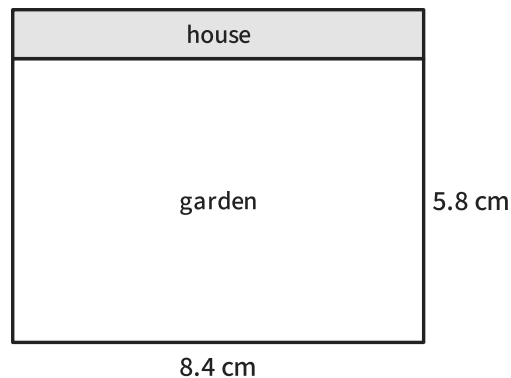
21

The diagram is a plan of a rectangular garden.

The scale of the plan is 1 : 150

A fence is put along the three sides of the garden that are not next to the house.

The fence is made from panels. Each panel is 1.8 m long and costs £34.99



Not drawn accurately

Work out the total cost of the panels.

Answer £ _____

[4 marks]

22

A plan of a new building has a scale of 1 : 50

The building has 6 windows, all the same size.

On the plan, each window is a rectangle 3.7 cm wide and 2.9 cm high.

Glass for the windows costs £84.50 per m²

The builder has £1350 to spend on glass.

Is £1350 enough to buy the glass for all 6 windows?

You must show your working.

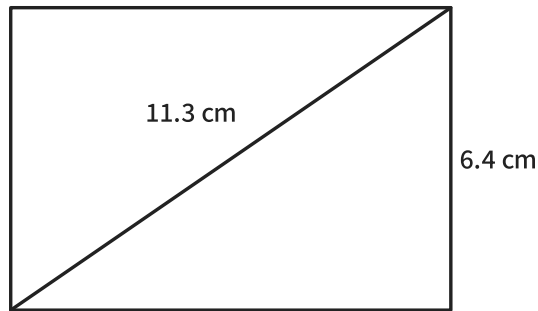
[4 marks]

23

A sports hall has a rectangular floor.

A plan of the hall has a scale of 1 : 400

On the plan, the diagonal of the floor is 11.3 cm and the width of the floor is 6.4 cm.



Not drawn accurately

Work out the real area of the floor.

Give your answer to the nearest m^2

Answer _____ m^2

[4 marks]

24

A map has a scale of 1 : 25 000

On the map, a lake has an area of 12 cm^2

Work out the real area of the lake.

Give your answer in km^2

Answer _____ km^2

[3 marks]

25 A model of a car is made to a scale of 1 : 43

- (a)** The painted surface of the model has an area of 96.2 cm^2
Work out the area of the painted surface of the real car.
Give your answer in m^2 to 1 decimal place.

Answer _____ m^2

[3 marks]

- (b)** The fuel tank of the real car holds 55 litres.
Work out the volume of the fuel tank of the model.
Give your answer in cm^3 to 2 significant figures.
1 litre = 1000 cm^3

Answer _____ cm^3

[2 marks]

26

A sculptor makes a model of a statue.

The model and the statue are mathematically similar.

The model is 24 cm tall and the statue is 3.3 m tall.

The model is made of resin. It has a mass of 640 g. The density of the resin is 1.2 g/cm^3

The statue is solid bronze. The density of the bronze is 8.8 g/cm^3

1 tonne = 1 000 000 g

Work out the mass of the statue.

Give your answer in tonnes to 3 significant figures.

Answer _____ tonnes

[4 marks]

END OF QUESTIONS