Chhetri Academy

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GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 50

Bearings and scale drawings

Foundation tier

Past paper question booklet

43	2012-2025	Foundation
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

6 The diagram shows two places on a map.



The scale of the map is 1 centimetre represents 2 kilometres.

What is the real distance, in kilometres, from the hill to the tower?

..... kilometres

(Total for Question 6 is 2 marks)

14 Josh has some land in the shape of a triangle as shown in the diagram.

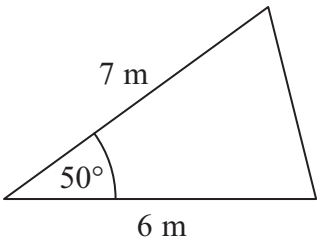


Diagram **NOT** accurately drawn

(a) Make an accurate scale drawing of this triangle.

(3)

Josh is going to put a fence along each side of the land.

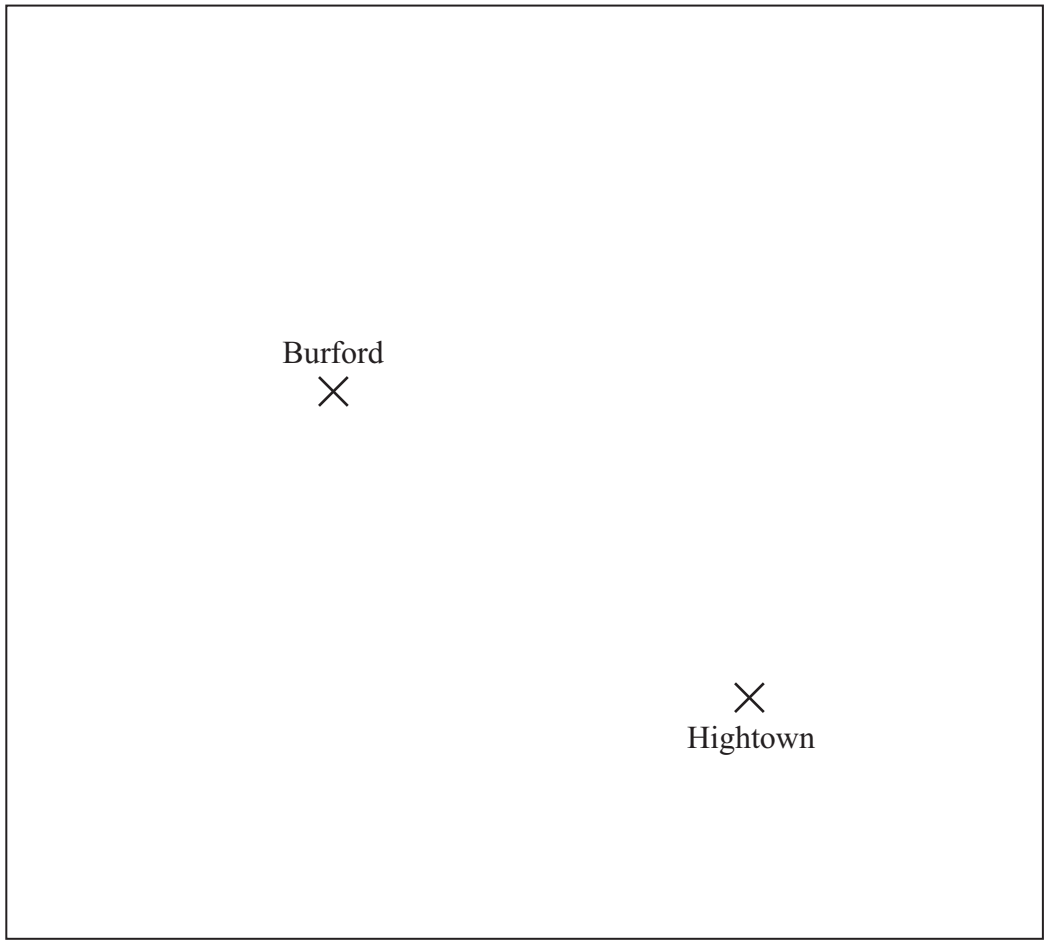
(b) Work out the total length of the fence.

..... m

(2)

(Total for Question 14 is 5 marks)

28 Here is a map.
The map shows two towns, Burford and Hightown.



Scale: 1 cm represents 10 km

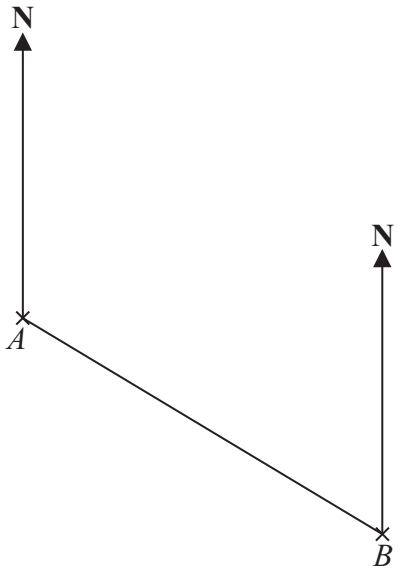
A company is going to build a warehouse.

The warehouse will be less than 30 km from Burford **and** less than 50 km from Hightown.

Shade the region on the map where the company can build the warehouse.

(Total for Question 28 is 3 marks)

12 The scale diagram shows the positions of two towns, A and B.



Scale: 1 cm represents 10 km

(a) Measure and write down the bearing of town B from town A.

..... °

(1)

(b) What is the real distance from town A to town B?
Give your answer in km.

..... km

(3)

(Total for Question 12 is 4 marks)

21 Here is a scale drawing of a rectangular garden $ABCD$.



Scale: 1 cm represents 1 metre.

Jane wants to plant a tree in the garden

at least 5 m from point C,
nearer to AB than to AD
and less than 3 m from DC.

On the diagram, shade the region where Jane can plant the tree.

(Total for Question 21 is 4 marks)

19 Here is a scale drawing of Gilda's garden.



Scale: 1 cm represents 1 m

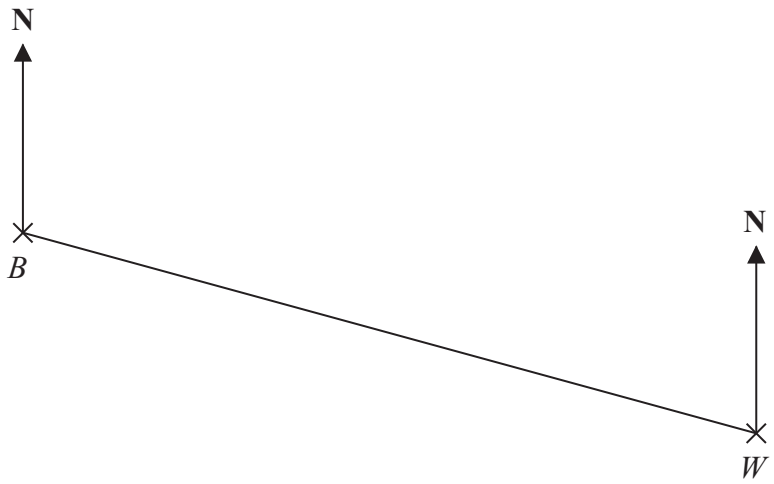
Gilda is going to plant an elm tree in the garden.

She must plant the elm tree at least 4 metres from the oak tree.

On the diagram, show by shading the region where Gilda can plant the elm tree.

(Total for Question 19 is 2 marks)

20 The diagram shows the positions of two villages, Beckhampton (B) and West Kennett (W).



Scale: 4 cm represents 1 km.

(a) Work out the real distance, in km, of Beckhampton from West Kennett.

..... km

(2)

The village, Avebury (A), is on a bearing of 038° from Beckhampton.

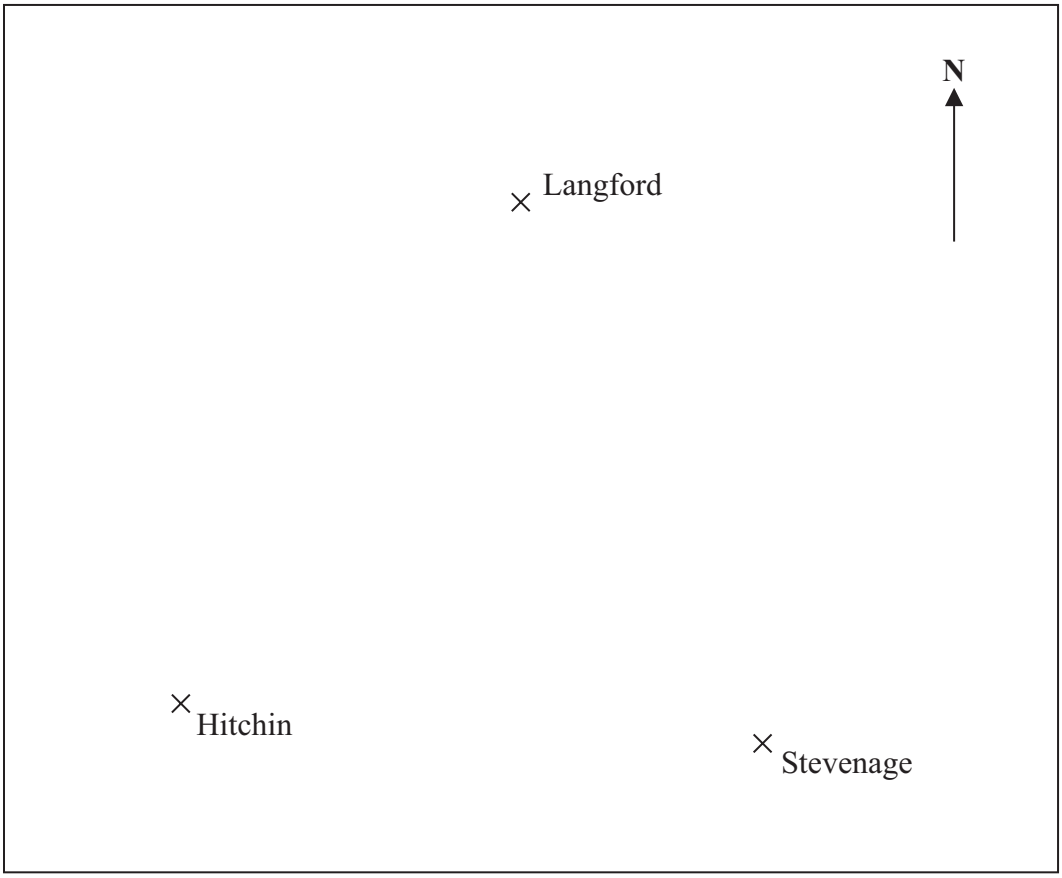
On the diagram, A is 6 cm from B.

(b) On the diagram, mark A with a cross (×).
Label the cross A.

(2)

(Total for Question 20 is 4 marks)

15 Here is a map showing three towns.



Scale: 1 cm represents 1 km.

(a) Work out the real distance from Hitchin to Langford.

..... km

(1)

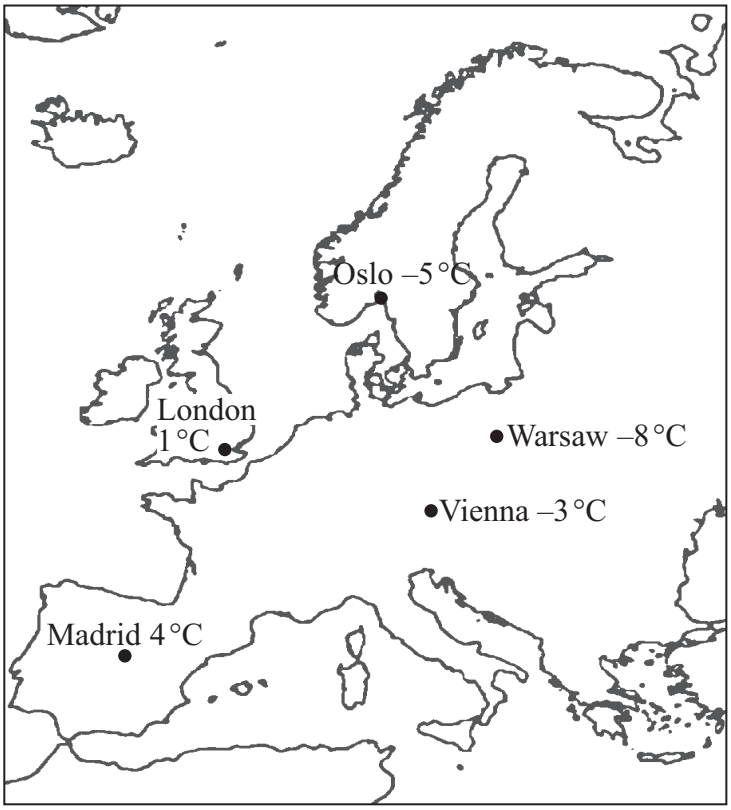
(b) Measure the bearing of Stevenage from Langford.

..... °

(2)

(Total for Question 15 is 3 marks)

7 Here is a map.



The map shows the temperatures in 5 cities at midday.

(a) Which city has the lowest temperature?

.....

(1)

(b) Work out the difference between the temperature in Oslo and the temperature in London.

.....°C

(1)

By midnight, the temperature in Madrid had gone down by 7 °C.

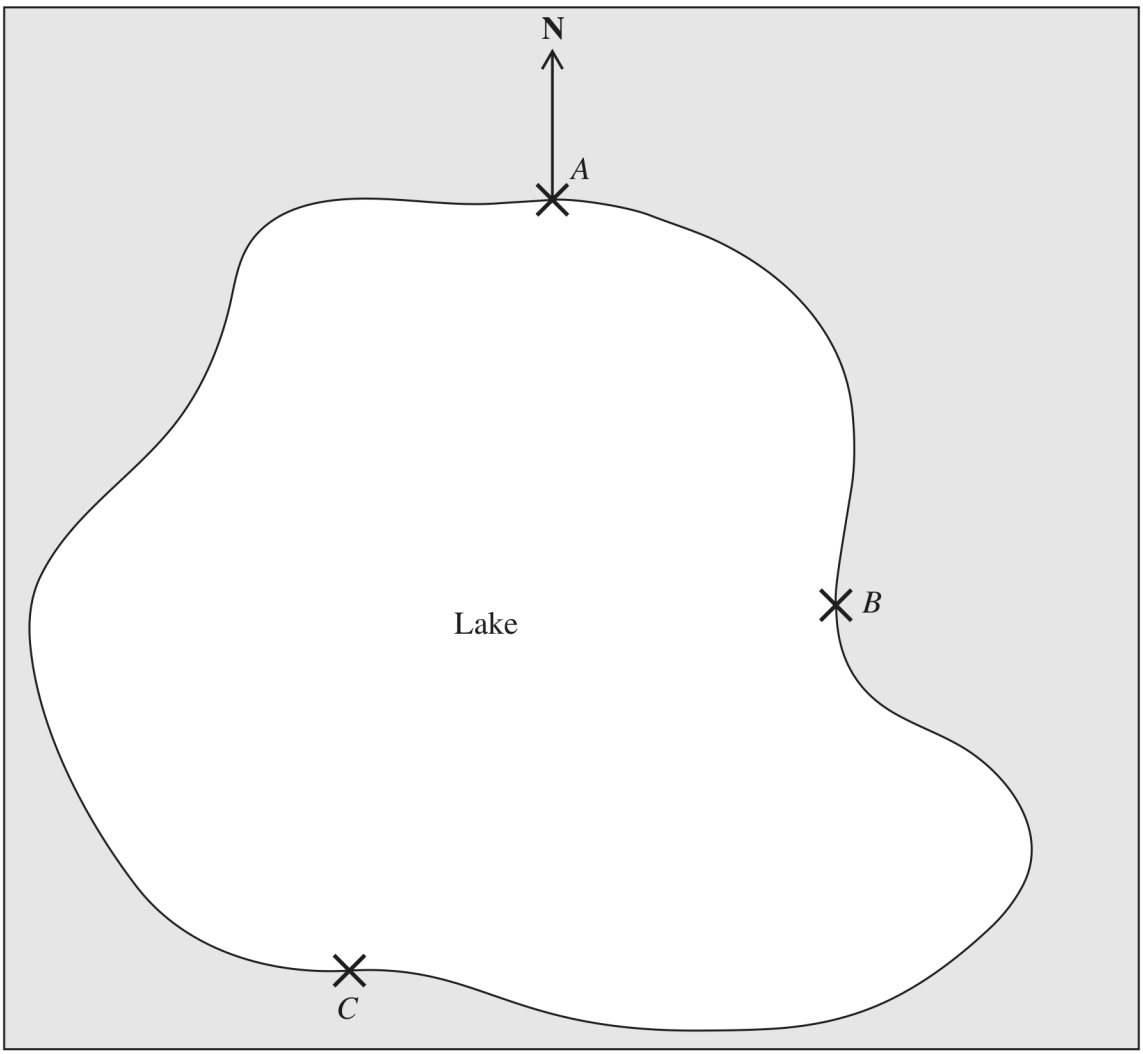
(c) Work out the temperature in Madrid at midnight.

.....°C

(1)

(Total for Question 7 is 3 marks)

12 The map shows the positions of three places A, B and C on the edge of a lake.



Scale 1 cm represents 2 km

(a) Find the bearing of B from A.

.....°

(1)

A ferry travels in a straight line from A to B.
It then travels in a straight line from B to C.

A speedboat travels in a straight line from A to C.

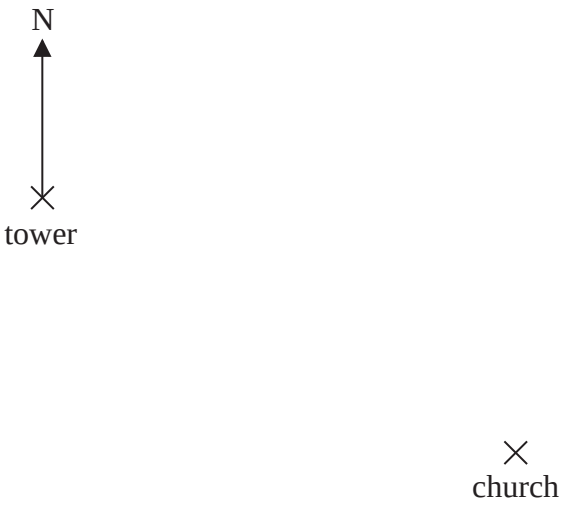
(b) How many more kilometres does the ferry travel than the speedboat?
You must show your working.

.....km

(4)

(Total for Question 12 is 5 marks)

16 The diagram shows part of a map.



(a) Find the bearing of the church from the tower.

..... °

(1)

The scale of the map is 1 cm represents 2.5 km.

(b) Work out the real distance between the tower and the church.

..... km

(2)

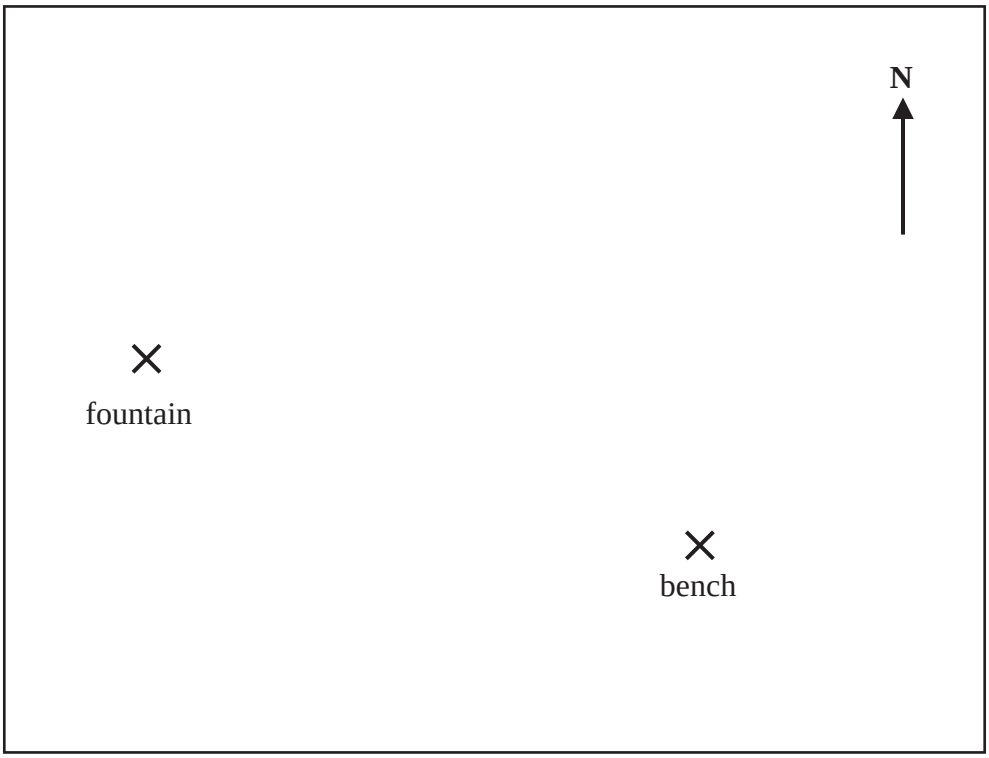
A school is 15 km due North of the church.

(c) On the diagram, mark with a cross (×) the position of the school.
Label your cross S.

(2)

(Total for Question 16 is 5 marks)

18 The diagram shows a scale drawing of a garden.



Scale: 1 centimetre represents 2 metres

(a) Work out the real distance from the fountain to the bench.

.....metres
(1)

(b) Measure the bearing of the bench from the fountain.

°
.....
(2)

Haavi is going to plant a tree in the garden.

The tree must be

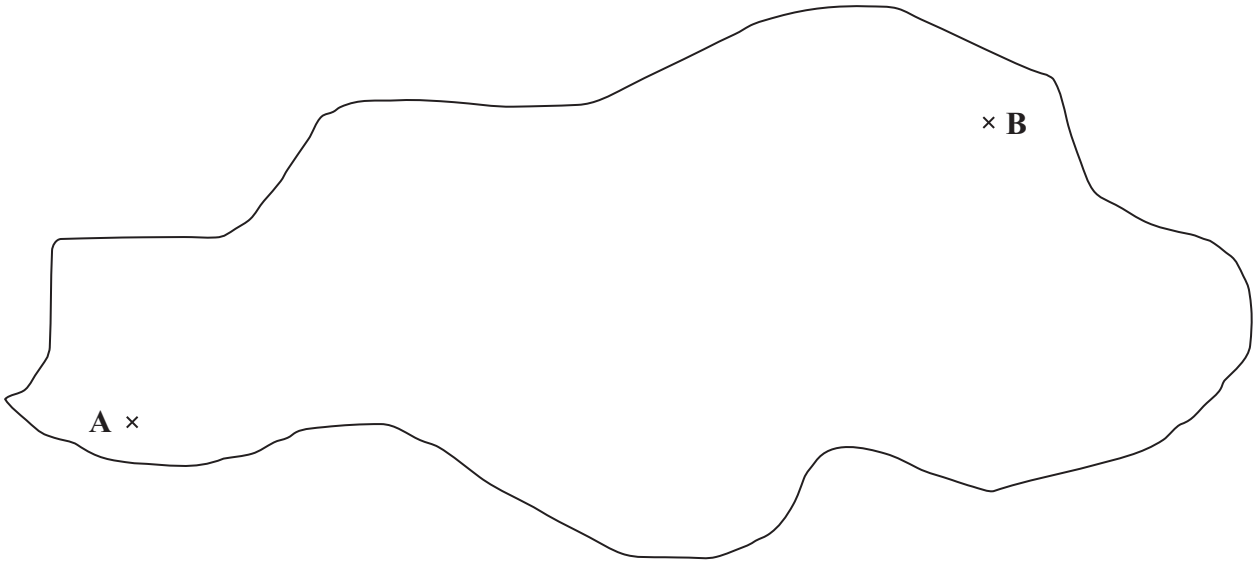
less than 7 metres from the fountain,
less than 12 metres from the bench.

(c) On the diagram show, by shading, the region in which Haavi can plant the tree.

(3)

(Total for Question 18 is 6 marks)

18 The map shows two airports, **A** and **B**.



Scale: 1 cm to 100 km

A plane flies directly from **A** to **B**.
The average speed of the plane is 300 km/h.

How long does the plane take to fly from **A** to **B**?
You must show all your working.

..... hours

(Total for Question 18 is 3 marks)

24 Here is a scale drawing of an office.
The scale is 1 cm to 2 metres.



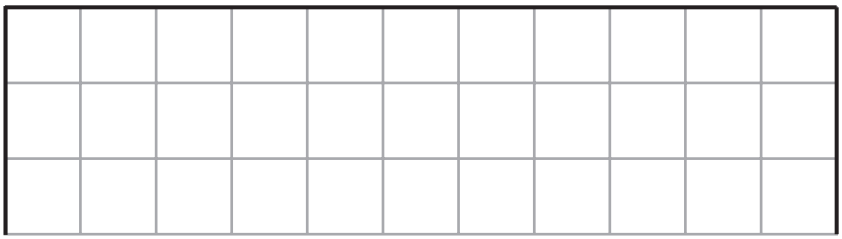
A photocopier is going to be put in the office.
The photocopier has to be closer to *B* than it is to *A*.
The photocopier also has to be less than 8 metres from *C*.

Show, by shading, the region where the photocopier can be put.

(Total for Question 24 is 3 marks)

10 The scale diagram shows part of the plan of a classroom.

bookshelves



Scale: 1 cm represents 50 cm

Mr Khan wants to put bookshelves along the complete length of the wall labelled "bookshelves".

There are two sizes of bookshelves.
Large bookshelves are 150 cm wide.
Small bookshelves are 100 cm wide.

(i) Work out how many large bookshelves and how many small bookshelves Mr Khan can put along the complete length of the wall.

..... large

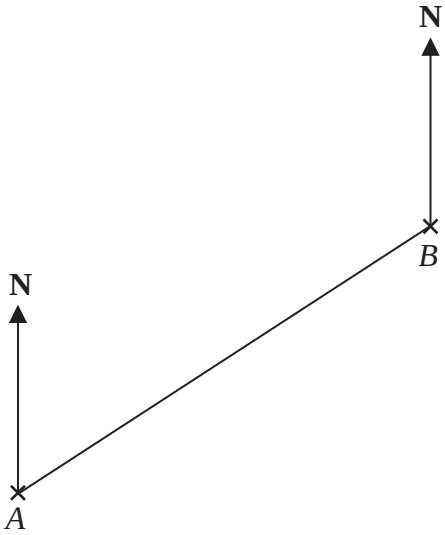
..... small

Both the large bookshelves and the small bookshelves are 50 cm from front to back.

(ii) Draw these bookshelves on the scale drawing to show how they will fit.

(Total for Question 10 is 4 marks)

17 The scale diagram shows the positions of two airports, *A* and *B*.



Scale: 1 cm represents 10 km

(a) Measure and write down the bearing of airport *B* from airport *A*.

..... °

(1)

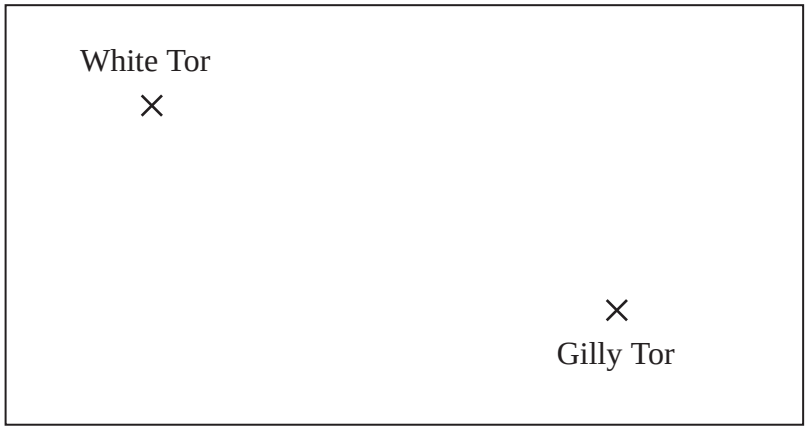
(b) What is the real distance from airport *A* to airport *B*?

..... km

(2)

(Total for Question 17 is 3 marks)

6 The diagram shows the positions of White Tor and Gilly Tor on a map.



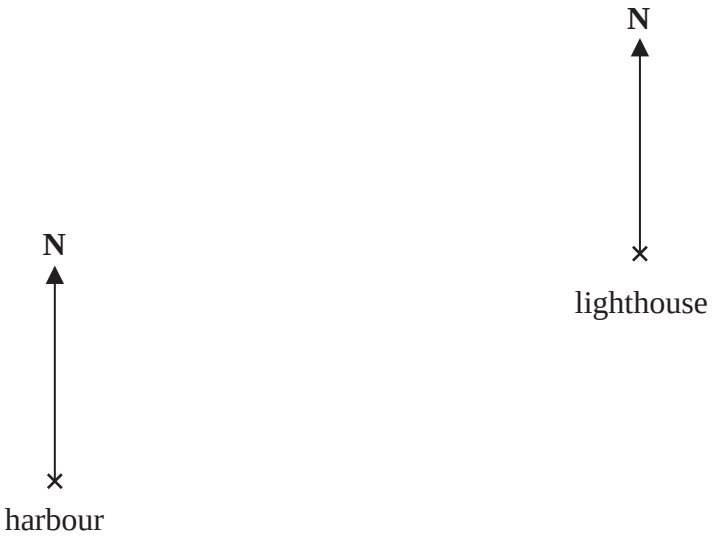
The scale of the map is 1 centimetre represents 2.5 kilometres.

Work out the real distance between White Tor and Gilly Tor.

.....kilometres

(Total for Question 6 is 2 marks)

21 The diagram shows the positions of a lighthouse and a harbour on a map.



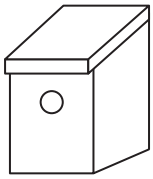
A boat is on a bearing of

300° from the lighthouse
040° from the harbour.

On the diagram, mark with a cross (×) the position of the boat.
Label the boat *B*.

(Total for Question 21 is 3 marks)

13 Tina is making a nest box for birds.



Tina has marked the six parts she needs on a piece of wood, as shown in the diagram below.

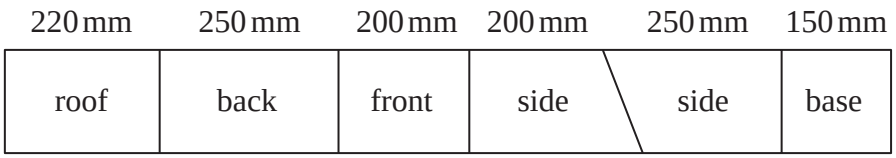


Diagram **NOT** accurately drawn

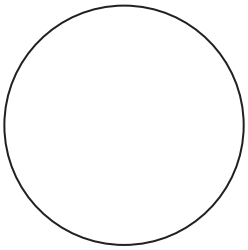
(a) Work out the total length of the six parts.

.....mm

(2)

Tina is going to cut a circular hole in the front of the nest box.

She makes this accurate full size drawing to represent the hole.



(b) Measure the diameter of the hole.

.....

(1)

Here is a sketch of one side of the nest box.

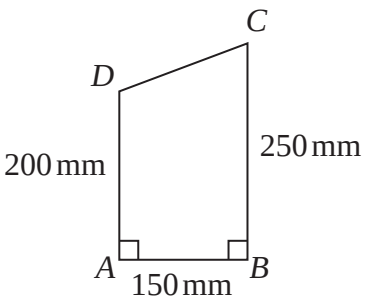


Diagram **NOT** accurately drawn

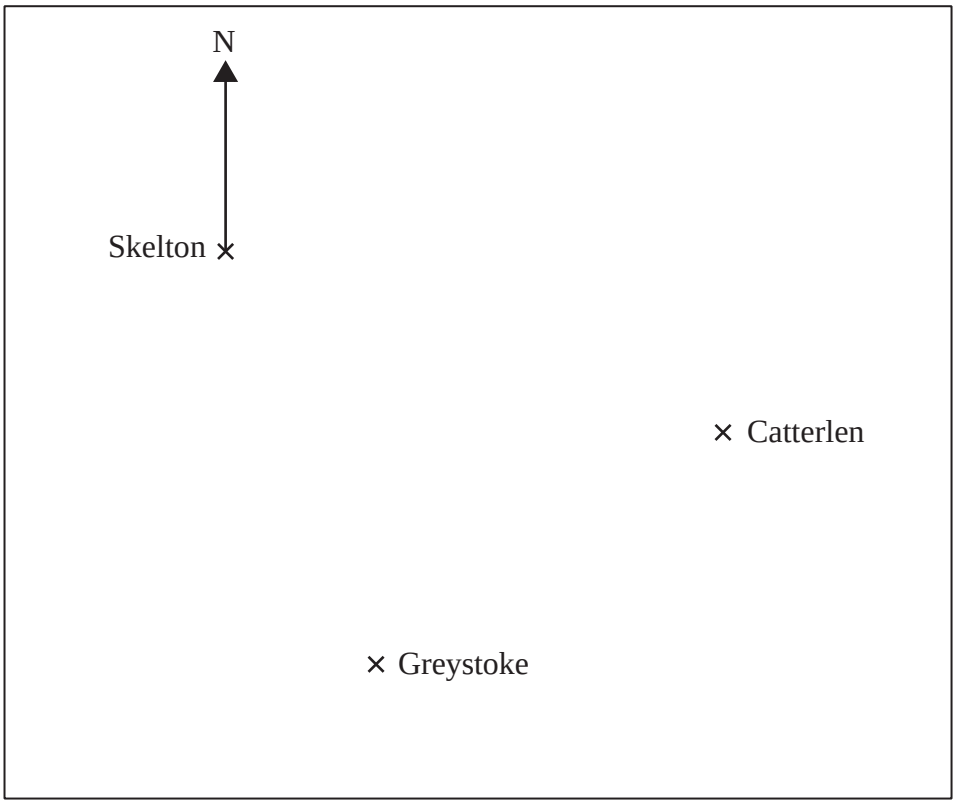
(c) In the space below, make an accurate scale drawing of this side of the nest box.
Use a scale of 1 cm to 20 mm.
The line *AB* has been drawn for you.

A ——————————————— *B*

(3)

(Total for Question 13 is 6 marks)

10 Here is a map showing three villages.



Scale: 1 cm represents 1 km.

(a) Work out the real distance from Catterlen to Skelton.

..... km

(1)

(b) Measure the bearing of Catterlen from Skelton.

..... °

(2)

A fourth village is the same distance from Greystoke as it is from Skelton.

(c) Mark with a cross (×) one possible position for this village.

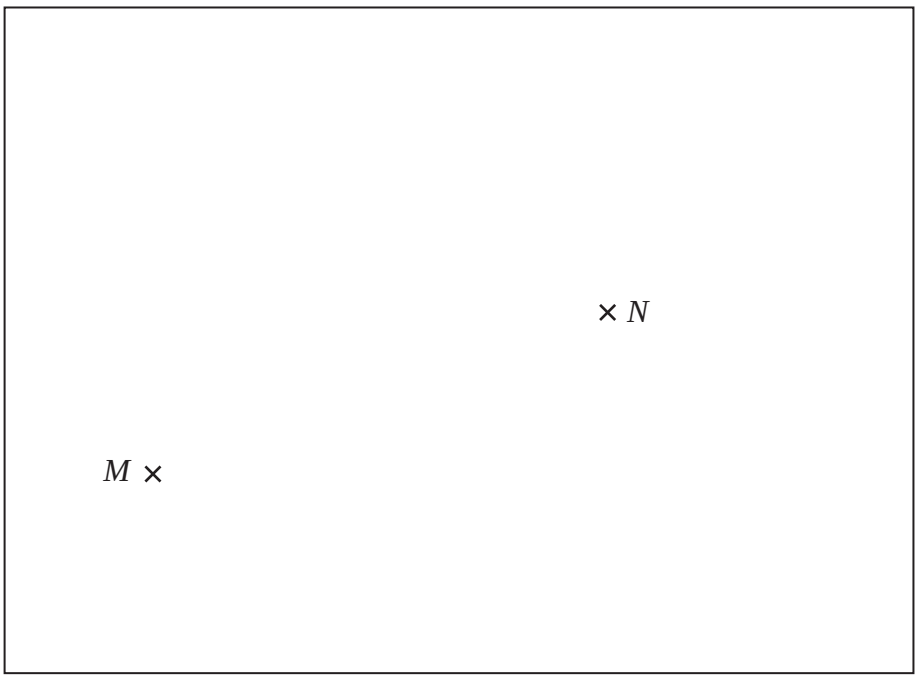
(1)

(Total for Question 10 is 4 marks)

17 Here is a map.
The map shows two towns Marlford (M) and Newborough (N).

A company is going to build a supermarket.
The supermarket will be more than 10 km from Marlford and less than 6 km from Newborough.

Find and shade the region on the map where the company can build the supermarket.



Scale: 1 cm represents 2 km.

(Total for Question 17 is 3 marks)

9 Here is a scale drawing of the plan of a room.



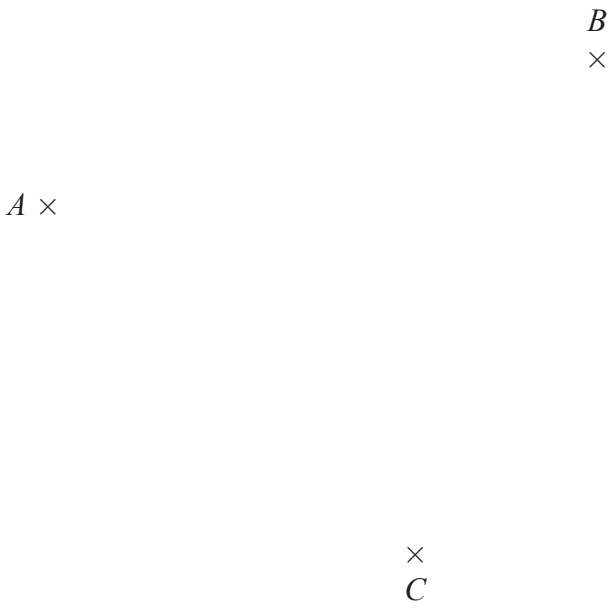
Scale: 2 cm represents 1 m

Work out the total length around the edge of the room.
Give your answer in metres.

.....metres

(Total for Question 9 is 3 marks)

16 A, B and C are three points on a map.



1 cm represents 100 metres.

Point T is 250 metres from point A.
Point T is equidistant from point B and point C.

On the map, show one of the possible positions for point T.

(Total for Question 16 is 3 marks)

9 Here is a map of an island.

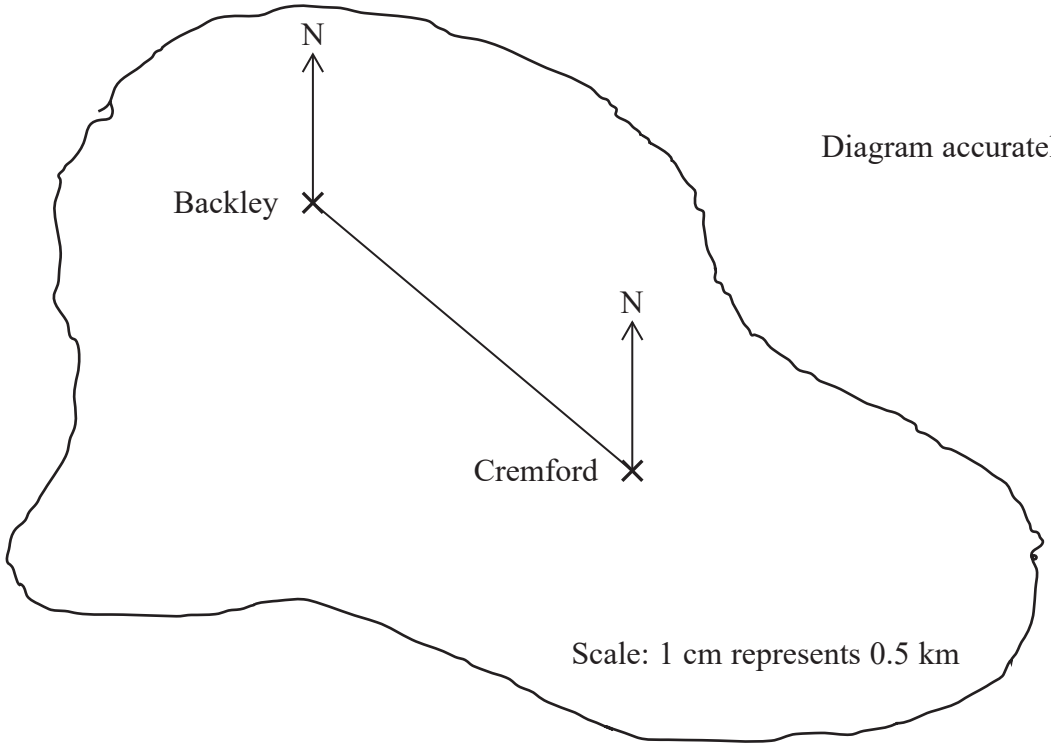


Diagram accurately drawn

A straight road joins the two villages, Backley and Cremford.

(a) Work out the real distance between the two villages.

.....km

(2)

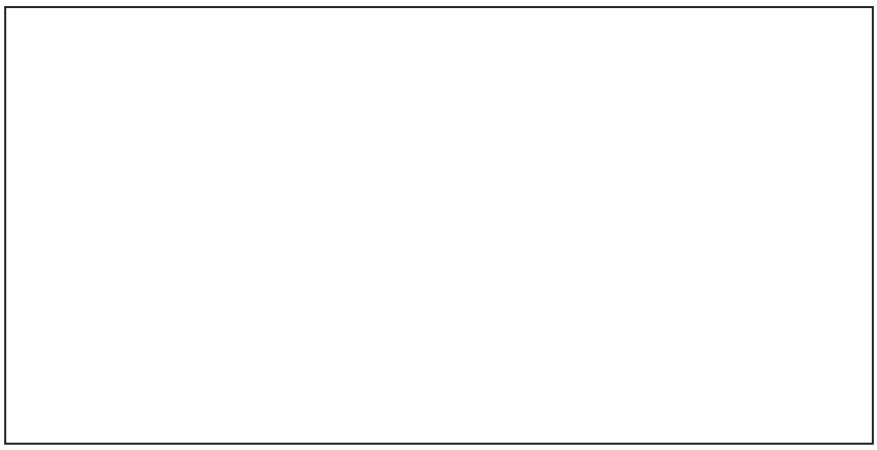
(b) Find the bearing of Cremford from Backley.

.....°

(1)

(Total for Question 9 is 3 marks)

12 The diagram shows a scale drawing of a tennis court.



The scale of the drawing is 1 : 200

Work out the perimeter of the real tennis court.
Give your answer in metres.

..... metres

(Total for Question 12 is 5 marks)

Question 26

8 A map has a scale of 1 cm to 14 km.

On the map, the distance between Manchester and London is 18.8 cm.

What is the real distance, in km, between Manchester and London?

.....km

(Total for Question 8 is 2 marks)

19 Here is a plan of a kitchen drawn to a scale of 1 : 30



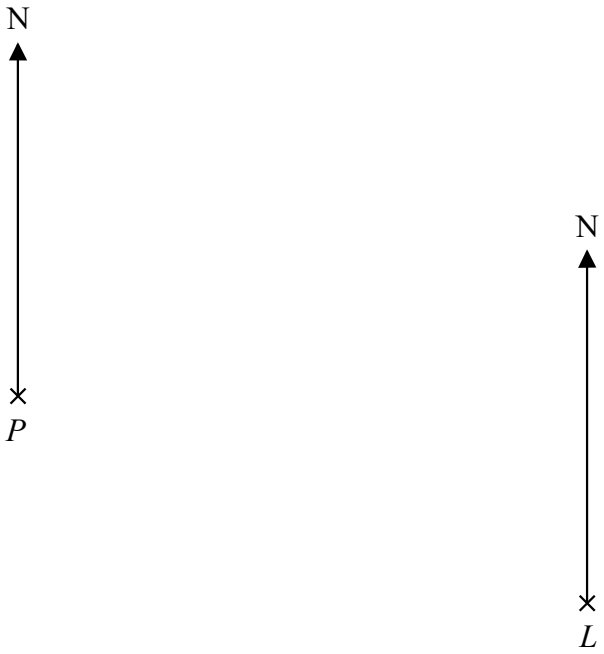
Sam is going to put a small table in the kitchen.

The table has to be
more than 180 cm from A
more than 150 cm from BC

Show, by shading on the diagram, the region where Sam can put the table.

(Total for Question 19 is 4 marks)

27 The accurate scale drawing shows the positions of port P and a lighthouse L.



Scale: 1 cm represents 4 km.

Aleena sails her boat from port P on a bearing of 070°

She sails for $1\frac{1}{2}$ hours at an average speed of 12 km/h to a port Q.

Find

(i) the distance, in km, of port Q from lighthouse L,

(ii) the bearing of port Q from lighthouse L.

distance QL = ... km

bearing of Q from L = ... °

(Total for Question 27 is 5 marks)

Question 29

15 The length of a plane is 19.2 metres.

Lukas buys a scale model of the plane.
The scale of the model is 1 : 24

Work out the length of the scale model of the plane.
Give your answer in centimetres.

..... centimetres

(Total for Question 15 is 3 marks)

13 The diagram shows two points, *A* and *B*, on a map.

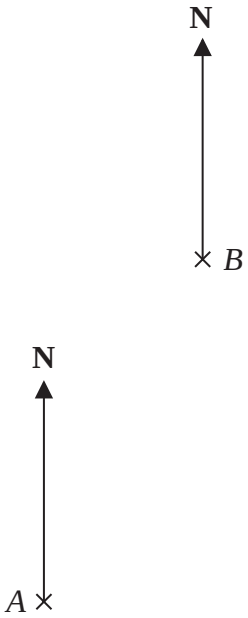


Diagram accurately drawn

Scale: 1 to 25 000

(a) Find the bearing of *B* from *A*.

..... °

(1)

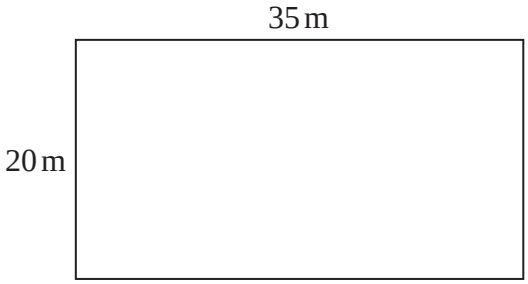
(b) Work out the real distance between *A* and *B*.
Give your answer in kilometres.

..... kilometres

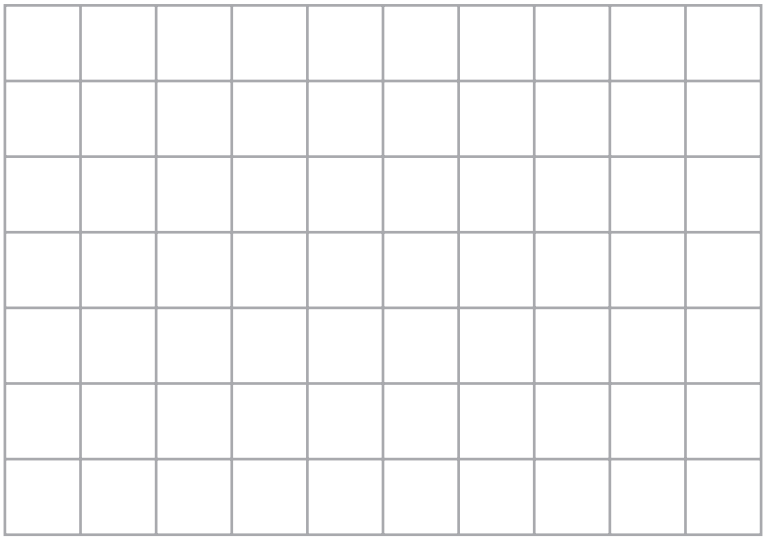
(3)

(Total for Question 13 is 4 marks)

5 The diagram shows a rectangle.

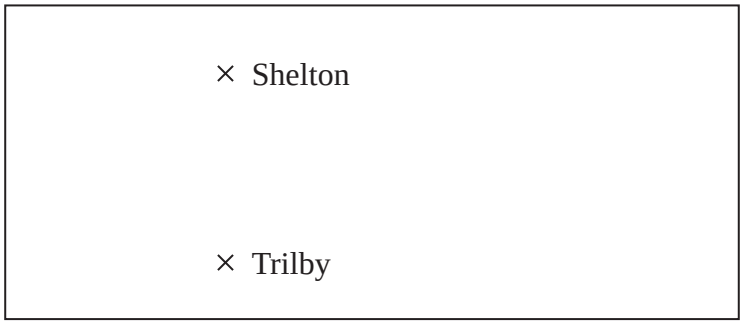


On the centimetre grid below, draw an accurate scale drawing of this rectangle.
Use a scale of 1 cm to represent 5 m.



(Total for Question 5 is 2 marks)

12 The diagram shows two places on a map.



Scale: 1 centimetre represents 20 kilometres

(a) What is the actual distance, in kilometres, from Shelton to Trilby?

..... kilometres
(2)

On a scale drawing, the scale is given as 1 : 1200

(b) How many metres does 5 centimetres represent on this drawing?

..... metres
(2)

(Total for Question 12 is 4 marks)

Question 33

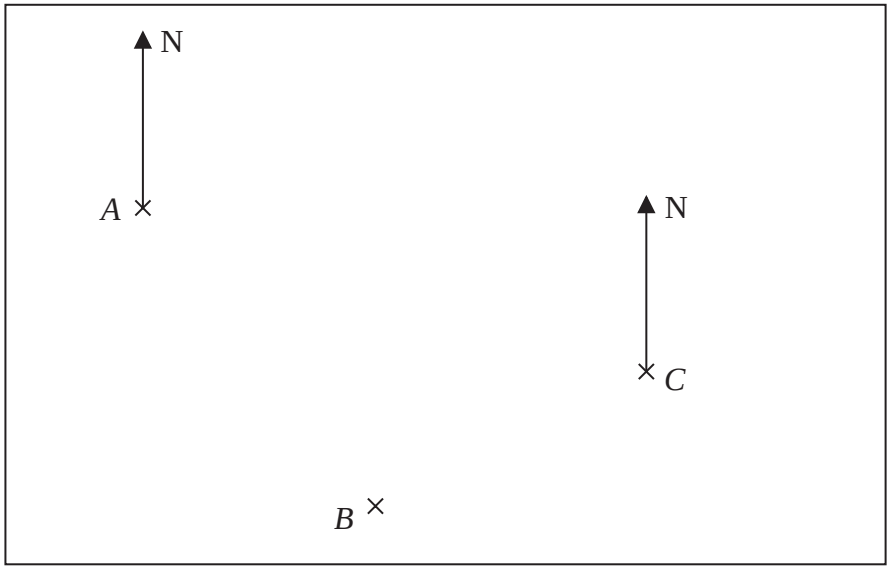
16 On a scale drawing, a building has length 12.4 cm and width 9.4 cm.
The real length of the building is 62 metres.

Work out, in metres, the real width of the building.

..... metres

(Total for Question 16 is 3 marks)

13 The accurately drawn map shows the positions of three points, *A*, *B* and *C*, in a field.



Scale: 1 cm represents 150 metres

Parveen walks in a straight line from *A* to *B*.
She then walks in a straight line from *B* to *C*.

Susan walks in a straight line from *A* to *C*.

Parveen walks more metres than Susan.

(a) How many more?

..... metres
(3)

(b) Find by measurement the bearing of *A* from *C*.

°
.....
(1)

(Total for Question 13 is 4 marks)

14 Jenny drives from London to Swindon at an average speed of 54 miles per hour.

She drives for $1\frac{1}{2}$ hours.

(a) Work out the distance from London to Swindon.

..... miles
(2)

Aleksy is using a map.

The map has a scale of $1:25\,000$

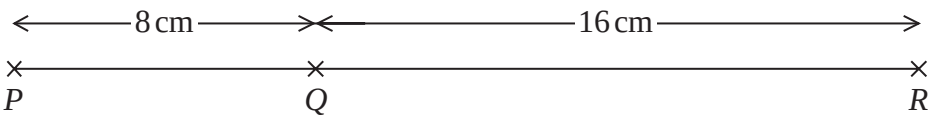
On the map a road has a length of 6 cm.

(b) Work out the length, in kilometres, of the real road.

..... kilometres
(3)

(Total for Question 14 is 5 marks)

8 The diagram shows three motorway service stations P, Q and R on a map.



The map has a scale of 1 cm = 4 km.

Work out the real distance from P to R.

..... km

(Total for Question 8 is 3 marks)

17 The diagram shows the position of town T.



Town R is 55 km from town T on a bearing of 065°

Mark the position of town R with a cross (×).
Use a scale of 1 cm to 10 km.

(Total for Question 17 is 2 marks)

7 Matt is drawing a scale diagram.

1 cm represents 5 m.

He draws a line 3 cm long.

(a) What real distance does the line represent?

..... m

(1)

The real distance between two points is 20 m.

(b) What is the distance between the two points on the scale diagram?

..... cm

(1)

(Total for Question 7 is 2 marks)

27 The bearing of port *B* from port *A* is 147°

Work out the bearing of port *A* from port *B*.

.....°

(Total for Question 27 is 2 marks)

6 A map has a scale of 1 cm represents 4 km.

On the map, the distance from town A to town B is 8 cm.

(a) Work out the real distance, in km, from town A to town B.

..... km

(2)

The real length of a road is 10 km.

(b) Work out the length of the road on the map.
Give the units of your answer.

.....

(2)

(Total for Question 6 is 4 marks)

15 A map has a scale of 1 : 25 000
On the map, a road has a length of 14 cm.

Work out the real length of the road.
Give your answer in kilometres.

..... kilometres

(Total for Question 15 is 3 marks)

14 A road has a length of 1.6 kilometres.

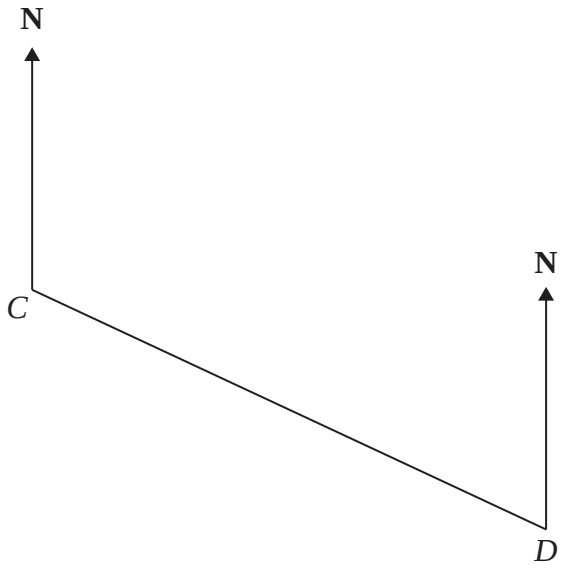
The road is shown on a map with a scale of 1 : 20 000

Work out the length, in centimetres, of this road on the map.

..... centimetres

(Total for Question 14 is 3 marks)

14 The accurately drawn diagram shows two points, C and D, on a map.



(a) Find the bearing of D from C.

..... °

(1)

The scale of the map is 1 cm represents 4 km.

(b) Work out the real distance from C to D.

..... km

(2)

(Total for Question 14 is 3 marks)