Surname

Other Names

Candidate Signature

AQA

Free-Standing Mathematics Qualification
Foundation Level
June 2015

Using Spatial Techniques   4982

Unit 2

Friday 15 May 2015   9.00 am to 10.00 am

For this paper you must have:
- a clean copy of the Data Sheet (enclosed)
- a calculator
- a pair of compasses
- a protractor
- a ruler.

Time allowed
- 1 hour

Instructions
- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- You may **not** refer to the copy of the Data Sheet that was available prior to this examination. A clean copy is enclosed for your use.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 40.
- You are expected to use a calculator where appropriate.

Advice
- In all calculations, show clearly how you work out your answer.
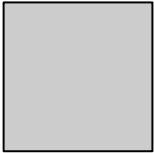
Section A

Answer **all** questions.

Answer each question in the space provided for that question.

*Use **Marble floor tiles** on page 3 of the Data Sheet.*

1   For each shape in the table below, state:

1 (a)   the order of rotational symmetry;

[2 marks]

1 (b)   the number of lines of symmetry.

[2 marks]

Shape	**Name**	**Order of rotational symmetry**	**Number of lines of symmetry**
	Parallelogram		
	Square		

4

2 (a) In the space below, draw a circle with a radius of 4 cm.

[1 mark]

2 (b) Using a **pencil, ruler and a pair of compasses only**, construct an equilateral triangle inside the circle, with its vertices on the circumference of the circle.

Show **all** construction lines on your diagram.

[2 marks]

Turn over for the next question

3

Turn over ▶

0 3

3   This triangle has two equal sides.
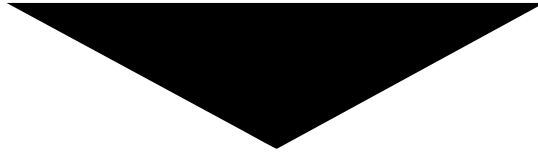
3 (a)   Write down the mathematical name of this type of triangle.

[1 mark]

Answer ....

3 (b)   The acute angles of this triangle are both $30°$. **Calculate** the obtuse angle of the triangle.

[2 marks]

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Answer ....

3

Turn over for the next question

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ANSWER IN THE SPACES PROVIDED

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Section B

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Motorbike stunts** *on page 4 of the Data Sheet.*

4   The diagram below shows the side view of a ramp. The scale of the diagram is $1:50$.

A

Scale $1:50$

Ramp

C x B
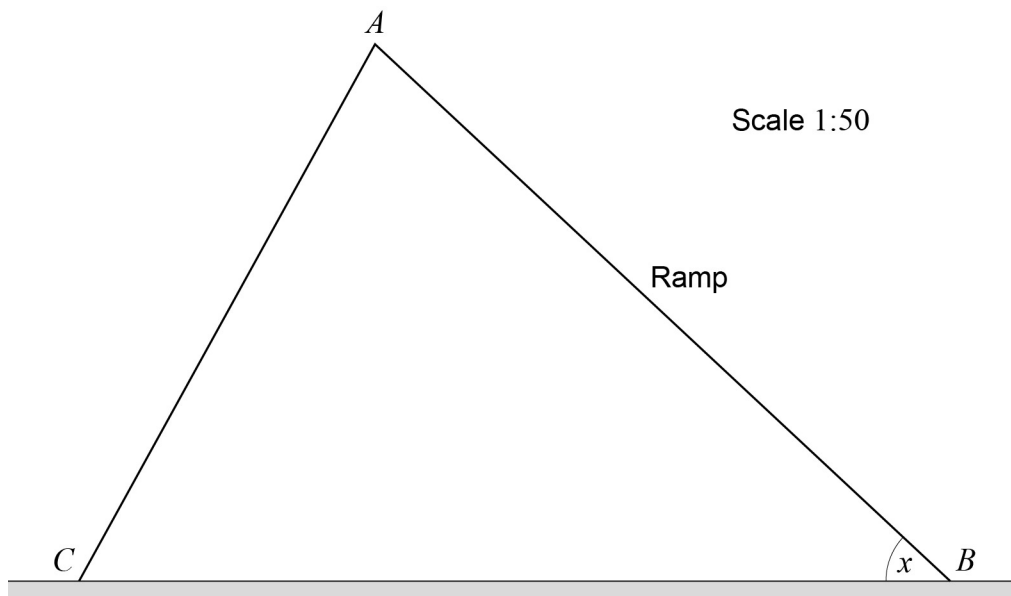
4 (a)   Measure angle x.

[1 mark]

Answer ....

4 (b) (i)   Measure the length of the ramp AB on the diagram.

Give your answer in **centimetres**.

[1 mark]

Answer ....

4 (b) (ii) Calculate the actual length of the ramp.

Give your answer in **metres**.

[3 marks]

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Answer ....

5

5 A motorbike moves in a circle around the 'Wall of Death'.
The diameter of the circle is 9.4 metres.

5 (a) Calculate the circumference of this circle.

[2 marks]

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Answer ....

5 (b) To travel a distance of 1 kilometre, how many times does the motorbike need to go around this circle?

[2 marks]

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Answer ....

4

Turn over for the next question

Turn over ▶

0 7

**Section C**

Answer **all** questions.

Answer each question in the space provided for that question.

Use **Barns** *on page 5 of the Data Sheet.*

6   The diagram below gives the dimensions of a barn.
The front of the barn has one line of symmetry.
All measurements are in metres.

Not to scale

5.5

1.6   1.6

0.2

5.8

2.7

3

8

On the opposite page, draw an accurate front elevation of the barn from the direction of the arrow.

Use a scale of 1:100.

[5 marks]

Space for working

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Turn over for the next question

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7 The diagram below shows the dimensions of the back wall of the barn.

Not to scale

5.8 m

3 m

8 m
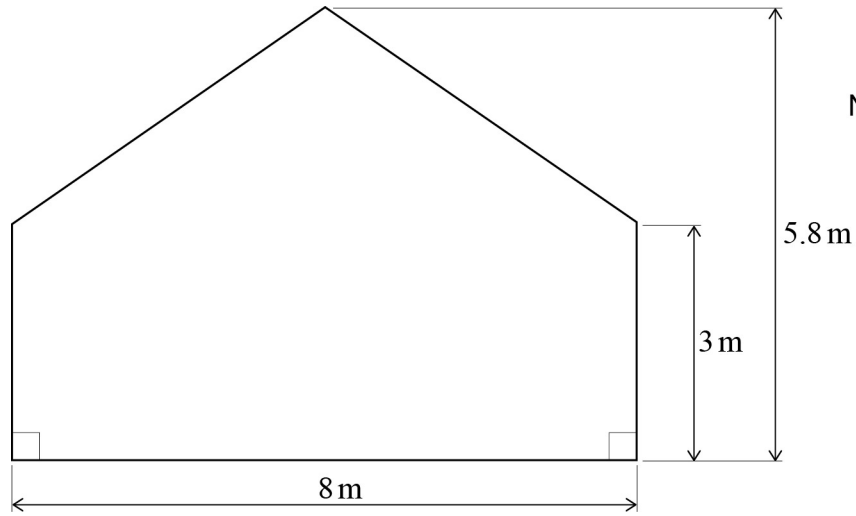
Calculate the area of the back wall of the barn.

[5 marks]

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Answer ....

5

Turn over for the next question

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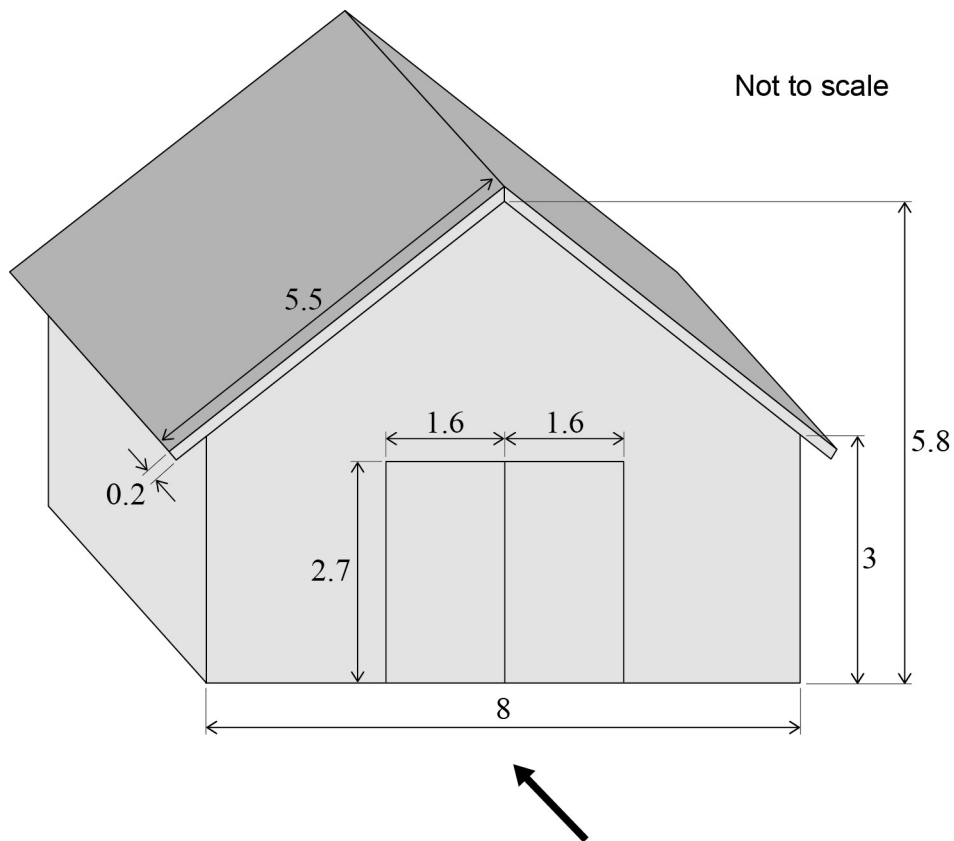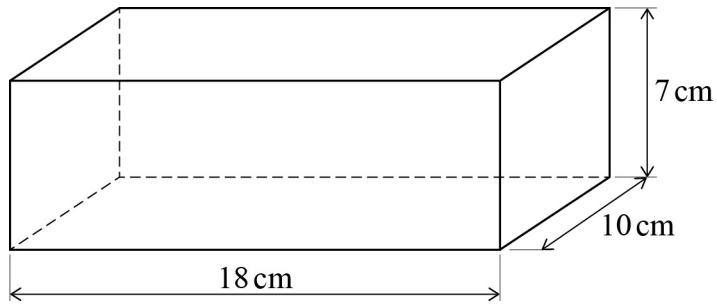
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Section D

Answer **all** questions.

Answer each question in the space provided for that question.

*Use **Cakes** on pages 6 and 7 of the Data Sheet.*

8 A cake tin is in the shape of a cuboid.
The diagram below shows the dimensions of the tin.

Not to scale

7 cm

10 cm

18 cm

Calculate the volume of this cake tin. State the units.

[3 marks]

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Answer ....
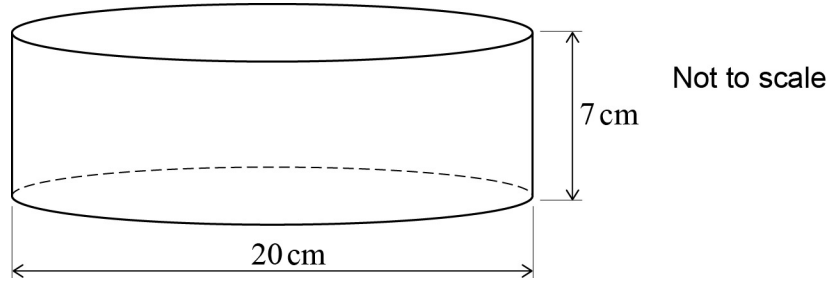
3

9 Another cake tin is in the shape of a cylinder.
The diagram below shows the dimensions of this cake tin.

Not to scale

7 cm

20 cm

9 (a) Calculate the area of the circular base of this cake tin.

[3 marks]

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Answer ....

9 (b) Calculate the volume of this cake tin.

[2 marks]

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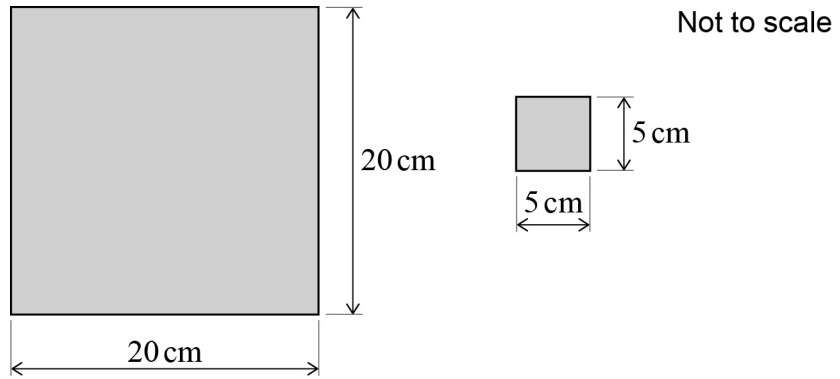Answer ....

5

Turn over for the next question

10 The top of a cake is a square with sides 20 cm long.
This cake is cut into smaller square pieces with sides 5 cm long.

Not to scale

20 cm

20 cm

5 cm

5 cm

How many smaller square pieces are obtained from the cake?

[3 marks]

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Answer ....

3

END OF QUESTIONS

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