Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

Free-Standing Mathematics Qualification
June 2007
Foundation Level

WORKING IN 2 AND 3 DIMENSIONS 6982/2
Unit 2

Thursday 17 May 2007 1.30 pm to 2.30 pm

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

Time allowed: 1 hour

Instructions
- Use blue or black ink or ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Do all rough work in this book. Cross through any work you do not want 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 maximum mark for this paper is 40.
- The marks for questions are shown in brackets.
- You are expected to use a calculator where appropriate.

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

For Examiner's Use			
Question	Mark	Question	Mark
1		9	
2			
3			
4			
5			
6			
7			
8			
Total (Column 1) →			
Total (Column 2) →			
TOTAL			
Examiner's Initials			

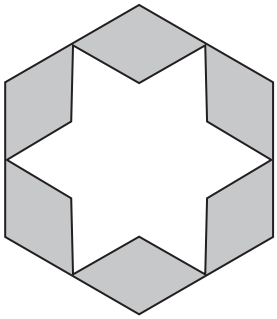
SECTION A

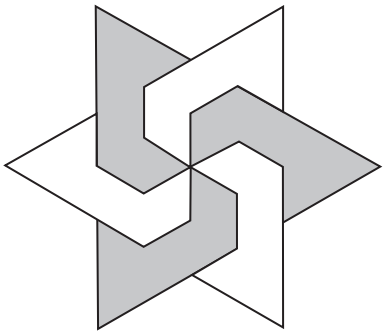
Answer **all** questions in the spaces provided.

Use **Rangoli patterns** *on page 2 of the Data Sheet.*

1 The diagrams below show two Rangoli patterns.

(a) Write the order of rotational symmetry under each pattern.





Pattern A ..... Pattern B .....

(2 marks)

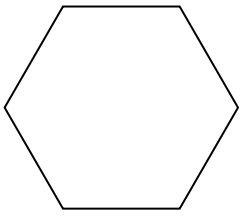
(b) How many lines of symmetry does each pattern have?

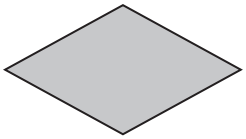
Pattern A ..... Pattern B .....

(2 marks)

(c) The diagrams below show two of the shapes used in Rangoli patterns. Each shape is a polygon with equal sides.

Write down the mathematical name of each shape.





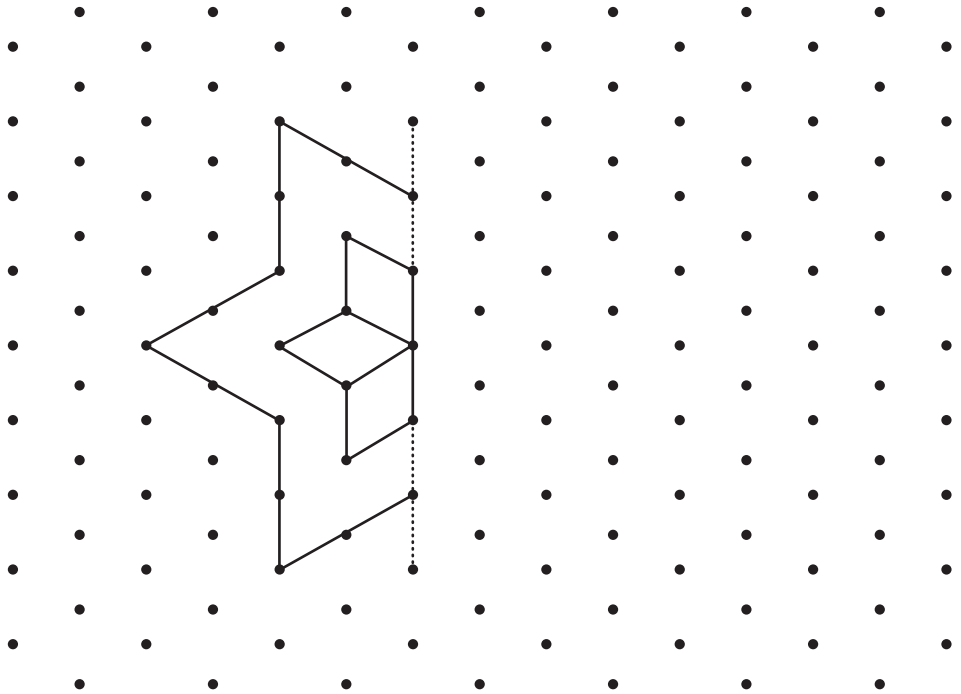
Name of shape ..... Name of shape .....

(2 marks)

6

2 The diagram below shows half of a Rangoli pattern.
The vertical dotted line is a line of symmetry.

Draw the other half of the pattern.



(4 marks)

4

Turn over for the next question

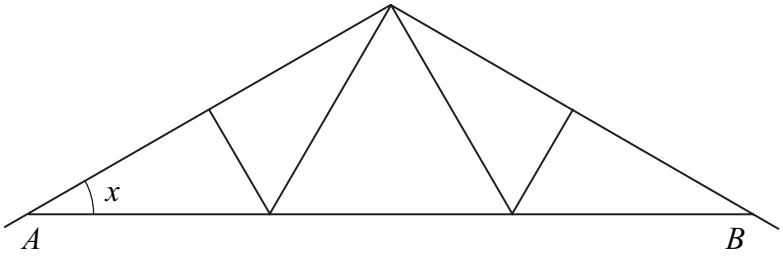
LEAVE MARGIN BLANK

SECTION B

Answer **all** questions in the spaces provided.

Use **Roof supports** *on page 3 of the Data Sheet.*

3 The diagram below shows the roof support for a garage drawn to a scale of 1:50.



(a) Measure the angle marked x on the diagram above.

Answer.....
(1 mark)

The width of the garage is represented by the line AB.

(b) (i) Measure the width AB on the diagram above.

Answer.....
(1 mark)

(ii) Calculate the width AB on the actual garage.
Give your answer in metres.

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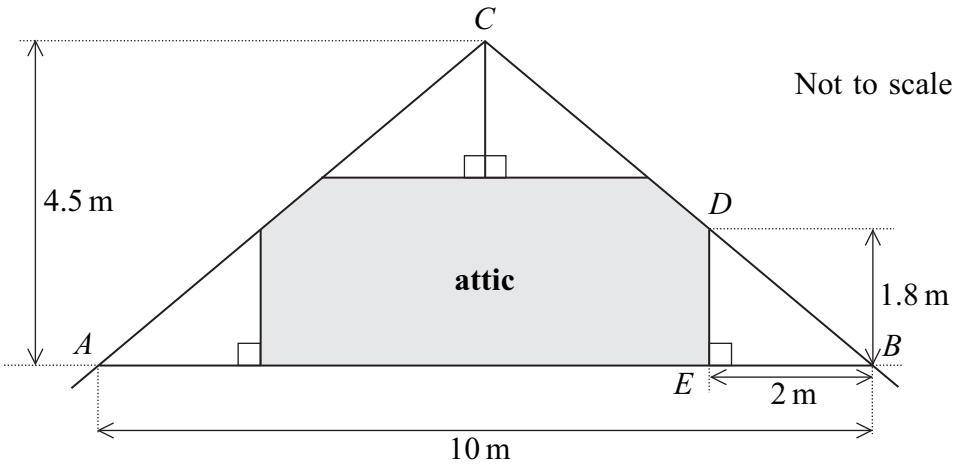
Answer.....
(3 marks)

5

4 The diagram below shows the dimensions of the roof support for an attic.
The four right-angled triangles are all the same shape and size.



(a) Calculate the area of the right-angled triangle *DEB*.

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Answer.....
(2 marks)

(b) Calculate the area of the triangle *ABC*.

.....

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Answer.....
(2 marks)

(c) Use your answers to parts (a) and (b) to find the shaded attic area.

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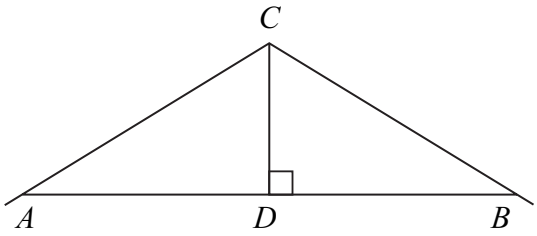
Answer.....
(2 marks)

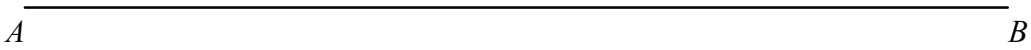
6

Turn over ▶

5 A scale diagram of the King post roof support is shown.
ABC is an isosceles triangle. *CD* is perpendicular to *AB*.



A larger scale diagram has been started below.



Using **pencil**, **ruler and compasses only**, construct the perpendicular bisector of *AB* and mark the position of *C* on the larger scale diagram of the roof support.
Leave **all** construction lines in the drawing.

(3 marks)

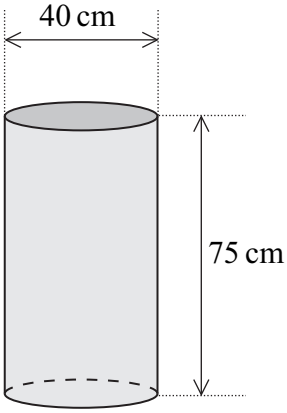
3

SECTION C

Answer **all** questions in the spaces provided.

Use **Litter bins** *on page 4 of the Data Sheet.*

6 The container inside a circular litter bin is cylindrical with the internal dimensions shown in the diagram.



(a) Calculate the area of the circular base of this container.

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Answer.....

(3 marks)

(b) Calculate the volume of the container. State the units.

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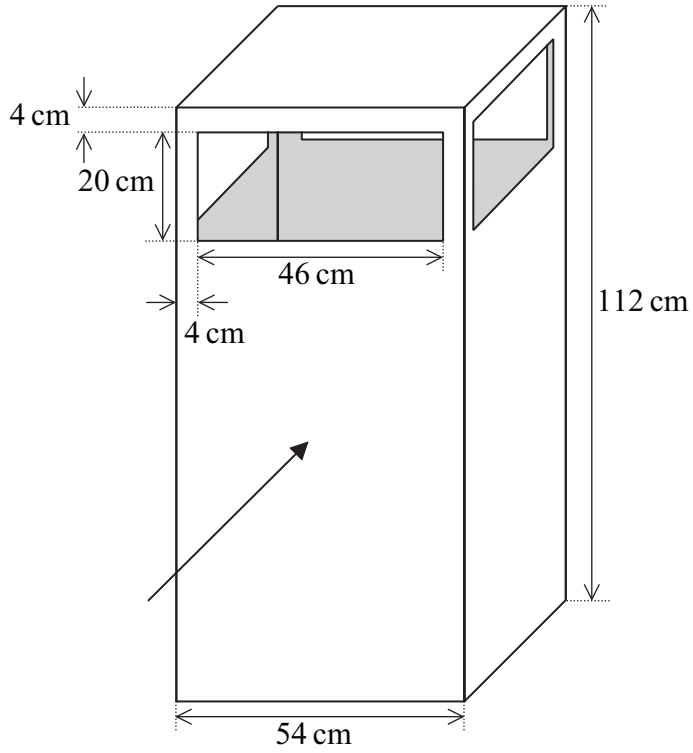
Answer.....

(3 marks)

6

7 The diagram below shows the dimensions of a square litter bin.
The four rectangular sides of this litter bin are identical.

On the page opposite, draw an accurate front elevation of the litter bin from the direction of the arrow shown.
Use a scale of 1:10.



Not to scale

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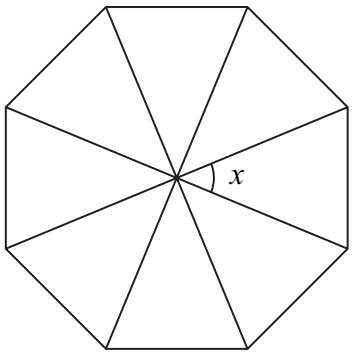
(4 marks)

4

Turn over for the next question

8 The diagram below shows the plan of an octagonal litter bin.
It is a regular octagon.



Calculate the angle marked x. You **must** show your working.

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Answer.....
(2 marks)

2

9 The council place a litter bin at each end of the promenade and every 50 metres along it.
The promenade is 3.2 kilometres long.

How many litter bins do they use?

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Answer.....
(4 marks)

4

END OF QUESTIONS

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