M2

General Certificate of Secondary Education

MATHEMATICS C (GRADUATED ASSESSMENT)
MODULE M2 – SECTION B

B272B

Tuesday 20 January 2009
Morning

Duration: 30 minutes

Candidate Forename		Candidate Surname	

Centre Number						Candidate Number					

INSTRUCTIONS TO CANDIDATES

* Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
* Use black ink. Pencil may be used for graphs and diagrams only.
* Read each question carefully and make sure that you know what you have to do before starting your answer.
* Show your working. Marks may be given for a correct method even if the answer is incorrect.
* Answer **all** the questions.
* Do **not** write in the bar codes.
* Write your answer to each question in the space provided, however additional paper may be used if necessary.

INFORMATION FOR CANDIDATES

* The number of marks is given in brackets **[ ]** at the end of each question or part question.
* Section B starts with question 7.
* You are expected to use a calculator in Section B of this paper.
* The total number of marks for this Section is **25**.
* This document consists of **8** pages. Any blank pages are indicated.

FOR EXAMINER'S USE

SECTION B	

Turn over

Formulae Sheet

Area of trapezium = $\frac{1}{2}(a+b)h$
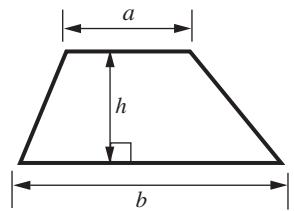
Volume of prism = (area of cross-section) × length
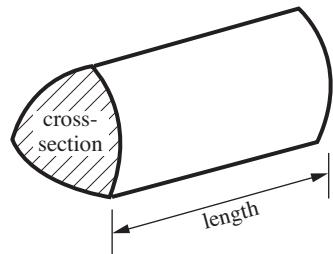
PLEASE DO NOT WRITE ON THIS PAGE

7 The table shows information about the average daily weather conditions in Helsinki.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Hours of sunlight	1	3	4	6	9	10	9	8	5	3	1	1
Maximum temperature (°C)	⁻3	⁻4	0	6	14	19	22	20	15	8	3	⁻1
Minimum temperature (°C)	⁻9	⁻10	⁻7	⁻1	4	9	13	12	8	3	⁻1	⁻5

(a) What is the average number of hours of sunlight in August?

(a) .... **[1]**

(b) Which month has the highest average number of hours of sunlight?

(b) .... **[1]**

(c) In which month is the average **maximum** temperature 8°C?

(c) .... **[1]**

(d) What is the modal average number of hours of sunlight?

(d) .... **[1]**

(e) For how many months is the average **minimum** temperature **below** 0°C?

(e) .... **[1]**

(f) In December the minimum temperature is ⁻5°C
and the maximum temperature is ⁻1°C.

What is the difference between ⁻5°C and ⁻1°C?

(f) .... °C **[1]**

8   Nadia designs and sells bags.

(a) On the front of each bag is a pattern made from black and white beads.
Nadia wants each pattern to have reflection symmetry.

(i)   Here are some patterns that Nadia has tried.

Write **yes** under each pattern that has reflection symmetry.

Write **no** under each pattern that does not have reflection symmetry.
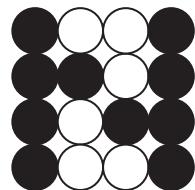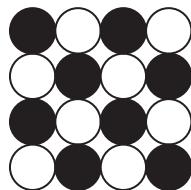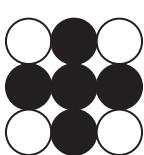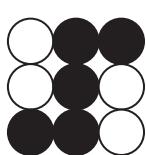
....   **[2]**

(ii) The pattern below does not have reflection symmetry.
Nadia has used a white bead instead of a black bead.

Shade in **one** bead so that her pattern has reflection symmetry.
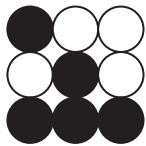
[1]

**(b)** Nadia uses this formula to work out how much to charge, in pounds, for each bag.

> Multiply the length of fabric in metres by 10
> then add the number of beads used.

Nadia makes a bag using 0·6 m of fabric and 9 beads.

Use the formula to work out how much she will charge for this bag.

(b) £ .... **[2]**

9 Look at this shape.
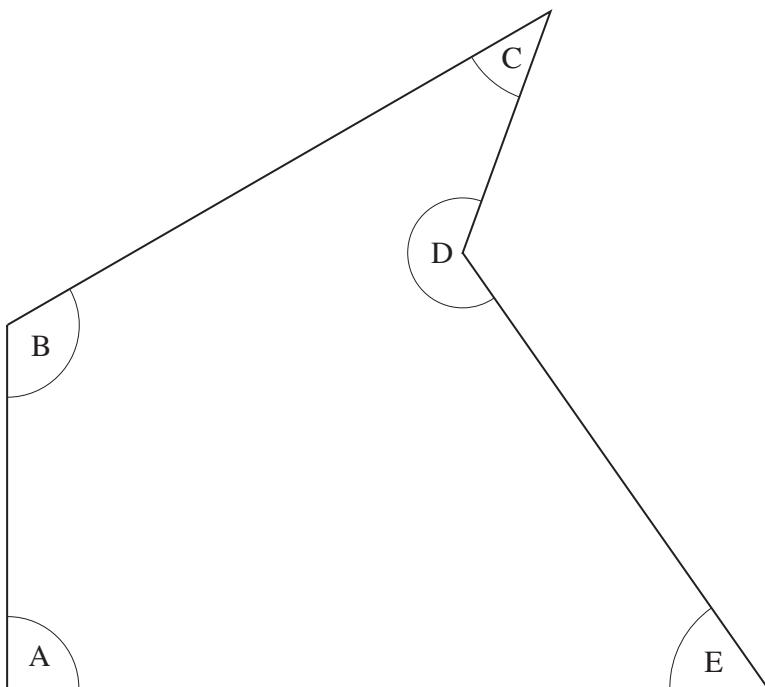
(a) Complete this sentence with the correct letter.

Angle .... is a reflex angle. **[1]**

(b) Measure the size of angle E.

(b) .... ° **[1]**

10 Lee records the number of phone calls he receives every day for a week.

    3   2   5   8   2   1   6

Find the median number of calls.

.... **[2]**

Turn over

11 David did a survey about healthy eating.

(a) He asked people whether they added salt to their food.
The table shows his results.

Do you add salt....?	
Always	10%
Usually	10%
Sometimes	25%
Hardly ever	50%
Never	5%

(i) What **fraction** of these people added salt **Sometimes**?

(a)(i) .... **[1]**

(ii) David asked 60 people.

How many of the 60 people added salt **Hardly ever**?

(ii) .... **[2]**

(b) David also asked how many portions of fruit and vegetables these people had eaten yesterday. This pie chart shows his results.
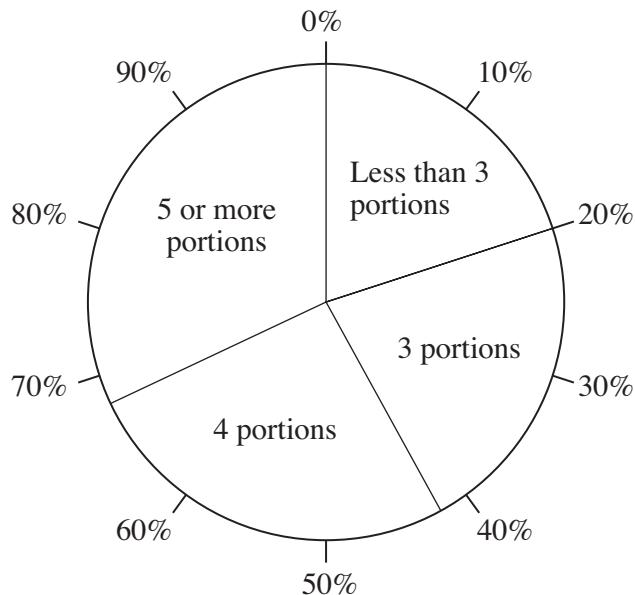
(i) What percentage of these people ate less than 3 portions of fruit and vegetables yesterday?

(b)(i) .... % **[1]**

(ii) Estimate the percentage of these people who ate 5 or more portions of fruit and vegetables yesterday.

(ii) .... % **[1]**

12 Val uses 125 g of pasta for one serving.

How many servings of pasta can she make from a 1·5 kg bag of pasta?

.... **[2]**

TURN OVER FOR QUESTION 13

13 Jozef is shading in a pattern on this number grid.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

(a) What number should he shade in next?

(a) .... **[1]**

(b) The numbers Jozef is shading form a sequence.

Describe the rule for the sequence.

....**[1]**

(c) Explain why the number 42 cannot be part of this number sequence.

....

....**[1]**