

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
MATHEMATICS C (GRADUATED ASSESSMENT)  
MODULE M7 – SECTION B**

**B277B**

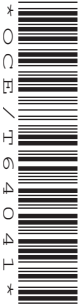
Candidates answer on the question paper

**OCR Supplied Materials:**  
None

- Other Materials Required:**
- Geometrical instruments
  - Tracing paper (optional)
  - Scientific or graphical calculator

**Tuesday 23 June 2009  
Morning**

**Duration: 30 minutes**



|                    |  |                   |  |
|--------------------|--|-------------------|--|
| Candidate Forename |  | Candidate Surname |  |
|--------------------|--|-------------------|--|

|               |  |  |  |  |  |                  |  |  |  |  |
|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre Number |  |  |  |  |  | Candidate Number |  |  |  |  |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

**INSTRUCTIONS TO CANDIDATES**

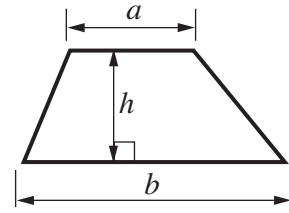
- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Show your working. 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**

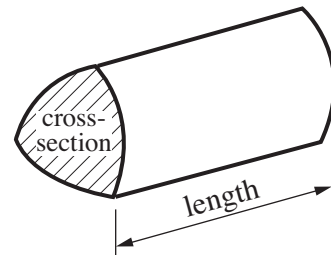
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 8.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is **25**.
- This document consists of **8** pages. Any blank pages are indicated.

## Formulae Sheet

**Area of trapezium** =  $\frac{1}{2} (a + b)h$



**Volume of prism** = (area of cross-section)  $\times$  length



**PLEASE DO NOT WRITE ON THIS PAGE**

- 8 Alan makes a spinner.  
It is numbered from 1 to 4.  
The table shows the results of 200 spins of Alan's spinner.

|                   |    |    |    |    |
|-------------------|----|----|----|----|
| Number on spinner | 1  | 2  | 3  | 4  |
| Frequency         | 60 | 37 | 52 | 51 |

- (a) What is the relative frequency of the spinner stopping on 3?

(a) ..... [1]

- (b) Do the results show that Alan's spinner is fair?  
Give a reason for your answer.

..... because .....

.....

..... [1]

- 9 Sandra is going to Switzerland for a holiday.  
She buys 552 Swiss Francs from the post office for £240.

Complete the table below.

|              |       |       |     |
|--------------|-------|-------|-----|
| Pounds       | ..... | 170   | 240 |
| Swiss Francs | 82.80 | ..... | 552 |

[4]

- 10 (a)** A plumber charges £35 for each call-out plus £24 per hour.

Write down a formula for the total charge, £ $C$ , for a call-out lasting  $n$  hours.

**(a)** ..... [2]

- (b)** Another plumber uses this formula to work out his charges.

$$C = 30n + 15$$

Rearrange this formula to make  $n$  the subject.

**(b)** ..... [2]

- 11** Multiply out.

$$(x + 2)(x - 5)$$

..... [2]

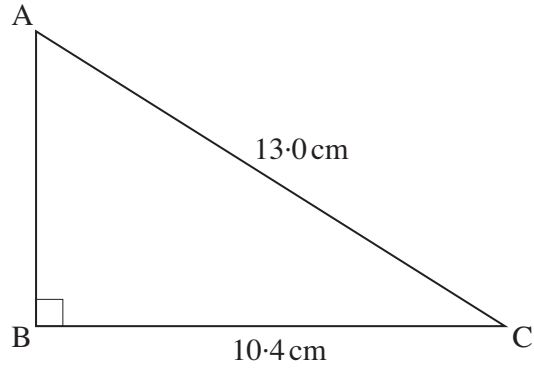
- 12 The heights, in centimetres, of 50 students were measured. The results are summarised in the table.

| Height ( $h$ cm)   | Frequency |
|--------------------|-----------|
| $140 \leq h < 150$ | 10        |
| $150 \leq h < 160$ | 21        |
| $160 \leq h < 170$ | 15        |
| $170 \leq h < 180$ | 4         |

Calculate an estimate of the mean height of the students.

..... cm [4]

13 (a)



Not to scale

ABC is a right-angled triangle.

Calculate AB.

(a) ..... cm [3]

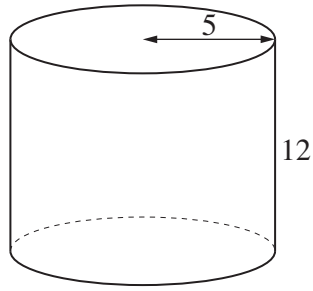
(b) A line has a length of 54 mm, correct to the nearest millimetre.

Write down the minimum possible length of the line.

(b) .....mm [1]

7

14 (a)



A solid cylinder has radius 5 cm and height 12 cm.

Calculate the total surface area of the cylinder.

(a).....cm<sup>2</sup> [4]

(b) The volume of another cylinder is 8500 cm<sup>3</sup>.

Change 8500 cm<sup>3</sup> into litres.

(b) .....litres [1]

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