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

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

# OXFORD CAMBRIDGE AND RSA EXAMINATIONS
## GENERAL CERTIFICATE OF SECONDARY EDUCATION

# B277B

# MATHEMATICS C (GRADUATED ASSESSMENT)

## MODULE M7 – SECTION B

## TUESDAY 23 JUNE 2009: Morning
## DURATION: 30 minutes

## SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

**Candidates answer on the question paper**

**OCR SUPPLIED MATERIALS:**

**None**

**OTHER MATERIALS REQUIRED:**

**Geometrical instruments**
**Tracing paper (optional)**
**Scientific or graphical calculator**

**READ INSTRUCTIONS OVERLEAF**

DC (CW/JG) OV90919 12079/1

## INSTRUCTIONS TO CANDIDATES

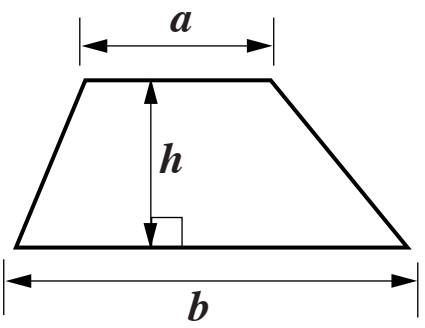
- **Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully and make sure that you know what you have to do before starting your answer.**
- **Show your working. Marks may be given for a correct method even if the answer is incorrect.**
- **Answer ALL the questions.**
- **Write your answer to each question in the space provided, however additional paper may be used if necessary.**

## INFORMATION FOR CANDIDATES

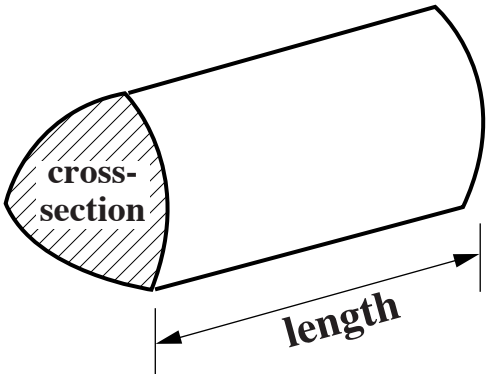
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Section B starts with question 8.**
- **You are expected to use a calculator in Section B of this paper.**
- **Use the $\pi$ button on your calculator or take $\pi$ to be 3·142 unless the question says otherwise.**
- **The total number of marks for this Section is 25.**

# FORMULAE SHEET

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




**Volume of prism =**
**(area of cross-section) × length**



**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?**
**[1 mark]**

**(a)** _____

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

_____ **because** _____

_____

_____

**[1 mark]**

**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 marks]**

**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.**
**[2 marks]**

**(a)** _____

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

$C = 30n + 15$

**Rearrange this formula to make $n$ the subject.**
**[2 marks]**

**(b)** _____

**11 Multiply out.**

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

**[2 marks]**

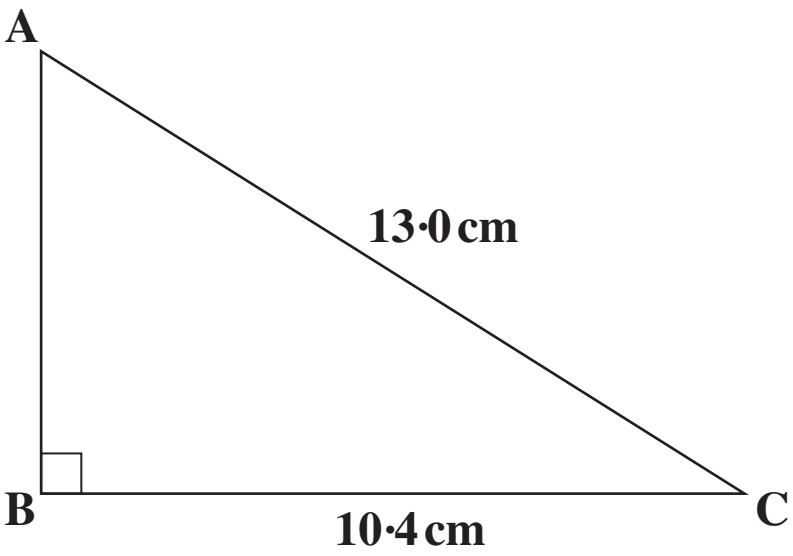
**12 The heights, in centimetres, of 50 students were measured. The results are summarised in the table.**

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

**Calculate an estimate of the mean height of the students.**
**[4 marks]**

_____ cm

**13 (a) ABC is a right-angled triangle.**




**Not to scale**

**Calculate AB.**
**[3 marks]**

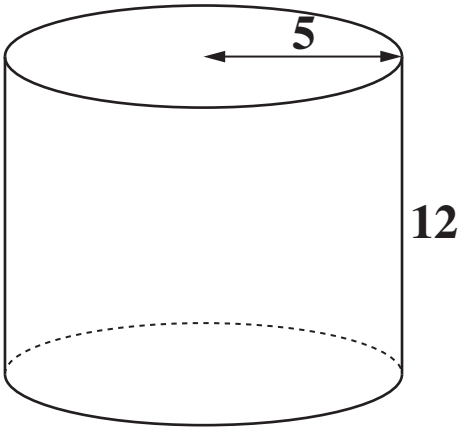
**(a) _____ cm**

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

**Write down the minimum possible length of the line.**
**[1 mark]**

**(b) _____ mm**

**14 (a) A solid cylinder has radius 5 cm and height 12 cm.**




**Calculate the total surface area of the cylinder.**
**[4 marks]**

**(a) _____ $cm^2$**

**(b) The volume of another cylinder is 8500 $cm^3$.**

**Change 8500 $cm^3$ into litres.**
**[1 mark]**

**(b) _____ litres**