



**F**

**GENERAL CERTIFICATE OF SECONDARY EDUCATION  
MATHEMATICS B (MEI)**

**B291B**

Paper 1 Section B (Foundation Tier)

Candidates answer on the question paper.

**OCR supplied materials:**  
None

**Other materials required:**

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

**Tuesday 11 January 2011  
Morning**

**Duration: 45 minutes**



Candidate forename		Candidate surname	
-----------------------	--	----------------------	--

Centre number						Candidate number				
---------------	--	--	--	--	--	------------------	--	--	--	--

**INSTRUCTIONS TO CANDIDATES**

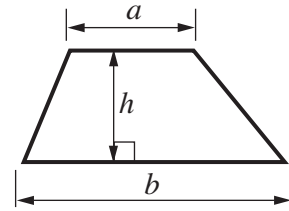
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show all your working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

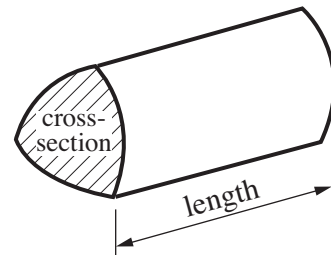
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 10.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is **36**.
- This document consists of **12** pages. Any blank pages are indicated.

**Formulae Sheet: Foundation Tier**

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



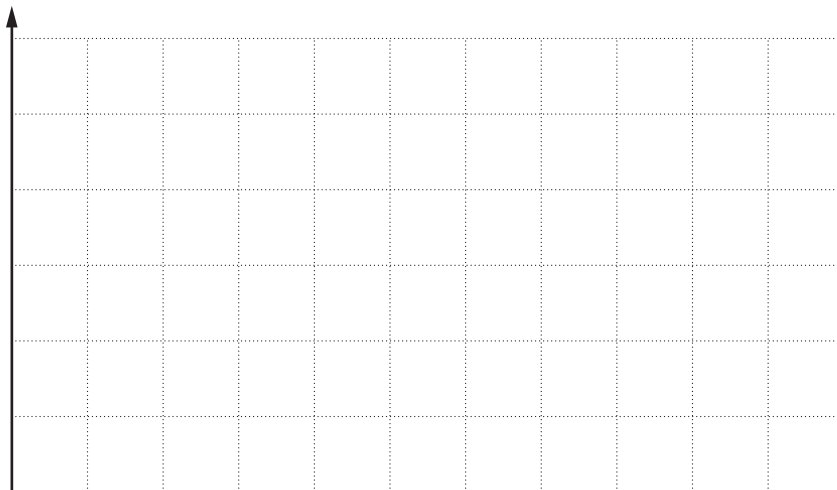
**Volume of prism** = (area of cross-section)  $\times$  length

**PLEASE DO NOT WRITE ON THIS PAGE**

- 10 Evie sorts out her shoes, dividing them into different types. Her results are shown in the table.

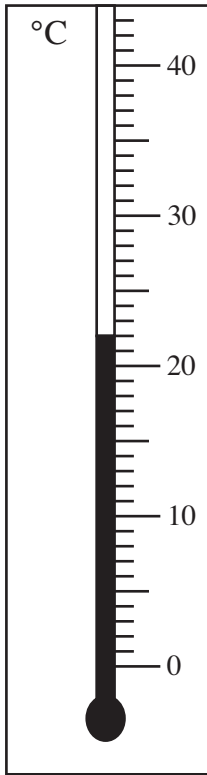
Type of shoe	Number of pairs
Boots	2
Trainers	1
High heels	3
Sandals	4
Slippers	1

Use the grid to draw a bar chart to show this information. Make sure you label the axes.



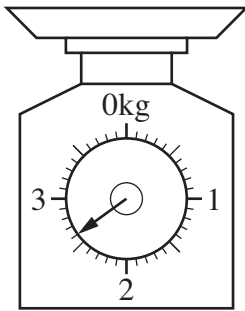
[3]

11 (a) (i) What temperature is shown?



(a)(i) ..... °C [1]

(ii) What weight is shown?



(ii) ..... kg [1]

(b) The **metric unit** used for measuring the thickness of glass is millimetres.

What would be the best **metric unit** to use for measuring

(i) the distance from London to Cambridge,

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

(ii) areas of carpet,

(ii) ..... [1]

(iii) the mass of a hen's egg?

(iii) ..... [1]

12 For a train journey an adult ticket costs £15. A child ticket is half price.

(a) Nick buys two adult tickets and three child tickets for this journey.

What is the total cost of the five tickets?

(a) £.....[3]

(b) With a railcard the normal cost of an adult ticket is reduced by  $\frac{1}{3}$ ,  
and the normal cost of a child ticket is reduced by 60%.

Liz uses her railcard to buy one adult ticket and one child ticket for the same journey.

What is the total cost of the two tickets?

(b) £ .....[3]

13 Seven friends compare the amount of money they each spent on their Saturday entertainment. These are the amounts, in pounds.

20.50      3.75      12.00      4.60      17.25      2.50      15.00

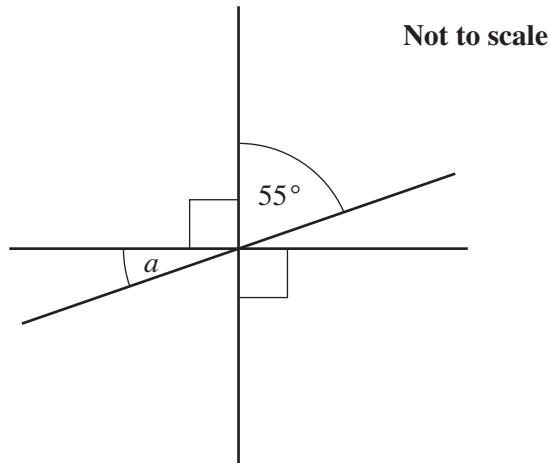
(a) What is the range of the amounts spent?

(a) £.....[1]

(b) What is the mean amount spent?

(b) £ .....[3]

- 14 (a) The diagram shows three straight lines intersecting at a point. Two of the lines intersect at right angles.



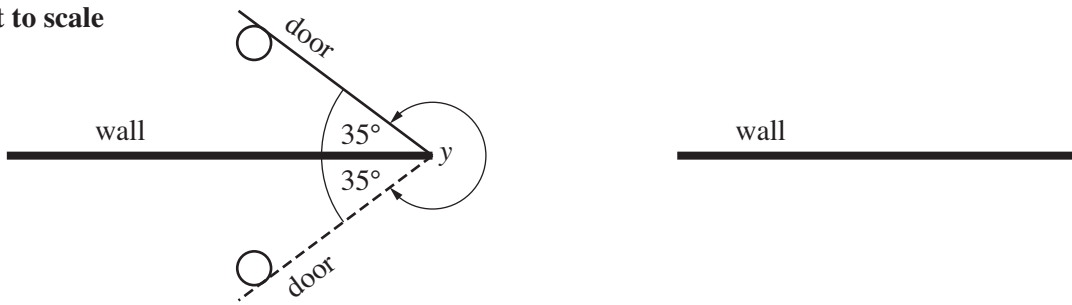
Work out angle  $a$ .  
Give a reason for the calculation you used.

Angle  $a = \dots\dots\dots^\circ$

Reason  $\dots\dots\dots$  [2]

- (b) A swing door can swing either forwards or backwards from its closed position. Doorstops on the floor prevent it from banging against the wall. When the door is fully open in either direction it makes an angle of  $35^\circ$  with the wall. The largest angle which the door can swing through is  $y$ .

Not to scale



Work out angle  $y$ .

(b)  $\dots\dots\dots^\circ$  [2]

Turn over

15 (a) Simplify these expressions.

(i)  $3a + 2a + 4a$

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

(ii)  $5w - x + 2w - 3x$

(ii) ..... [2]

(b) Solve these equations.

(i)  $10x = 25$

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

(ii)  $x - 3 = 8$

(ii) ..... [1]

(iii)  $3x - 7 = 11$

(iii) ..... [2]



- 16 Fred and Jo each own an orchard in which they have a number of apple trees. Last year they recorded the numbers of apples picked from each tree. The data are summarised in the stem and leaf diagrams.

<b>Fred</b>	<b>Jo</b>
3   9	3   6
4   5	4   2 3 4
5	5   3 6 8
6   6 7 7 8	6   3 5 7
7   2 3 4 6 8 8 9	7   4 5
8   7 8	8

Key    4 | 5 means 45

Key    4 | 2 means 42

- (a) Work out the median number of apples for each.

(a) Fred .....

Jo ..... [2]

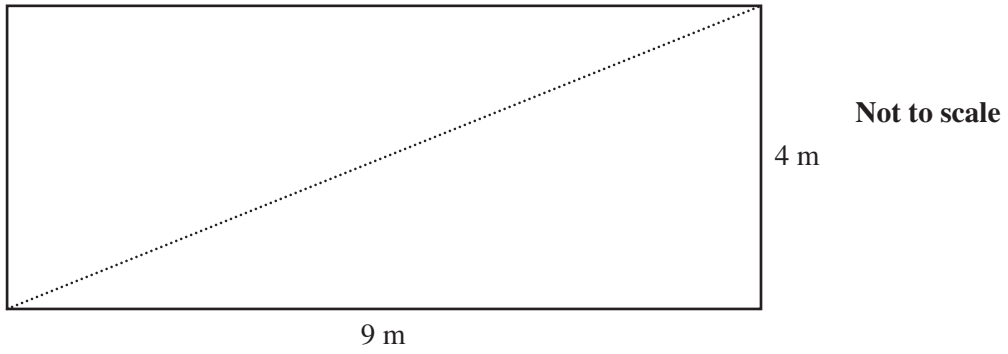
- (b) Make two comparisons between the distributions.

1. ....

2. .... [2]

**TURN OVER FOR QUESTION 17**

- 17 Dan's rectangular flower bed measures 9 metres by 4 metres.  
A fence, shown dotted, divides the bed into two sections.



What is the length of the fence?

.....m [3]

**PLEASE DO NOT WRITE ON THIS PAGE**

**PLEASE DO NOT WRITE ON THIS PAGE**



**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series. If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact the Copyright Team, First Floor, 9 Hills Road, Cambridge CB2 1GE.

OCR is part of the Cambridge Assessment Group; Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.