

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS B (MEI)

Paper 2 Section B (Foundation Tier)

MONDAY 2 JUNE 2008

Afternoon
Time: 1 hour

Candidates answer on the question paper
Additional materials (enclosed): None

Additional materials (required):
Geometrical instruments
Scientific or graphical calculator
Tracing paper (optional)



Candidate
Forename

Candidate
Surname

Centre
Number

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Candidate
Number

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INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use blue or 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.
- Answer **all** the questions.
- Show your working. Marks may be given for a correct method even if the answer is incorrect.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- Unless otherwise instructed in the question, take π to be 3.142 or use the π button on your calculator.
- The total number of marks for this Section is **50**.
- Section B starts with question 12.

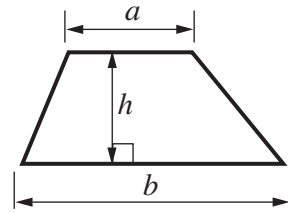
FOR EXAMINER'S USE

SECTION B

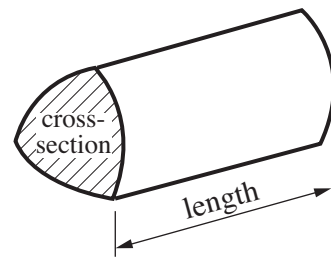
This document consists of **15** printed pages and **1** blank page.

Formulae Sheet: Foundation Tier

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



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



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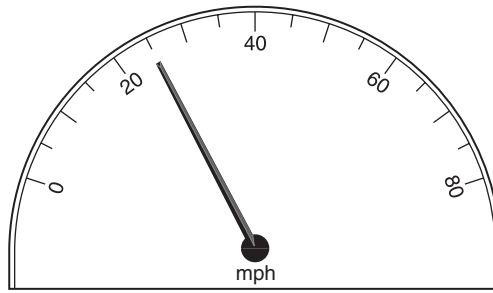
A carpenter has a 2.75 m length of wood that he wishes to saw into 6 equal pieces.

Calculate the length of each piece.

Give your answer to a suitable degree of accuracy.

.....m [2]

13 (a) (i) What speed is shown?

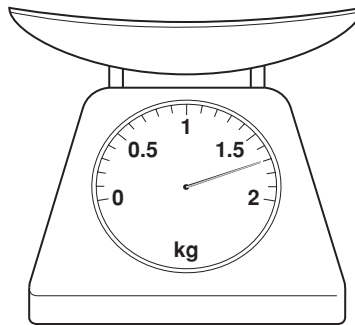


(a)(i)..... mph [1]

(ii) Travelling at this speed, how far would I travel in 3 hours?

(ii)..... miles [1]

(b) (i) What mass is shown?



(b)(i) kg [1]

(ii) Convert this into grammes.

(ii)..... g [1]

(c) (i) What number is shown by the arrow?

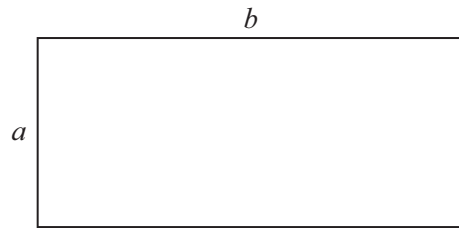


(c)(i)..... [1]

(ii) Mark 4.01 on the number line.

[1]

14 (a)



The perimeter of this rectangle is $2a + 2b$.

Use this expression to find the perimeter when $a = 3.7$ cm and $b = 5.2$ cm.

(a)..... cm [2]

(b) Suppose n is a whole number.

What type of whole number is $2n$?

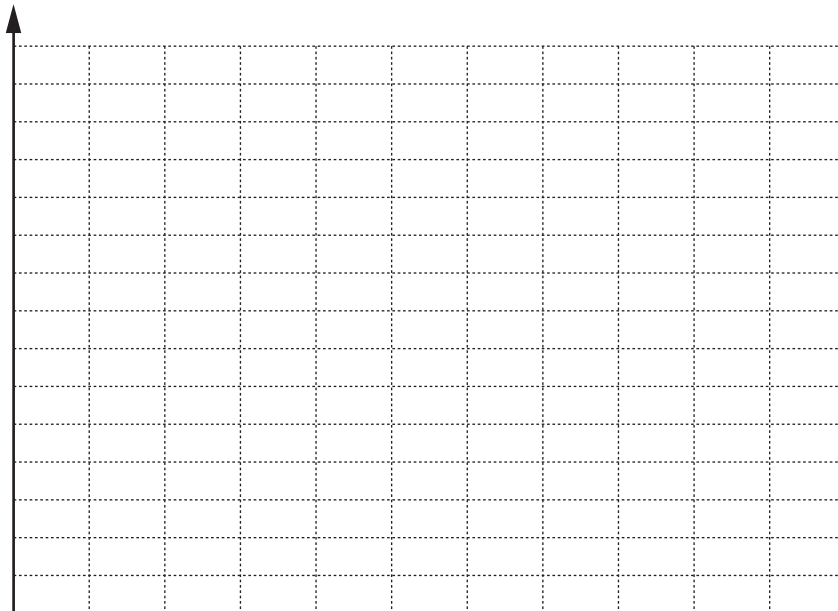
(b) [1]

15 Liam keeps a record of the weather.

Here is a table of his findings for March this year.

Type of weather	Number of days
Mild and dry	12
Mild with showers	2
Cold and dry	8
Cold with showers	4
Mostly rain	5

(a) On the grid, draw a bar chart showing this information. Label your axes clearly.



[3]

(b) Which type of weather is the mode?

(b) [1]

(c) Liam says “In March it is more likely to be ‘mild and dry’ than not.”

Why is he wrong?

.....

 [1]

(d) Liam wants to arrange a trip for the first of March next year.

(i) Use his table to estimate the probability that it will be ‘mild and dry’ for the trip.

(d)(i)..... [2]

(ii) Suggest a better method of estimating the probability of a ‘mild and dry’ day on the first of March next year.

.....
.....
..... [1]

16 Jane bought

3 kg of potatoes at 78p per kg,

$\frac{1}{2}$ kg of oranges at £1.30 per kg,

a melon at £1.89.

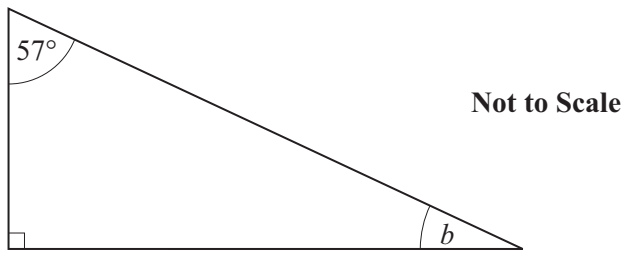
She paid with a £10 note.

How much change should she receive?

Show your method clearly.

£ [4]

- 17 (a) Here is a right-angled triangle.



Work out angle b .

(a).....° [2]

- (b) Explain why it is impossible for one of the angles of a right-angled triangle to be obtuse.

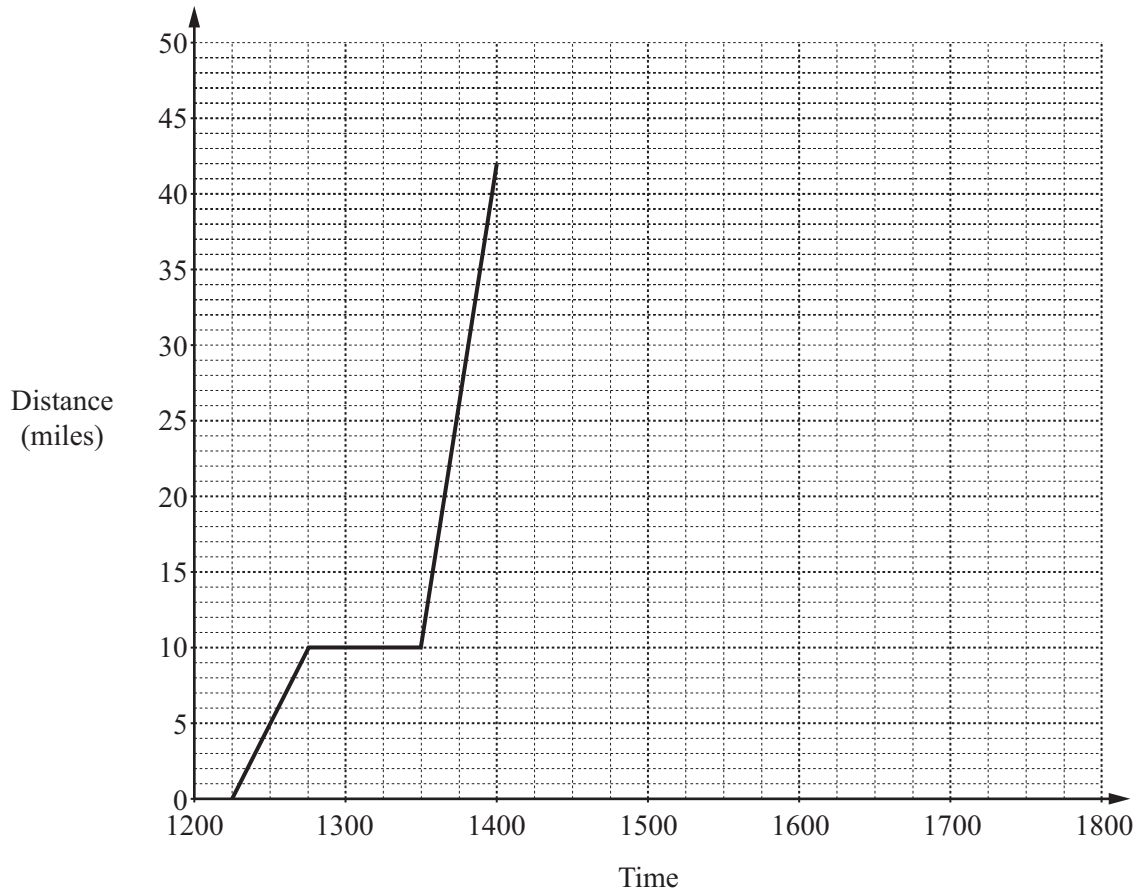
.....

.....

..... [2]

- 18 Johann travelled by bus to the railway station. He then took a train to his uncle's house.

This distance-time graph represents his journey.



- (a) How long did he wait for the train?

(a)..... minutes [1]

- (b) How far did he travel by train?

(b)..... miles [1]

- (c) He stayed at his uncle's house for 2 hours. His uncle then drove him home. They arrived at Johann's house at 1700.

Complete the graph of Johann's journey.

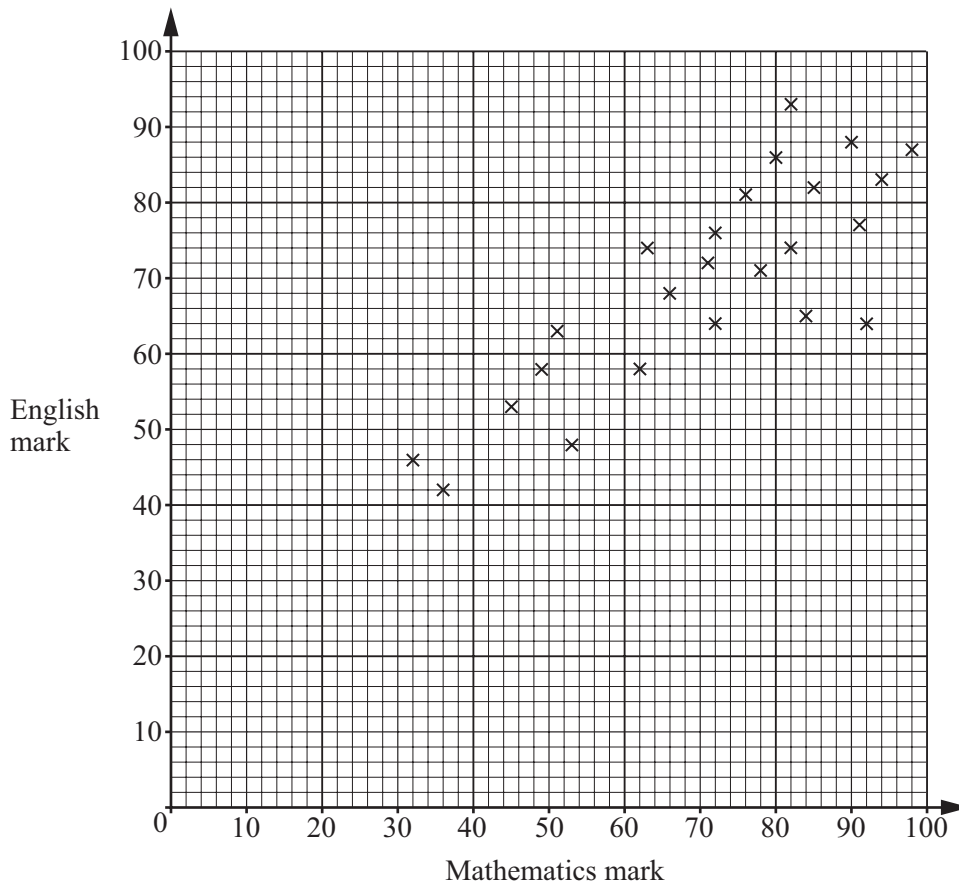
[2]

19 Aisha is in the top mathematics set. She is carrying out a survey of mathematics and English examination marks for her school.
 For her sample she chooses students in her mathematics set.
 She asks them what marks they scored in both examinations.

(a) Make one criticism of this method of obtaining her sample.

.....
 [1]

(b) The scatter diagram below shows the results of Aisha’s survey for 24 of the students in her set.



(i) Describe the relationship between the mathematics marks and the English marks for Aisha’s set.

..... [1]

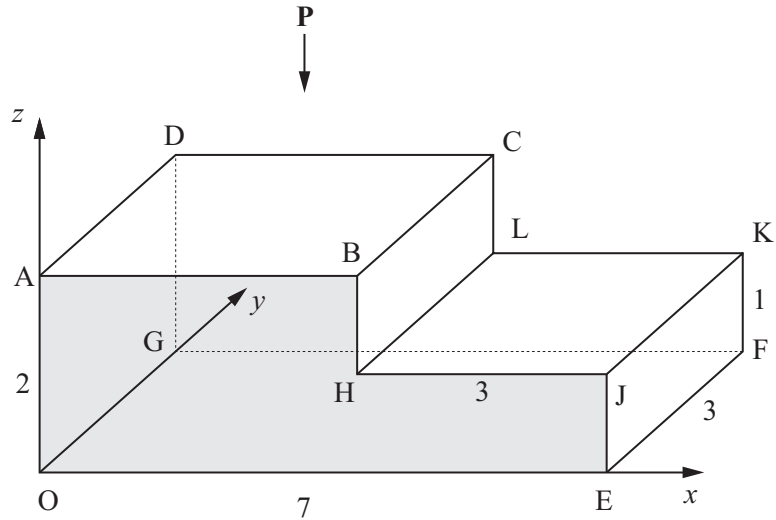
(ii) Draw a line of best fit on the graph.

[1]

(iii) Another student in Aisha’s set took the mathematics examination but missed the English examination.
 Her mathematics mark was 58.

Use your line of best fit to estimate her English mark.

(b)(iii) [1]



In the diagram each edge of the shape is parallel to one of the axes.

$$OE = 7 \quad OA = 2 \quad EF = 3 \quad HJ = 3 \quad FK = 1$$

(a) Write down the coordinates of

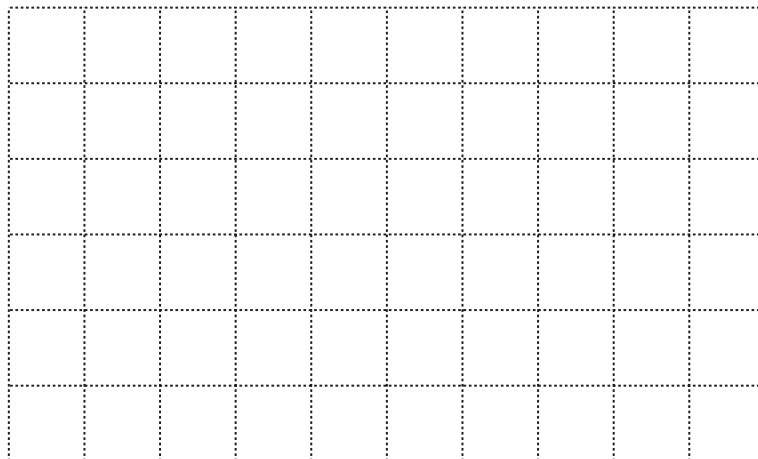
(i) the point K,

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

(ii) the point H.

(ii) (..... , ,) [1]

(b) All lengths on the diagram are in centimetres. On the grid draw an accurate full size plan view of the shape as viewed from **P**.



[2]

(c) (i) Calculate the shaded area, OABHJE.

(c)(i)cm² [2]

(ii) Use your answer to part (c)(i) to work out the volume of the prism.
Give the units of your answer.

(ii) [2]

TURN OVER FOR QUESTION 21

21 (a) Using your calculator, find

(i) the positive square root of 20 correct to 2 significant figures,

(a)(i) [2]

(ii) the negative square root of 1.96 .

(ii) [1]

(b) Write down the cube root of 64.

(b) [1]

(c) Write each of these as a single power of 2.

(i) $2^7 \times 2$

(c)(i) [1]

(ii) $\frac{2^6 \times 2^3}{2^4}$

(ii) [2]

15
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