

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

MATHEMATICS B (MEI)
PAPER 2 SECTION A
INTERMEDIATE TIER

1968/2315A

Monday **12 JUNE 2006** Morning 1 hour

Candidates answer on the question paper.

Additional materials:

- Geometrical instruments
- Tracing paper (optional)

Candidate Name	Centre Number	Candidate Number											
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TIME 1 hour

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers, in blue or black ink, in the spaces provided on the question paper.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Show all your working. Marks may be given for working which shows that you know how to solve the problem, even if you get the answer wrong.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this section is 50.



WARNING

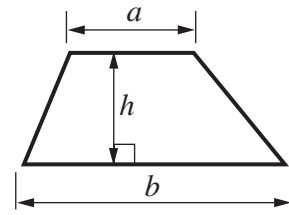
You are not allowed to use a calculator in Section A of this paper.

FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

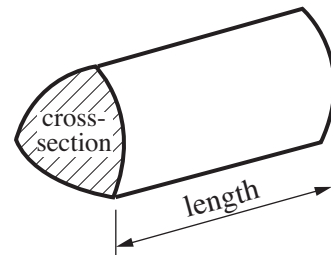
This question paper consists of 11 printed pages and 1 blank page.

Formulae Sheet: Intermediate Tier

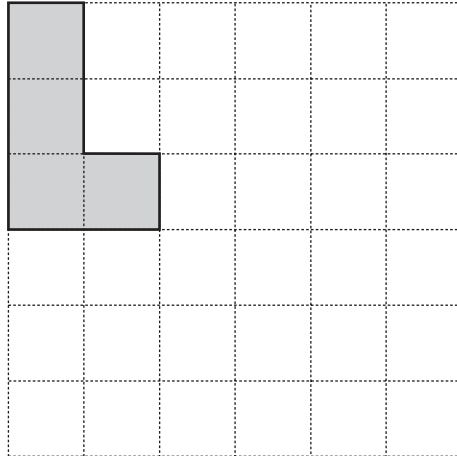
Area of trapezium = $\frac{1}{2}(a + b)h$



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

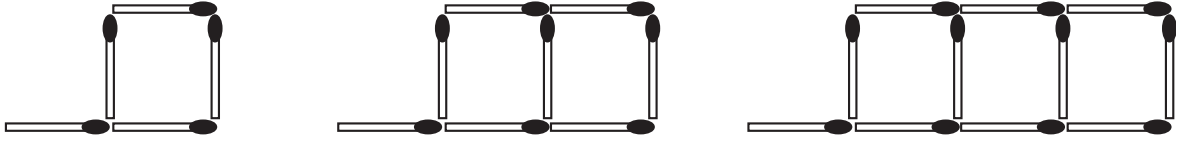


- 1 Complete this design so that the whole grid has rotational symmetry of order 4. Shade in as few squares as possible.



[3]

- 2 (a) Here are the first three patterns in a sequence.
Each pattern is made from matchsticks.



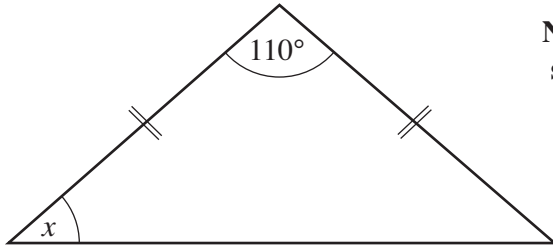
How many matchsticks are there in the fifth pattern?
Explain how you can obtain your answer without drawing the pattern.

..... matchsticks, because
.....[2]

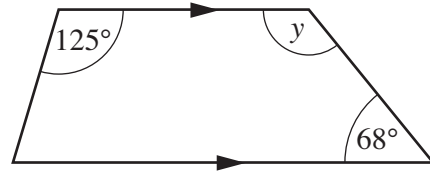
- (b) In a different sequence, the n th term is $3n^2$.
Find the first three terms of this sequence.

(b),,[2]

3



Not to scale



(a) Find these angles, giving your reasons.

$x = \dots\dots\dots^\circ$ because
[3]

$y = \dots\dots\dots^\circ$ because
[2]

(b) What is the mathematical name for the quadrilateral which contains angle y ?
 Give the reason for your decision.

Name: because
[2]

4 Work out, giving your answers as fractions in their simplest terms.

(a) $\frac{3}{10} \times \frac{4}{5}$

(a)[2]

(b) $2\frac{2}{5} - 1\frac{3}{4}$

(b)[3]

5 Here are the ingredients for a recipe for Boulangère Potatoes.

Serves 4

50 g butter
700 g potatoes
2 onions
salt and pepper
200 ml milk

(a) David follows the recipe.
He uses 4 onions.

How many people can he serve?

(a)[1]

(b) Prue follows the recipe for 6 people.

What quantity of potatoes does she need?
Give the units of your answer.

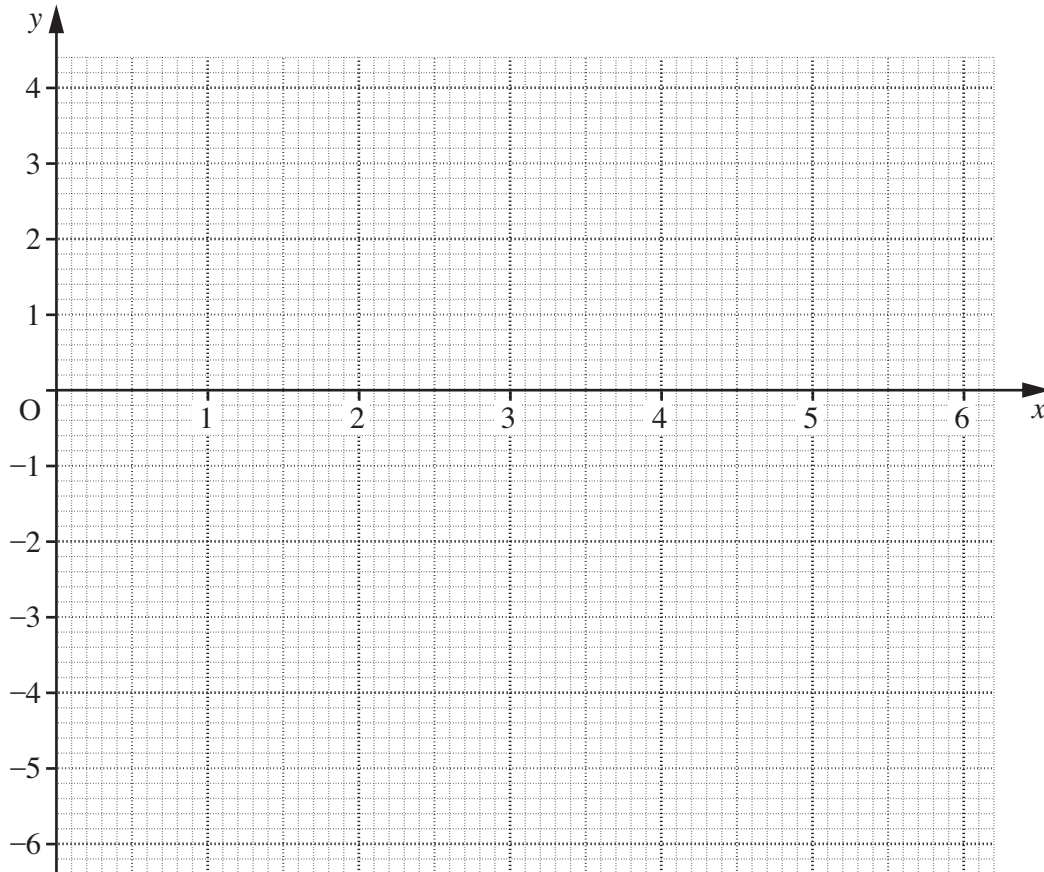
(b)[3]

- 6 (a) Complete the table for $y = x^2 - 6x + 4$.

x	0	1	2	3	4	5	6
y	4	-1	-4			-1	4

[2]

- (b) Draw the graph of $y = x^2 - 6x + 4$.



[2]

- (c) Use your graph to find the values of x for which $x^2 - 6x + 4 = 0$.

(c)[2]

7 (a) Solve.

$$5x - 2 = 3x + 5$$

(a)[3]

(b) Solve by factorising.

$$x^2 + 7x + 10 = 0$$

(b)[3]

(c) Solve algebraically these simultaneous equations.

$$\begin{aligned} 3x + 5y &= 10 \\ 2x + 4y &= 7 \end{aligned}$$

(c) $x =$

$y =$ [4]

8 Work out.

- (a) $(2 \times 10^3) \times (6 \times 10^2)$
Give your answer in standard form.

(a)[2]

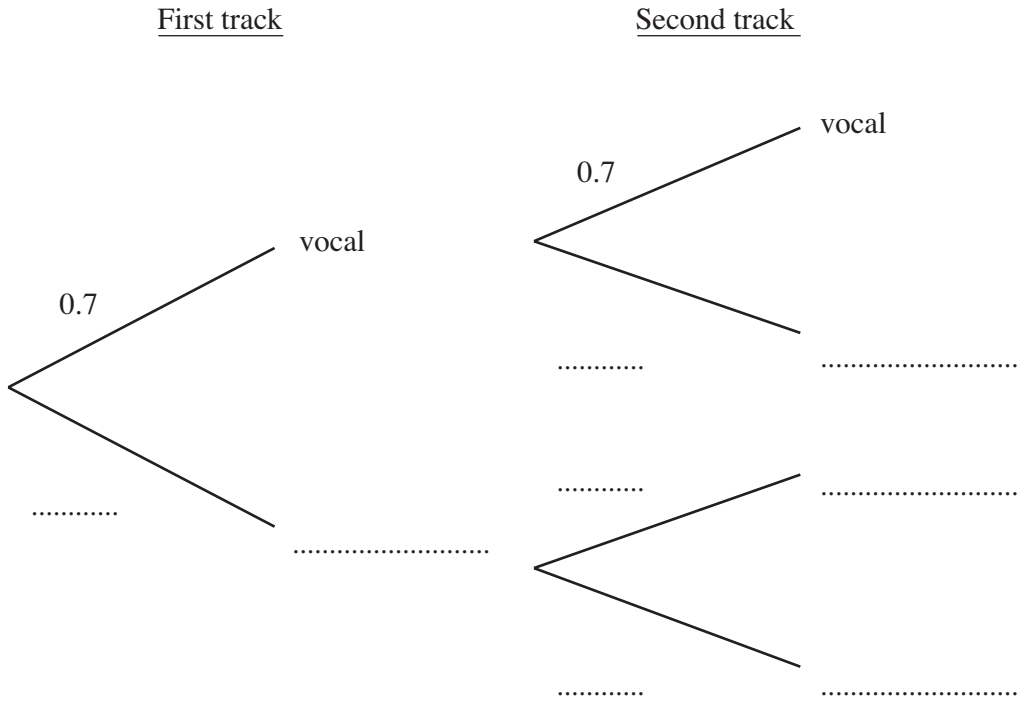
- (b) $(4 \times 10^{-1}) + (3 \times 10^{-2})$

(b)[2]

- 9 Jim has a CD with 10 tracks.
7 of the tracks are vocals and the remaining 3 are instrumentals.

Jim sets his CD player to play tracks of this CD at random.
(The same track can be repeated.)

- (a) Complete this tree diagram to show probabilities for the first two tracks played.



[2]

- (b) Calculate the probability that

- (i) both tracks are vocals,

(b)(i)[2]

- (ii) at least one track is a vocal.

(ii)[3]

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