Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

B292A

MATHEMATICS B (MEI)

Paper 2 Section A (Foundation Tier)

FRIDAY 14 JANUARY 2011: Morning
DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)
Do not use a calculator for this paper.

READ INSTRUCTIONS OVERLEAF

DC (LEO/CGW) 11MEP01067 39748/1

INSTRUCTIONS TO CANDIDATES

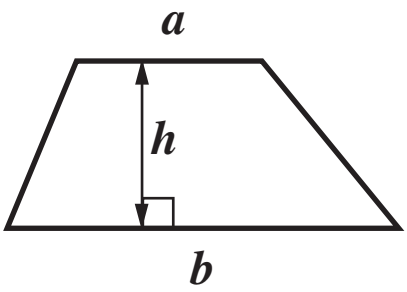
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **Show 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.**

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.**

FORMULAE SHEET: FOUNDATION TIER

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



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

1 Rhona has twenty-four soft-centred chocolates.
The flavours are listed below.

Orange	Orange	Lemon	Mint	Lemon
Cherry	Orange	Lemon	Coffee	Coffee
Orange	Cherry	Coffee	Mint	Orange
Cherry	Orange	Orange	Orange	Coffee
Cherry	Cherry	Orange	Cherry	

(a) Complete the table below.
The first three chocolates have been tallied already.
[2 marks]

Flavour of centre	Tally	Frequency
Orange	II	
Lemon	I	
Mint		
Cherry		
Coffee		

(b) On the diagram below, draw a pictogram that represents these data. [3 marks]

Key:  = 2 Chocolates

Orange	
Lemon	
Mint	
Cherry	
Coffee	

(c) Rhona chooses one of these chocolates at random.

What is the probability that it has a lemon centre? [2 marks]

_____

2 (a) By drawing one line, divide the shape below into two trapeziums. [1 mark]

(b) By drawing one line, divide the shape below into two quadrilaterals that are <u>NOT</u> trapeziums. [1 mark]

(c) By drawing TWO lines, divide the shape below into one rectangle and two triangles. [1 mark]

(d) By drawing TWO lines, divide the shape below into one kite and two triangles. [1 mark]

3 (a) Look at the six percentages below.

25% 34% 12% 50% 75% 20%

Select a percentage from the list that is equivalent to

(i) $\frac{1}{2}$

[1 mark]

_____

(ii) $\frac{3}{4}$

[1 mark]

_____

(b) Work these out.

(i) $\frac{3}{7} + \frac{2}{7}$

[1 mark]

_____

(ii) $\frac{5}{8} - \frac{3}{8}$

Give your answer in its simplest form. [2 marks]

_____

4 **Bob, Liz, Cora and Hamid each run a raffle.**
They each have a book of red raffle tickets and a book of blue raffle tickets.
All the books have the same number of tickets.

- **Bob sells all his red tickets and all his blue tickets.**
- **Liz sells all her red tickets, but only a few of her blue tickets.**
- **Cora sells none of her red tickets, but all of her blue tickets.**
- **Hamid sells some of his red tickets, but none of his blue tickets.**

Select the person in whose raffle it is

(a) an evens chance that a red ticket wins, [1 mark]

_____

(b) impossible that a red ticket wins, [1 mark]

_____

(c) likely that a red ticket wins. [1 mark]

_____

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5 (a) Work these out.

(i) $40 - 10 \times 2$
[1 mark]

_____

(ii) 3×10^2
[1 mark]

_____

(iii) $\dfrac{2(3 + 9)}{4 \times 3}$

[2 marks]

_____

(iv) $2^3 \times 3^2$
[2 marks]

_____

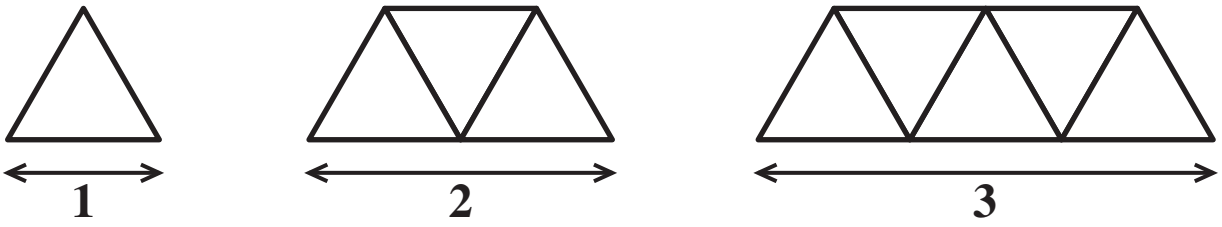
(b) Anil does the calculation below on his calculator.

$$\frac{0.432 \times 689.86}{28.4}$$

He writes down the numbers shown on his calculator display as
10 493 645, but forgets to put in the decimal point.

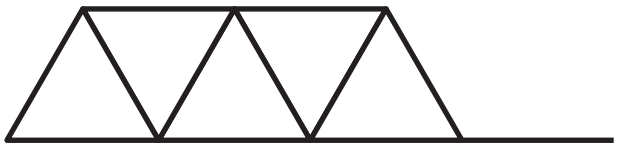
Use estimation to decide where the decimal point should go.
You must show your working. [3 marks]

6 The sides of some bridges are built using identical bars joined to form triangles.
The diagrams below show the designs for the sides of bridges which are one, two and three bars long.



This uses 3 bars **This uses 7 bars** **This uses 11 bars**

(a) Complete the diagram below for the side of a bridge which is 4 bars long. [1 mark]



(b) How many bars are used for the side of a bridge which is 4 bars long? [1 mark]

_____

(c) Complete the table below. [1 mark]

Number of bars long (L)	Number of bars used
1	3
2	7
3	11
4	
5	

(d) Describe the pattern in the table for the number of bars used. [1 mark]

_____

(e) Write down an expression for the number of bars used when the bridge is L bars long. [2 marks]

_____

7 **At Barney's Diner a three-course meal costs £2 more than a two-course meal.**
A group of 8 people go to the Diner.
Three of them have two-course meals and the rest have three-course meals.

The total cost is £126
Let £x be the cost of a two-course meal.

Write down an equation in x and solve it to find the cost of a two-course meal. [5 marks]

£ _____

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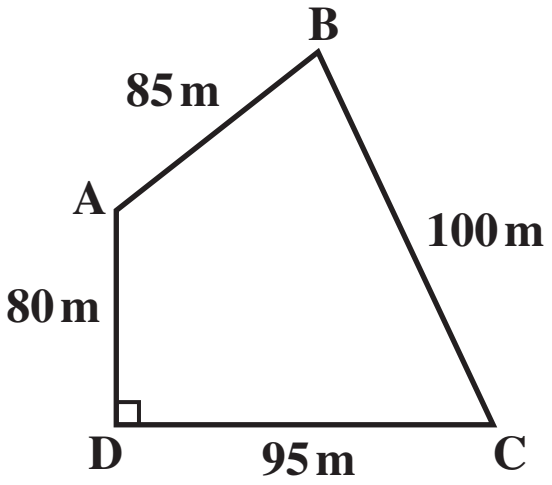
8 IN THIS QUESTION LEAVE IN ALL THE CONSTRUCTION ARCS YOU USE.

The diagram below shows the sketch of a field.
It is not to scale.



(a) On the page opposite, make an accurate scale drawing of the field.
Use a scale of 1 cm to represent 10 m.
The line DC has been drawn for you. [3 marks]

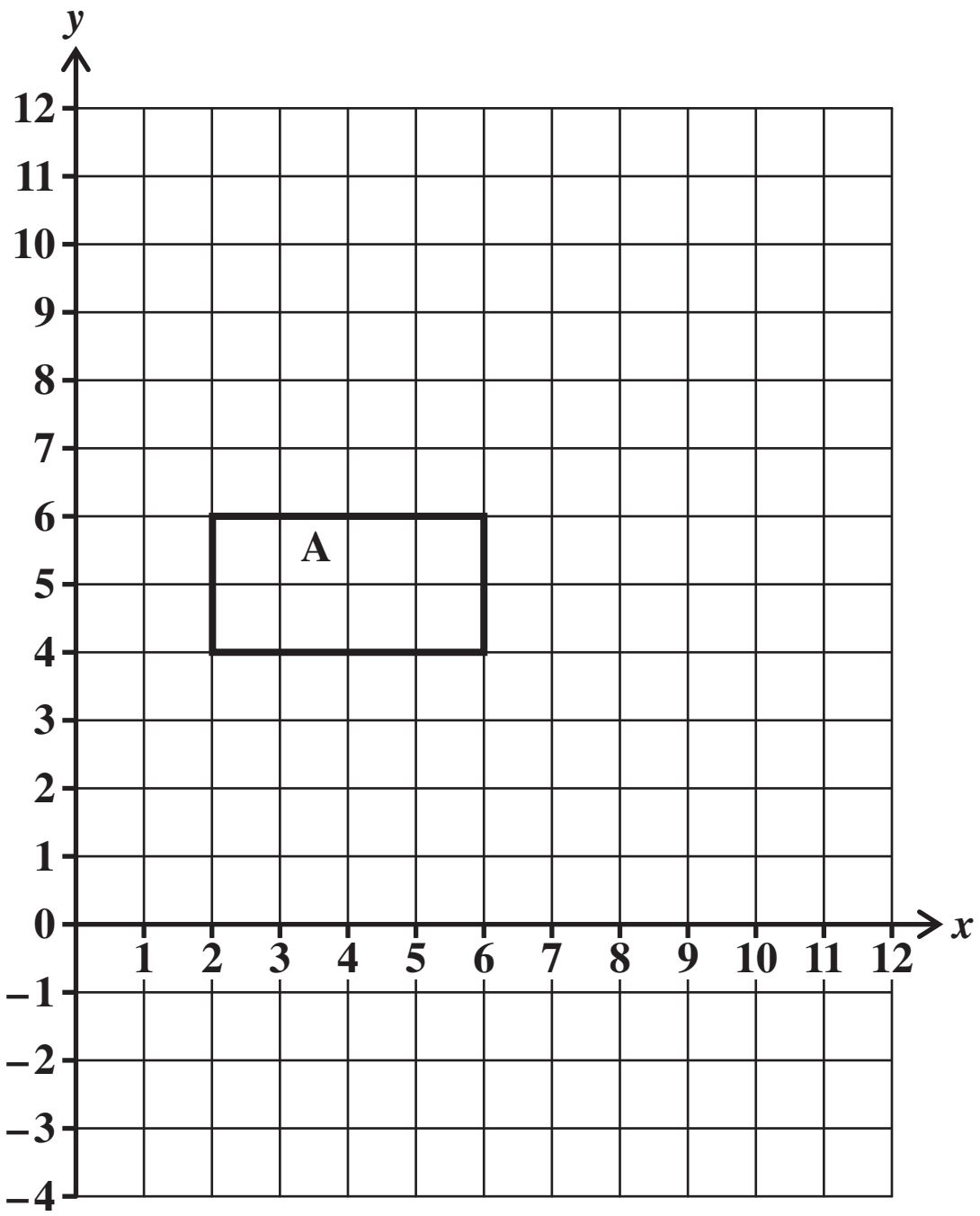
(b) A mobile phone mast is to be erected in the field.
The mast must be

- **the same distance from B as it is from D**
- **at least 65 m from A.**

On your drawing, use ruler and compasses only to construct all the possible positions for the mast.
Show your answer clearly. [4 marks]


D
C

9 A rectangle is drawn on the grid below.



(a) Enlarge rectangle A by scale factor $\frac{1}{2}$ with centre (0, 0)
[2 marks]

(b) Translate rectangle A by the vector $\begin{pmatrix} 2 \\ -7 \end{pmatrix}$
[2 marks]

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