

**GENERAL CERTIFICATE OF SECONDARY EDUCATION**

**MATHEMATICS B (MEI)**

**B291A**

Paper 1 Section A (Foundation Tier)

Candidates answer on the Question Paper

**OCR Supplied Materials:**

None

**Other Materials Required:**

- Geometrical instruments
- Tracing paper (optional)

**Tuesday 12 January 2010**  
**Morning**

**Duration: 45 minutes**



Candidate Forename		Candidate Surname	
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Centre Number							Candidate Number				
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**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.
- Do **not** write in the bar codes.
- 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.
- The total number of marks for this Section is **36**.
- This document consists of **12** pages. Any blank pages are indicated.

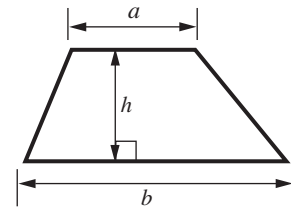
**WARNING**



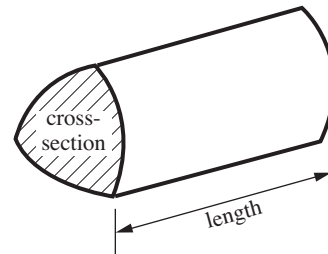
No calculator can be used for Section A of this paper

## 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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1 (a) Write the number thirty million in figures.

(a) ..... [1]

(b) Write the number 8491

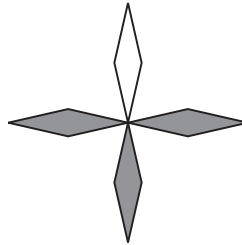
(i) to the nearest ten,

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

(ii) to the nearest hundred.

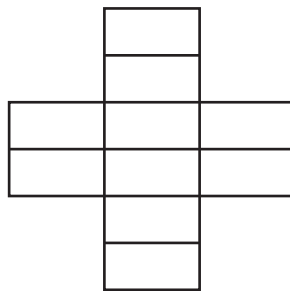
(ii) ..... [1]

2 (a) (i) What fraction of the diagram is shaded?



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

(ii) Shade 20% of the diagram below.



[1]

(b) Put a ring round each of the fractions which equal  $\frac{1}{4}$ .

$$\frac{4}{5}$$

$$\frac{2}{8}$$

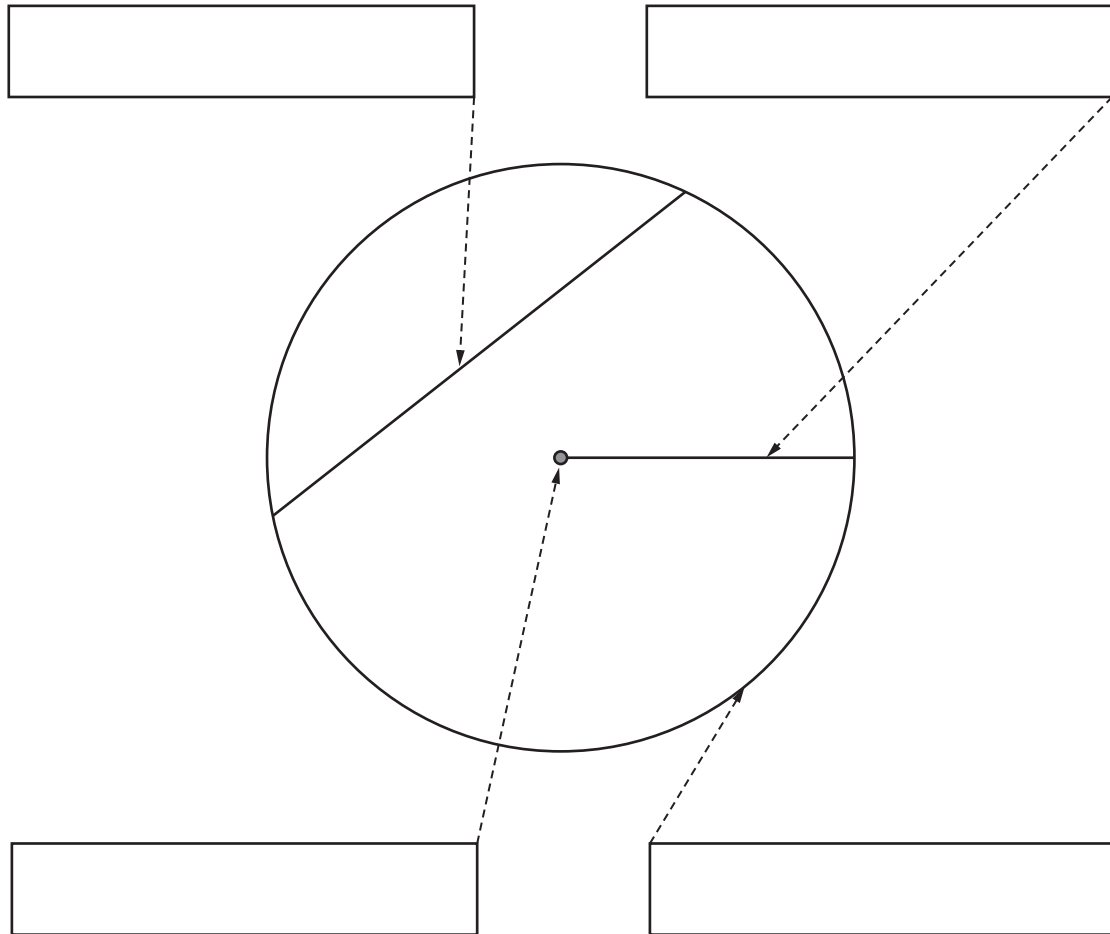
$$\frac{8}{16}$$

$$\frac{10}{40}$$

[2]

- 3 Label the parts of the circle by writing the correct words in the boxes.  
Choose from this list.

diameter	centre	chord	tangent
circumference	radius	sector	



[4]

- 4** A play has three acts with two intervals.  
 Each act lasts 35 minutes.  
 Each interval is 15 minutes.  
 The play starts at 7:30 pm.

At what time does the play finish?

..... pm [3]

- 5 (a)** Solve these equations.

**(i)**  $6x = 18$

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

**(ii)**  $y - 4 = 5$

**(ii)** ..... [1]

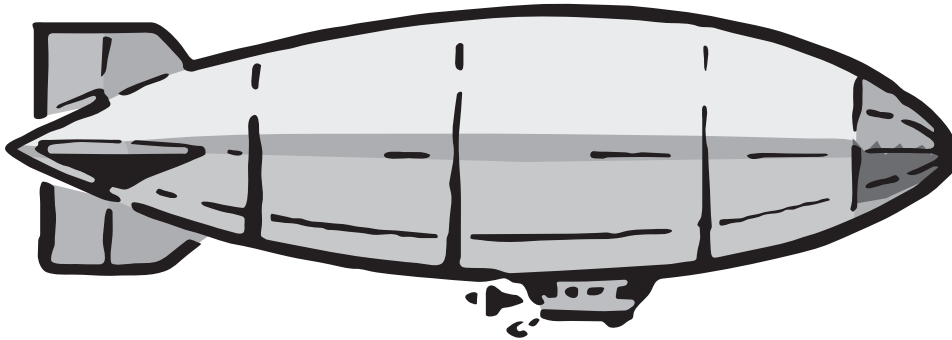
- (b)** Work out  $3s + 2t$  when  $s = 4$  and  $t = 8$ .

**(b)** ..... [2]

- (c)** Work out  $-2 \times 6$ .

**(c)** ..... [1]

6 This is a picture of an airship.



- (a) The volume of this airship is  $156\,019\text{ m}^3$ .  
The value of the 6 in 156 019 is six thousand.

What is the value of the 5?

(a) ..... [1]

- (b) A skyship is a smaller type of airship.

The airship is 240 m long.  
The skyship is 60 m long.

How many times longer is the airship than the skyship?

(b) ..... [1]

- (c) Emma builds a scale model of the airship.  
She uses a scale of 1 cm to 5 m.

- (i) The diameter of the model is 8 cm.

What is the diameter of the airship?

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

(ii) The length of the airship is 240 m.

What is the length of the model?

(ii) ..... cm [1]

(d) The airship shed is a cuboid, 250 m by 60 m by 50 m.

Work out the volume of the shed.  
Give the units of your answer.

(d) ..... [3]

(e) The speed of the airship is 70 mph.  
5 miles is about 8 kilometres.

Convert 70 mph to kilometres per hour.

(e) ..... km/h [2]

8

7 Some residents are campaigning to get a bypass built for their village.

(a) They decide to carry out a traffic survey.

Design a data sheet they could use to show the types and numbers of vehicles passing through the village.

You may not need all the space in the table.


[2]



- (b) The residents also decide to survey local opinion using a questionnaire.

Fred says they should ask the question,  
“Do you think we should have a bypass to make our village safer?”

What is wrong with Fred’s question?

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

- (c) Dan suggests that all the questionnaires should be given out at the village primary school at the end of afternoon school.

Give two reasons why this is not a good suggestion.

Reason 1 .....

.....

Reason 2 .....

..... [2]

**TURN OVER FOR QUESTION 8**

8 (a) Make  $n$  the subject of this formula.

$$m = 5n - 3$$

(a)  $n = \dots\dots\dots$  [2]

(b) Simplify  $p^2 \times p^6$ .

(b)  $\dots\dots\dots$  [1]

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