

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

**B291B**

Paper 1 Section B (Foundation Tier)

**Monday 6 June 2011  
Afternoon**

**Duration: 45 minutes**

Candidates answer on the question paper.

**OCR supplied materials:**  
None

- Other materials required:**
- Geometrical instruments
  - Scientific or graphical calculator
  - Tracing paper (optional)



Candidate forename		Candidate surname	
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Centre number							Candidate number				
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**INSTRUCTIONS TO CANDIDATES**

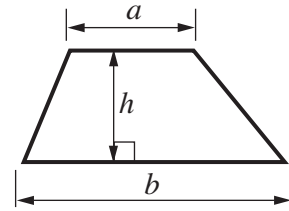
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Write your answer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

**INFORMATION FOR CANDIDATES**

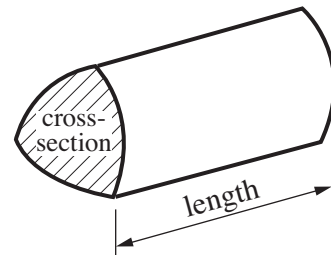
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 10.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- 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

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10 (a) Write the number twelve thousand and sixty seven in figures.

(a) ..... [1]

(b) Write the number 7809 in words.

..... [1]

(c) Write the number 3764

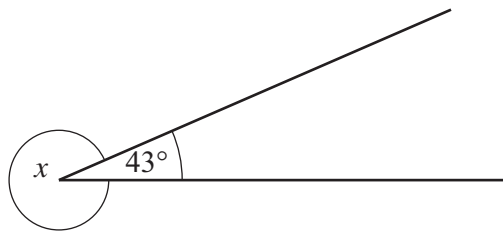
(i) correct to the nearest ten,

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

(ii) correct to the nearest thousand.

(ii) ..... [1]

11



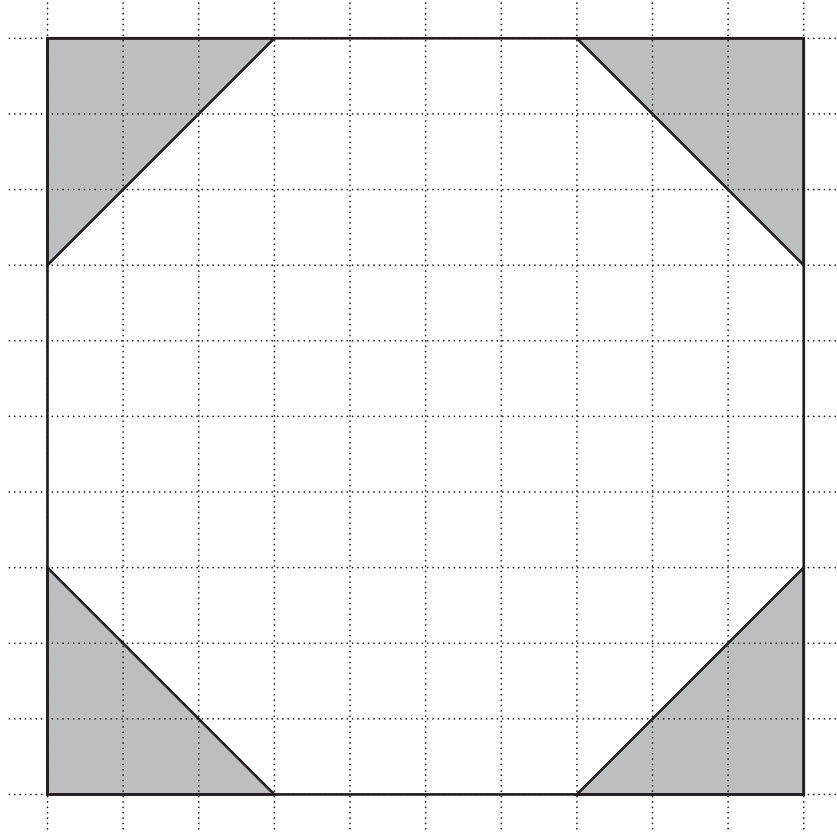
Not to scale

Calculate the size of angle  $x$ , and give a geometrical reason for your answer.

Angle  $x$  is .....<sup>o</sup>, because .....

..... [2]

- 12 The diagram shows a large square drawn on a 1 cm square grid. It is split into a white octagon and four grey triangles.



- (a) What is the area of the large square?

(a) .....  $\text{cm}^2$  [1]

- (b) What is the area of **one** of the four grey triangles?

(b) .....  $\text{cm}^2$  [1]

- (c) Find the area of the white octagon.

(c) .....  $\text{cm}^2$  [2]

13 Calculate the following.

(a)  $\frac{3}{7}$  of 133

(a) ..... [2]

(b)  $2.4^2$

(b) ..... [1]

(c)  $\sqrt{7.29}$

(c) ..... [1]

14 (a) Ronaldo made a list of the number of matches won by the school football team in the previous seven seasons.

6 13 11 8 9 8 8

Work out the mean number of matches won in a season.

(a) ..... [2]

(b) Taylor made a list of the number of matches won by the school hockey team in the previous seven seasons.

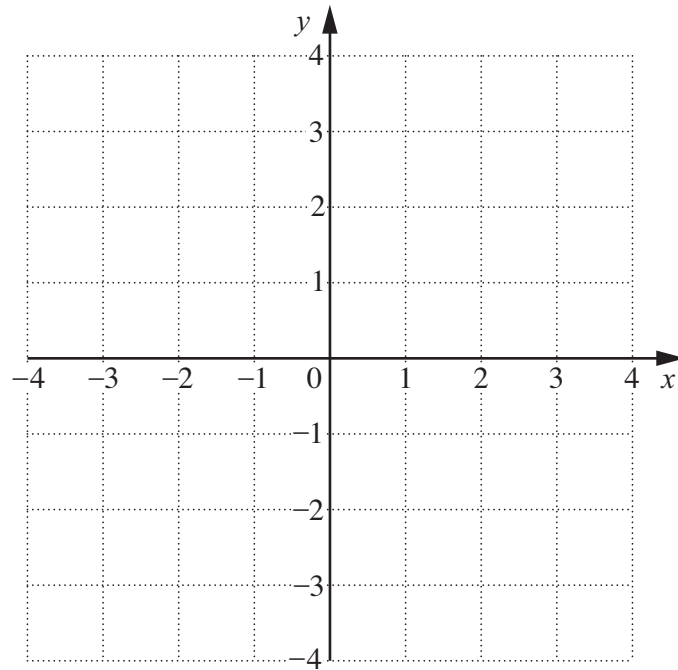
10 12 11 8 9 10 9

She says that the mean of these numbers is 13.

**Without working out the mean** explain how you know that she is wrong.

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

15



Plot the points with these coordinates.

(a)  $(-2, -1)$  [1]

(b)  $(0, -3)$  [1]

16 (a) Work out  $2x + 4y$  when  $x = 3$  and  $y = 5$ .

(a) ..... [2]

(b) Simplify the following expression.

$$5c + 2d - 3c + d$$

(b) ..... [2]

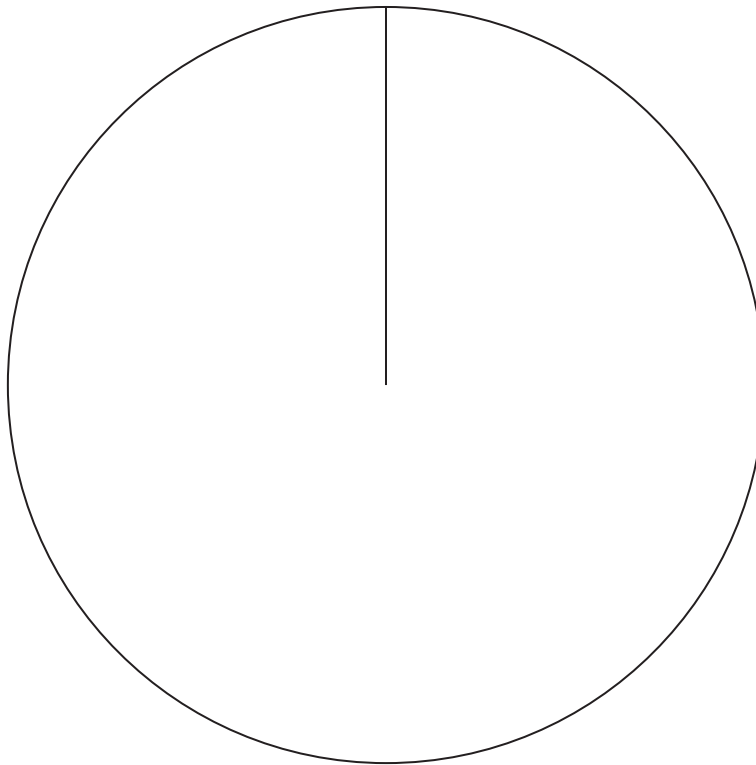
- 17 A biology student counted the numbers of four different species present in a rock pool. The results are shown in the table.

Species	Frequency
Crabs	10
Mussels	20
Prawns	25
Starfish	5
Total	60

- (a) Why does a total frequency of 60 make it easy to work out the angles for a pie chart?

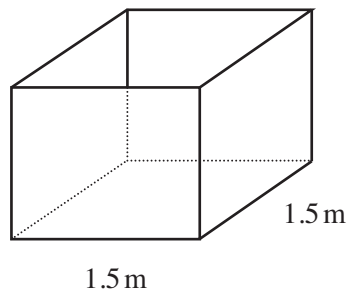
..... [1]

- (b) Draw a pie chart to show this information.



[4]

- 18 An empty tank in the shape of a cuboid has a square base of side 1.5 m.



Jacob puts  $3.15 \text{ m}^3$  of water into the tank.

What is the depth of the water in the tank?

..... m [3]



- 19 This formula can be used to convert temperatures in degrees Celsius,  $C$ , to temperatures in degrees Fahrenheit,  $F$ .

$$F = \frac{9}{5} C + 32$$

- (a) Change  $140^{\circ}\text{C}$  into  $^{\circ}\text{F}$ .

(a) .....  $^{\circ}\text{F}$  [1]

- (b) Rearrange the formula so that  $C$  is the subject.

(b) ..... [3]

- (c) Liz has an old recipe book which states that a cake needs to be baked at  $350^{\circ}\text{F}$ .

At what temperature should she set her oven in  $^{\circ}\text{C}$  to bake the cake?  
Show your working.

(c) .....  $^{\circ}\text{C}$  [1]

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