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

**B292B**

Paper 2 Section B (Foundation Tier)

Candidates answer on the question paper.

**OCR supplied materials:**  
None

**Other materials required:**

- Geometrical instruments
- Scientific or graphical calculator
- Tracing paper (optional)

**Friday 14 January 2011  
Morning**

**Duration: 1 hour**



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

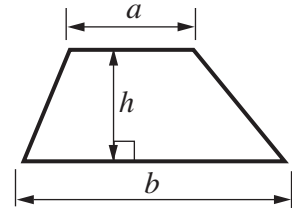
- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Show your working. 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.
- Do **not** write in the bar codes.

**INFORMATION FOR CANDIDATES**

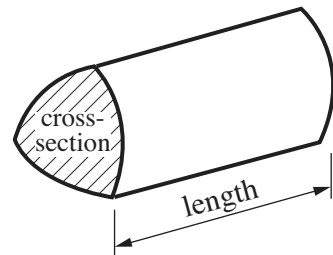
- The number of marks is given in brackets [ ] at the end of each question or part question.
- Section B starts with question 10.
- You are expected to use a calculator in Section B of this paper.
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- The total number of marks for this Section is **50**.
- This document consists of **12** pages. Any blank pages are indicated.

## Formulae Sheet: Foundation Tier

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

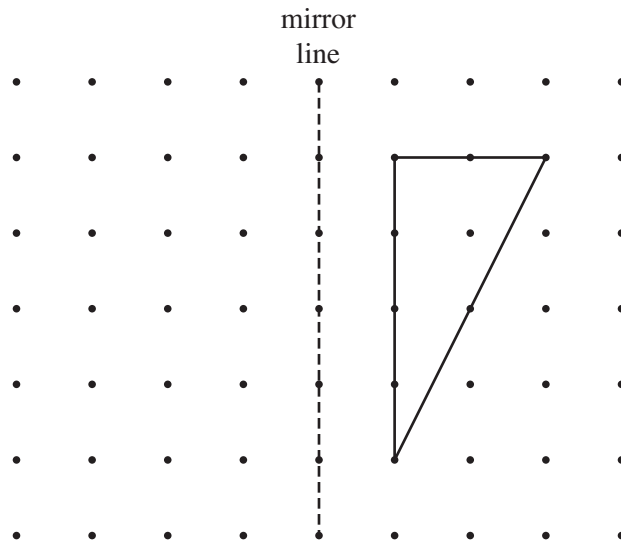


**Volume of prism** = (area of cross-section)  $\times$  length



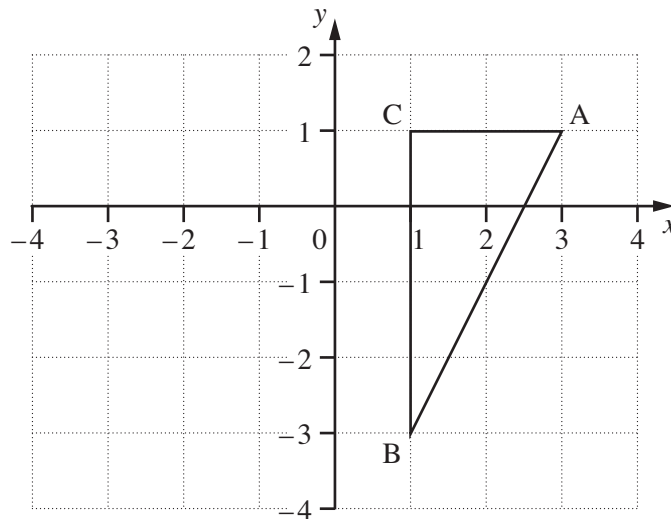
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10 (a) Draw the reflection of the triangle in the mirror line.



[2]

(b) Here is the same triangle on a coordinate grid.



(i) Mark the midpoint of the line AB. Label it M. [1]

(ii) Write down the coordinates of M.

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

(iii) Plot the point  $(-3, -2)$ . Label it D. [1]

- 11 (a) Mr Digance, the geography teacher, buys resources for his department. Parts of his bill are missing.

Fill in the three missing parts.

12 geography books	@	£5.89 =	£ .....
.....	@	£2.40 =	£ 14.40
Total =			£ .....

[3]

- (b) Mr Digance has three class sets of books. There are 32 books in each set. Each book is 8 mm thick.

Will all of the books fit on a shelf that is 75 cm long?  
Explain your answer.

..... because .....

.....

.....

..... [3]

- 12 Write down the next three terms in each of these sequences.

- (a) The sequence of odd numbers.

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

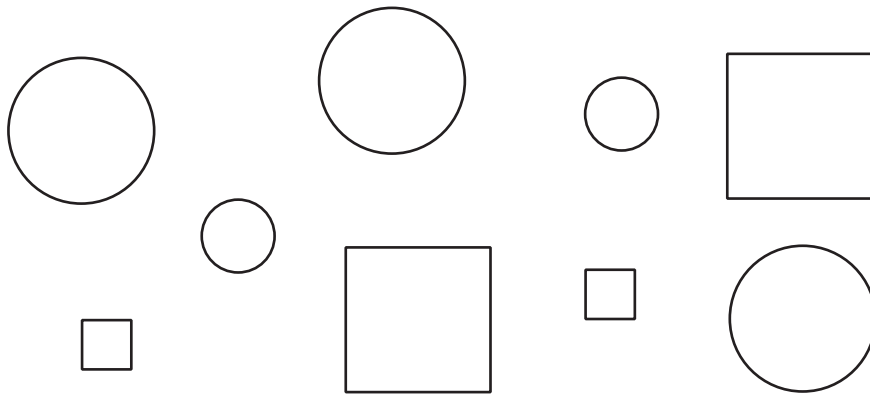
- (b) The sequence which doubles each time.

(b) 1 , ..... , ..... , ..... [1]

- (c) The sequence of square numbers.

(c) 1 , ..... , ..... , ..... [1]

- 13 Here are 9 tiles from a game.  
There are small and large circles, and small and large squares.



Chloe takes one of these tiles at random.

What is the probability that it is

- (a) a small circle,

(a) ..... [1]

- (b) a circle of any size,

(b) ..... [1]

- (c) **not** a large square?

(c) ..... [1]

- 14 (a) Packets of Wheatigrains usually contain 450 g.  
Special offer packets contain 15% extra.

How much **extra** is in a special offer packet?

(a) ..... g [2]

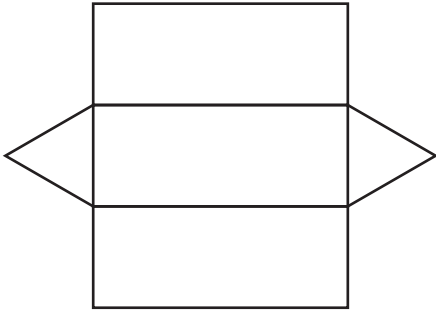
- (b) The price of a car is usually £5850.  
The price is reduced by 23%.

Find the reduction in price.

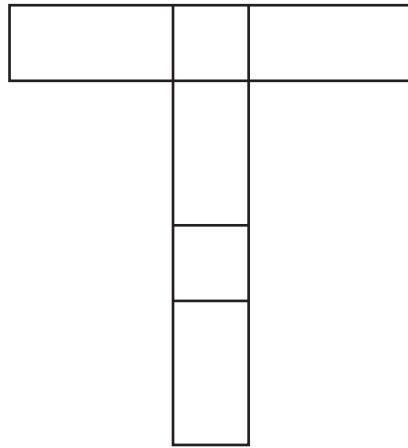
(b) £ ..... [2]

Turn over

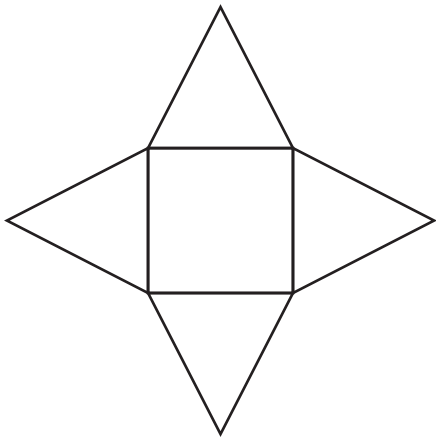
15 Write down the names of the 3-D shapes for which these are nets.



.....



.....

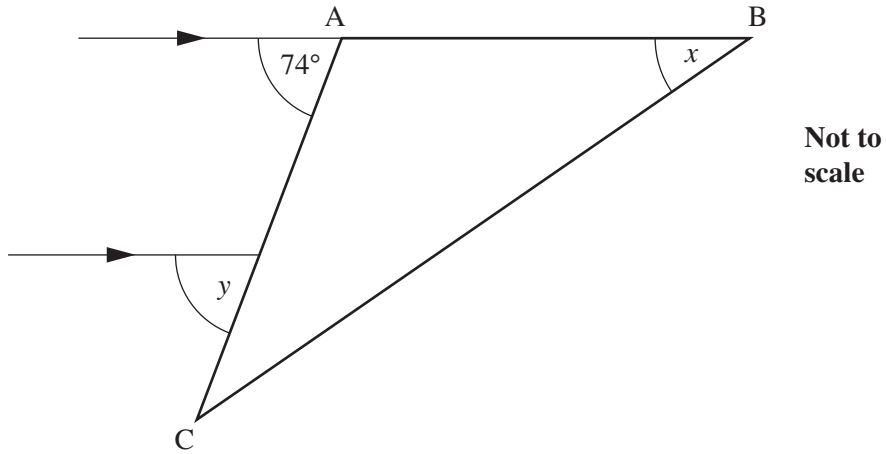


.....

[3]

16 Multiply out  $3(2x + 10)$ .

..... [2]



In this diagram  $AB = AC$ .

Find these angles, giving your reasons.

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

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

- 18 (a) Using your calculator, find both square roots of 3.  
Give your answers correct to 2 decimal places.

(a) ..... [2]

- (b) Write down the cube root of 1000.

(b) ..... [1]

- (c) Write down the next prime number after 19.

(c) ..... [1]

- (d) Calculate  $2^5$ .

(d) ..... [1]

19

<u>Exchange rates</u>	
Australian dollars (AUD) to UK pounds (£)	1 AUD = £0.46
New Zealand dollars (NZD) to UK pounds (£)	1 NZD = £0.38

Joseph goes on holiday. He has £1000 to spend.  
He buys 800 Australian dollars (AUD), and uses the rest of the £1000 to buy New Zealand dollars (NZD).

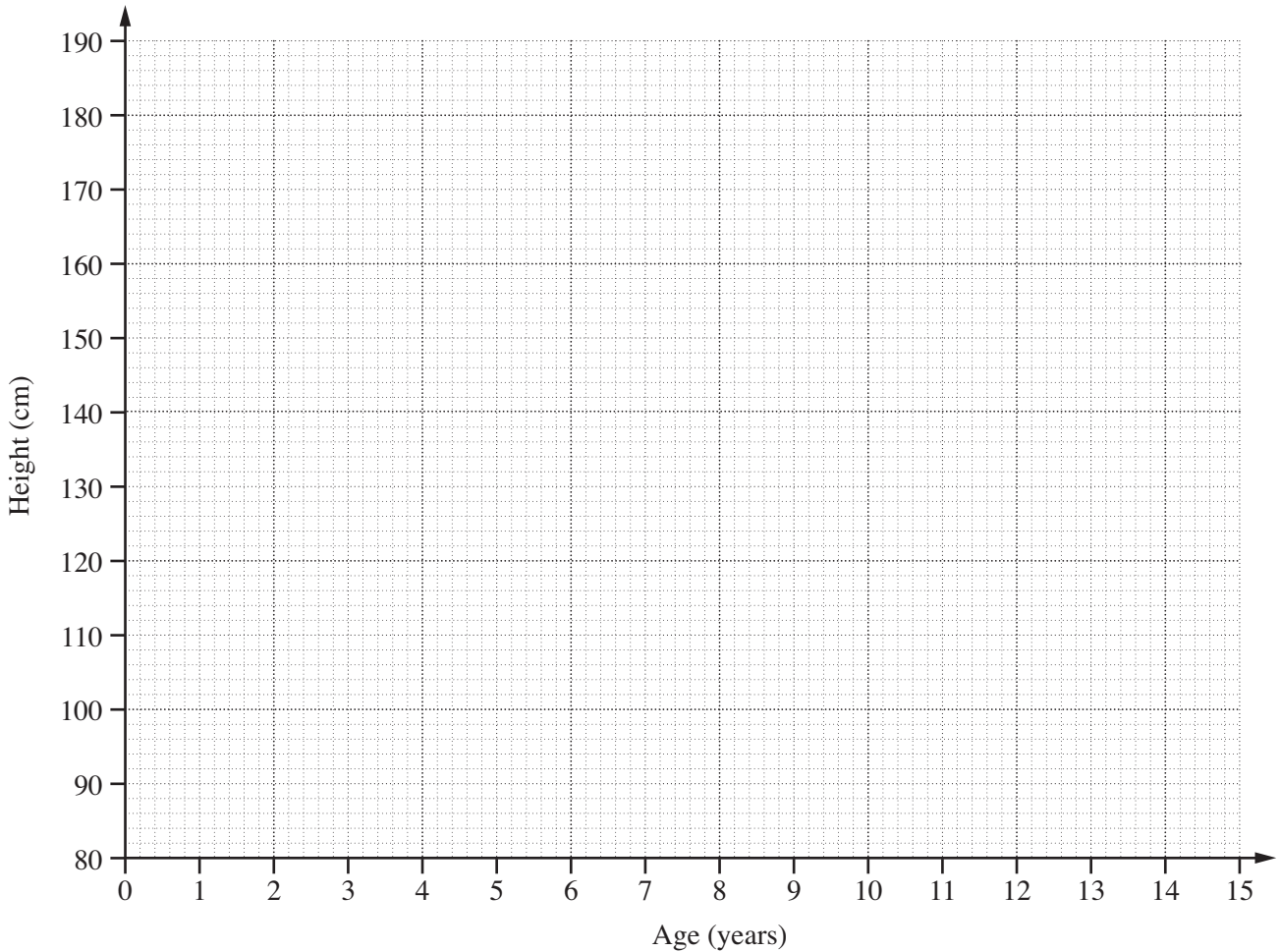
How many New Zealand dollars will he get?  
Show your working.

..... NZD [4]



20 The table shows the average heights of children of different ages in a certain town.

Age (years)	2	3	4	6	8	10
Height (cm)	86	95	102	116	128	139



(a) Plot the scatter diagram for these data. [2]

(b) Draw a line of best fit. [1]

(c) Use your line of best fit to estimate the average height of children from the town who are 7 years old.

(c) ..... cm [1]

(d) Would it be sensible to use your line of best fit to estimate the average height of children from the town who are 15 years old?  
Explain your answer.

..... because .....

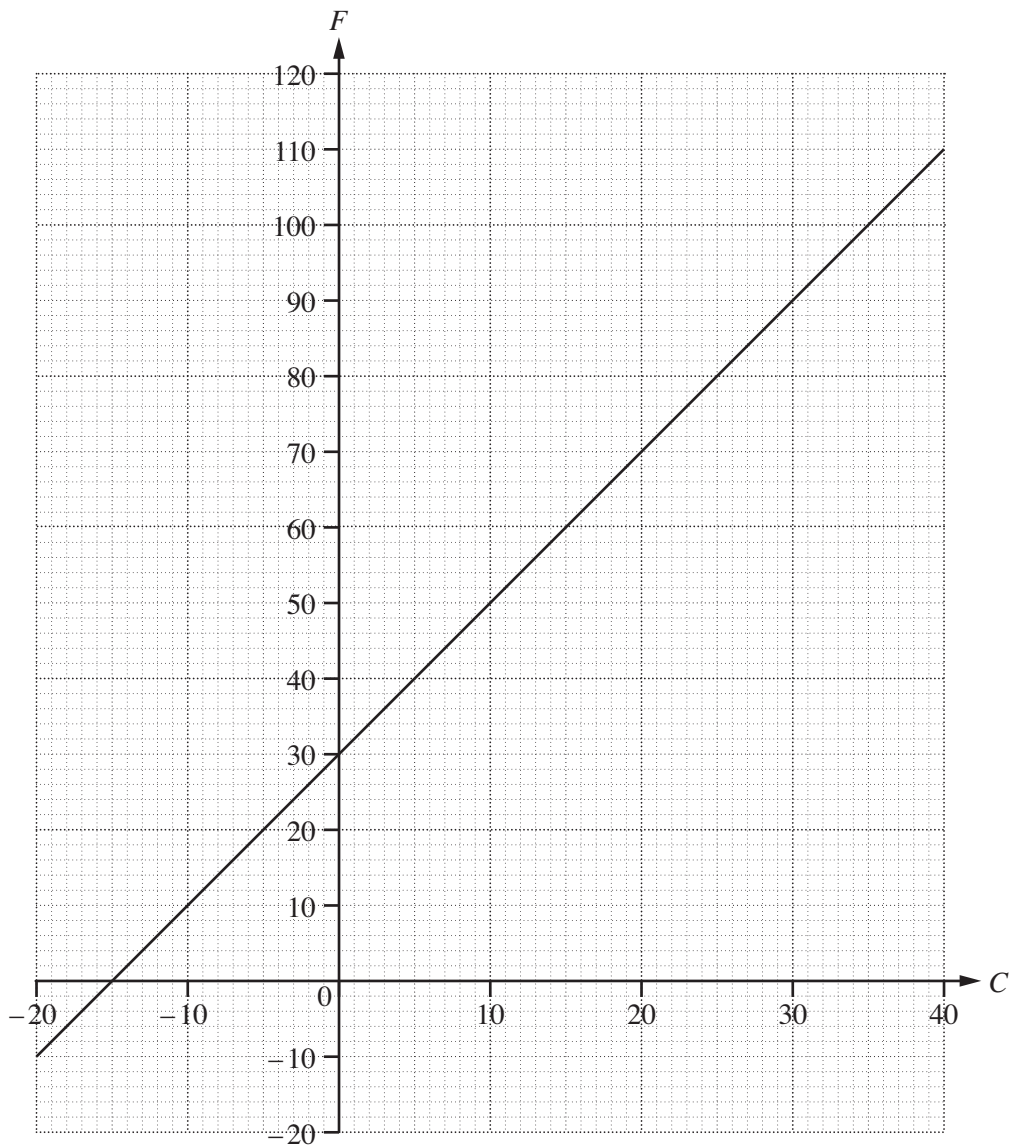
..... [1]

- 21 (a) Craig uses the formula  $F = 2C + 30$  to convert a temperature in degrees Celsius,  $C$ , to one in degrees Fahrenheit,  $F$ .

Use Craig's formula to find  $F$  when  $C = 75$ .

(a) ..... [1]

The conversion graph for Craig's formula is shown on the grid.



- (b) Craig's formula does not give exact conversions.  
The formula which gives exact conversions is

$$F = 1.8C + 32.$$

- (i) Complete this table for  $F = 1.8C + 32$ .

$C$	- 20	0	20	40
$F$			68	

[1]

- (ii) On the grid, draw the graph of  $F = 1.8C + 32$ .

[2]

- (c) At what temperature in degrees Celsius do both formulae give the same temperature in degrees Fahrenheit?

(c) ..... °C [1]

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