UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

8229900006

MATHEMATICS **0580/33**

Paper 3 (Core) **October/November 2010**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Mathematical tables (optional)
Geometrical instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

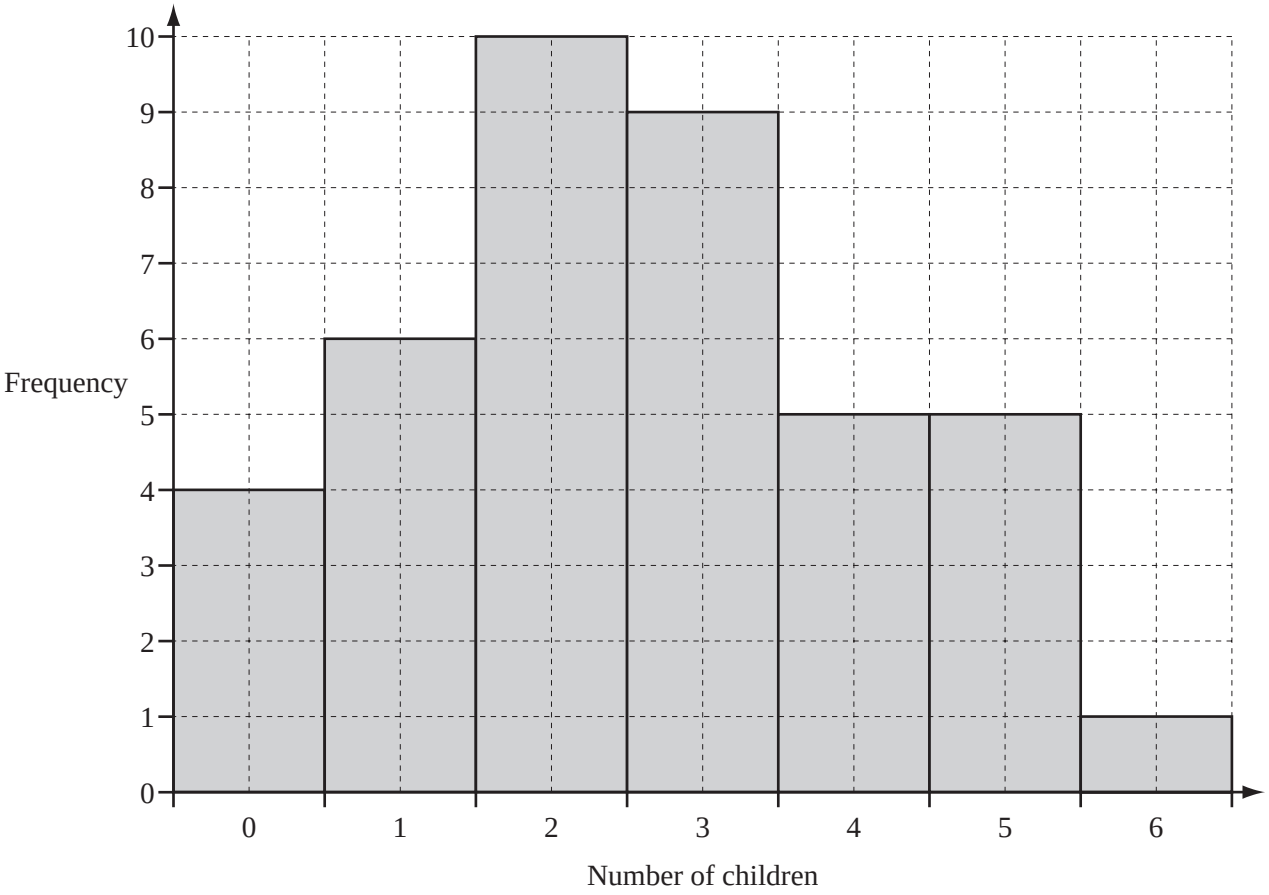
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 104.

This document consists of **16** printed pages.

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1

For Examiner's Use



The number of children in each of 40 families was recorded.
The bar chart shows the results.

(a) Complete the frequency table.

Number of children	0	1	2	3	4	5	6
Frequency	4	6					

[3]

(b) Find

(i) the mode,

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

(ii) the median,

Answer(b)(ii) ..... [2]

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(iii) the mean.

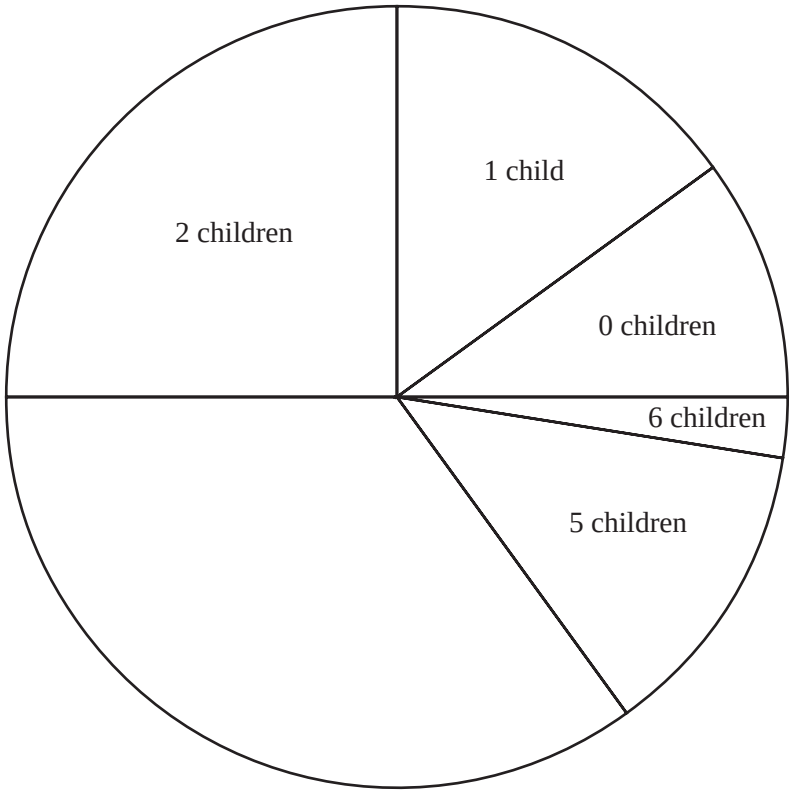
Answer(b)(iii) ..... [3]

(c) A pie chart showing the information has been started.

(i) Calculate the angles of the sectors for 3 and 4 children.

Answer(c)(i) ..... , ... [3]

(ii) Complete the pie chart accurately.



[1]

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2 Eduardo lives in Argentina and travels to Uruguay for a holiday.

(a) His flight from Buenos Aires to Montevideo takes 55 minutes.
The plane departs at 17 35.

(i) Write down the arrival time.

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

(ii) The distance between Buenos Aires and Montevideo is 230 km.

Calculate the average speed of the plane.

Answer(a)(ii) ..... km/h [3]

(b) At the airport, Eduardo changed some Argentine pesos (ARS).
He received 9121 Uruguay pesos (UYU).

(i) The exchange rate was ARS 1 = UYU 6.515.

Calculate how many Argentine pesos Eduardo changed.

Answer(b)(i) ARS ..... [2]

(ii) Eduardo spent 1890 Uruguay pesos on meals.

Calculate this as a percentage of the UYU 9121.

Answer(b)(ii) ..... % [1]

(iii) At the end of his holiday, Eduardo has UYU 610 remaining.
He changes this into Argentine pesos when the exchange rate is UYU 1 = ARS 0.149.

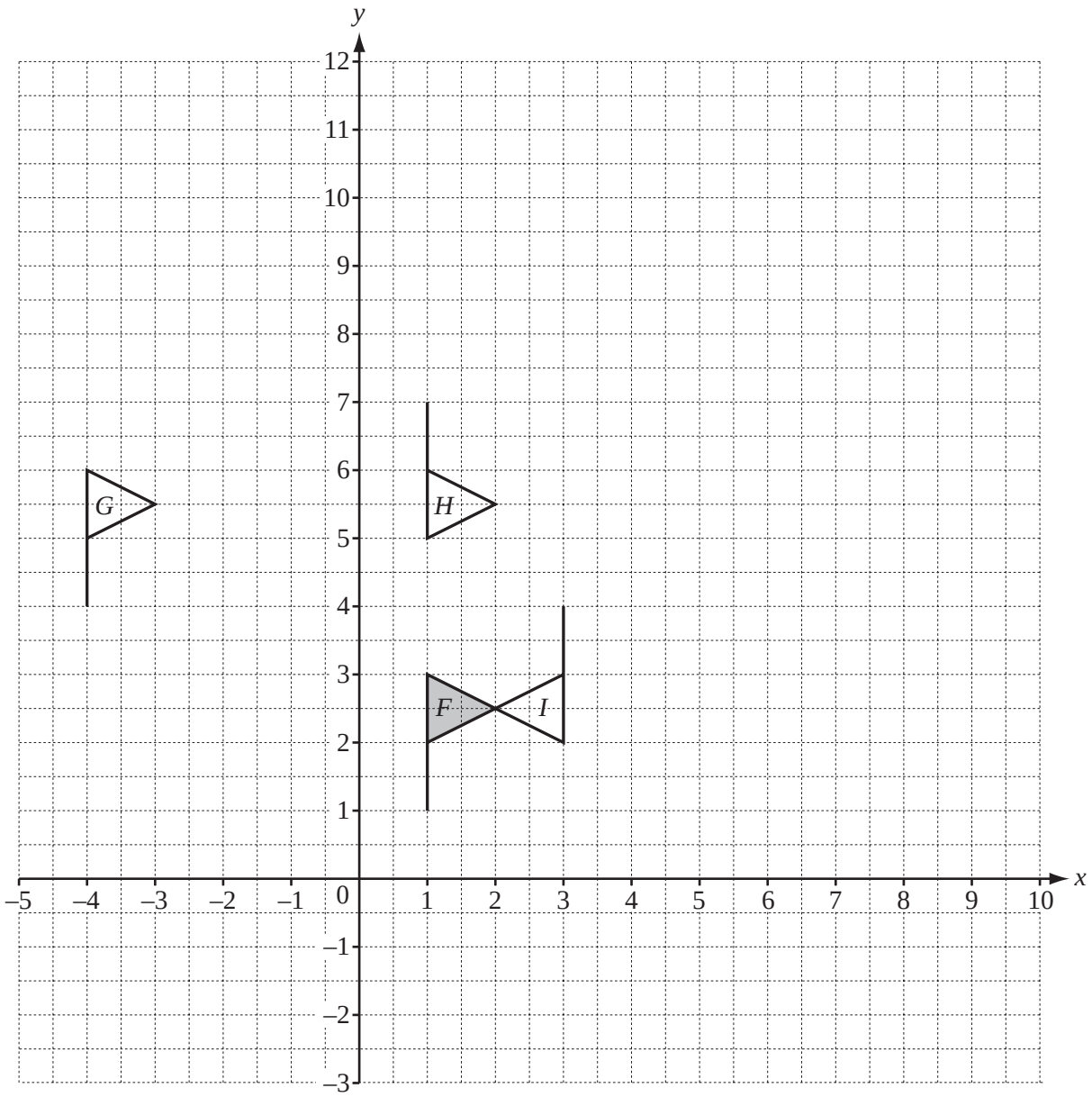
Calculate how much Eduardo receives in Argentine pesos.
Give your answer to the nearest whole number.

Answer(b)(iii) ARS ..... [2]

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3

For Examiner's Use



(a) Describe fully the **single** transformation that maps

(i) flag *F* onto flag *G*,

Answer(a)(i) ..... [2]

(ii) flag *F* onto flag *H*,

Answer(a)(ii) ..... [2]

(iii) flag *F* onto flag *I*.

Answer(a)(iii) ..... [3]

(b) On the grid, draw

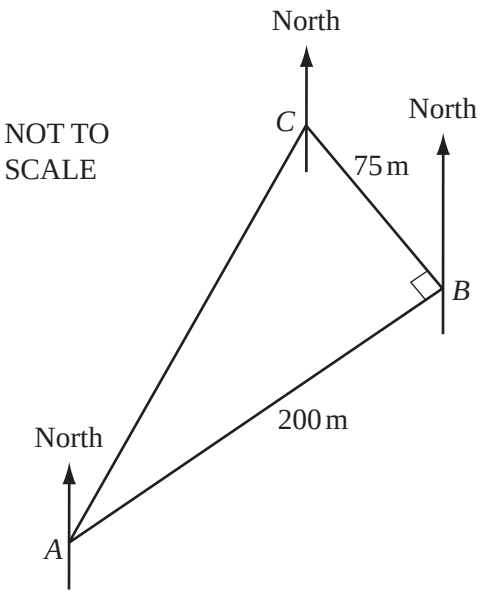
(i) the reflection of flag *F* in the *y*-axis, [2]

(ii) the enlargement of flag *F*, centre (0, 0) and scale factor 4. [2]

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4

For Examiner's Use



Dariella walks 200 m from A to B.
She then turns through 90° and walks 75 m from B to C.

(a) Calculate

(i) the distance AC,

Answer(a)(i) ..... m [2]

(ii) angle CAB.

Answer(a)(ii) Angle CAB = ... [2]

(b) The bearing of B from A is 065°.

Find the bearing of

(i) C from A,

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

(ii) A from C,

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

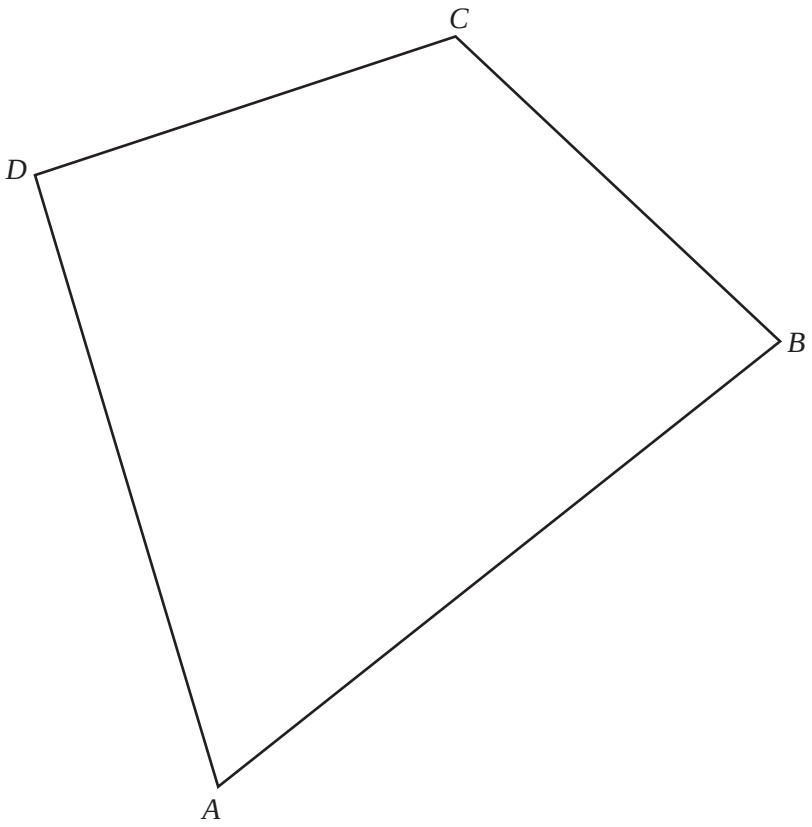
(iii) C from B.

Answer(b)(iii) ..... [2]

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5

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The diagram shows a quadrilateral *ABCD*.

(a) **Using a straight edge and compasses only**, construct

(i) the perpendicular bisector of *AB*, [2]

(ii) the bisector of angle *ADC*. [2]

(b) Draw accurately the locus of points, inside the quadrilateral, that are 2 cm from *BC*. [2]

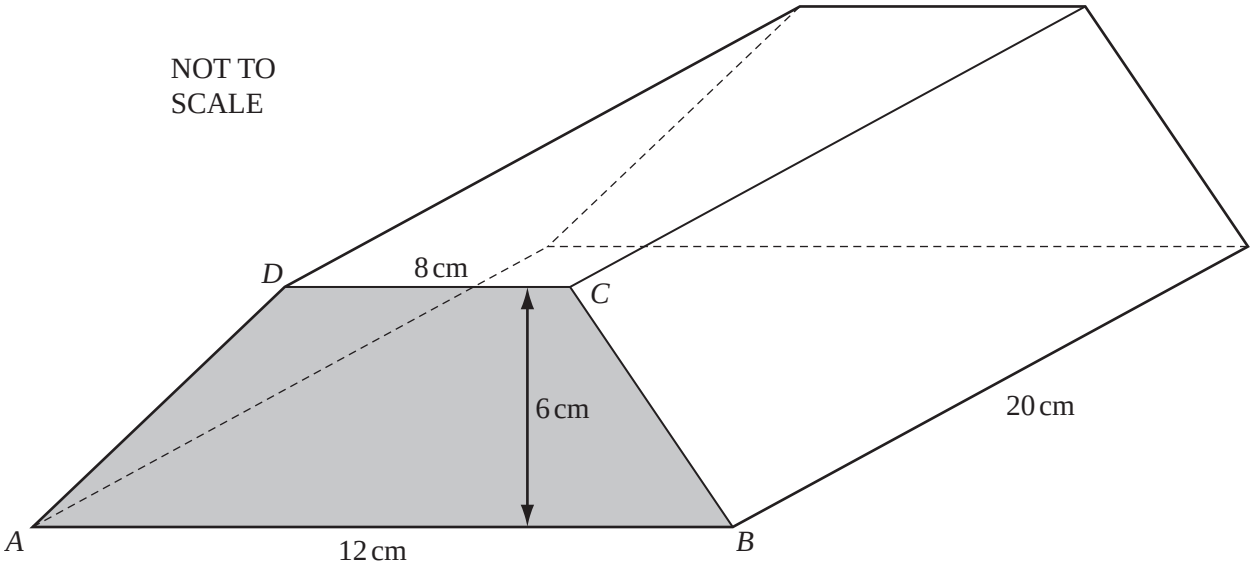
(c) Shade the region, inside the quadrilateral, which is

nearer to *B* than to *A*

and nearer to *DC* than to *DA*

and more than 2 cm from *BC*. [1]

6



The diagram shows a prism of length 20 cm.
The cross-section of the prism is a trapezium, *ABCD*, with *AB* parallel to *DC*.
AB = 12 cm, *DC* = 8 cm and the perpendicular distance between *AB* and *DC* is 6 cm.

(a) Calculate

(i) the area of the trapezium *ABCD*,

Answer(a)(i) ..... cm^2 [2]

(ii) the volume of the prism.

Answer(a)(ii) ..... cm^3 [1]

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(b) The prism is solid and made of brass.

(i) One cubic centimetre of brass has a mass of 8.5 grams.

Calculate the mass of the prism.
Give your answer in kilograms.

Answer(b)(i) ..... kg [2]

(ii) Brass costs \$2.26 for one kilogram.

How much will the brass cost to make this prism?
Give your answer correct to 2 decimal places.

Answer(b)(ii) \$ ..... [2]

For Examiner's Use

7 Alex has d dollars to spend.
He buys a book which costs \$9 less than 2 times d.

(a) Write down an algebraic expression, in terms of d, for the cost of the book.

Answer(a) \$ ..... [2]

(b) The actual cost of the book is \$7.80.

Find the value of d.

Answer(b) $d =$ ..... [2]

(c) How much does Alex have left after buying the book?

Answer(c) \$ ..... [1]

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8 The area, A, of a sector of a circle of radius r is given by the formula below.

$$A = \frac{\pi r^2}{5}$$

(a) Calculate the area when the radius is 7.5 cm.

Answer(a) ..... cm^2 [2]

(b) Make r the subject of the formula.

Answer(b) $r =$ [3]

(c) Calculate r when $A = 4.8\,cm^2$.

Answer(c) $r =$ ..... cm [2]

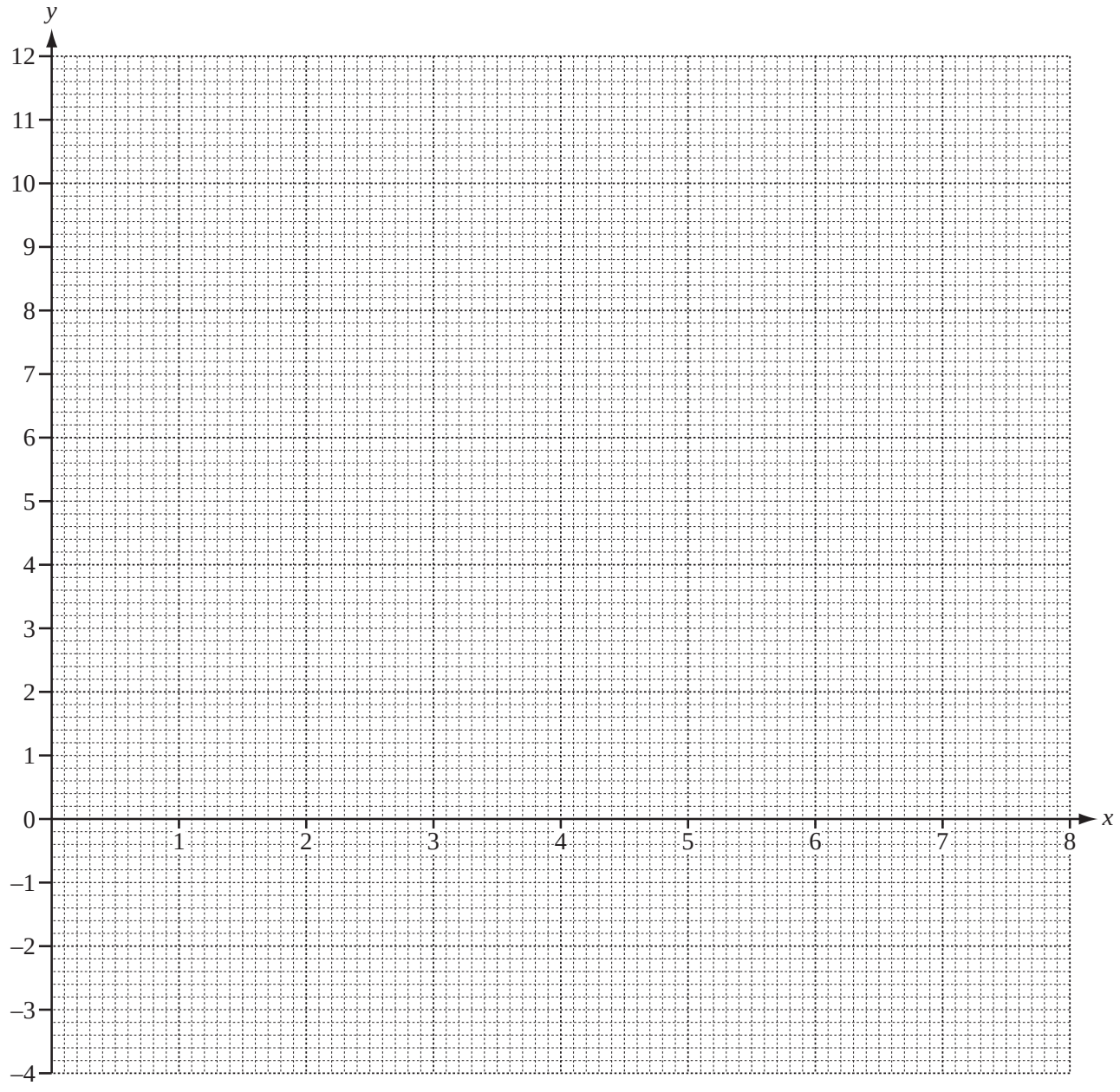
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9 (a) (i) Complete the table for $y = 12 - x^2$.

x	0	1	2	3	4
y	12	11			– 4

[2]

(ii) On the grid, draw the graph of $y = 12 - x^2$ for $0 \leqslant x \leqslant 4$.



[3]

(iii) **Use your graph** to solve the equation $12 - x^2 = 0$.

Answer (a)(iii) $x =$ ..... [1]

For Examiner's Use

(b) (i) Complete the table for $y = \frac{12}{x}$, $x \neq 0$.

x	1	2	3	4	5	6	7	8
y	12	6	4		2.4		1.7	

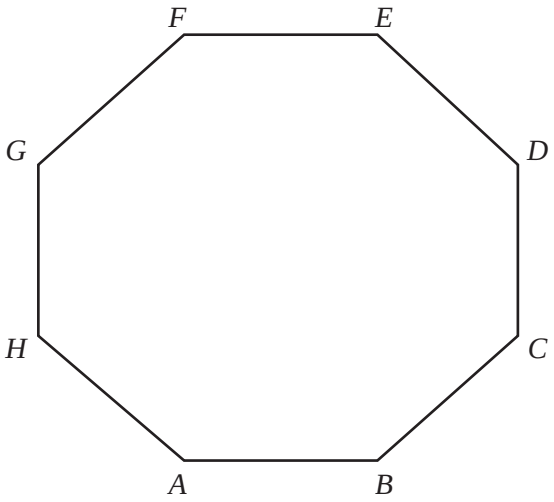
[3]

(ii) On the grid opposite, draw the graph of $y = \frac{12}{x}$ for $1 \leqslant x \leqslant 8$. [3]

(c) Write down the co-ordinates of the points of intersection of the two graphs.

Answer(c) (..... , ...) , (..... , ...) [2]

10



NOT TO SCALE

For Examiner's Use

ABCDEFGH is a regular octagon.

(a) Show that angle *BCD* = 135°.

Answer (a)

[2]

(b) Find

(i) angle *DEB*,

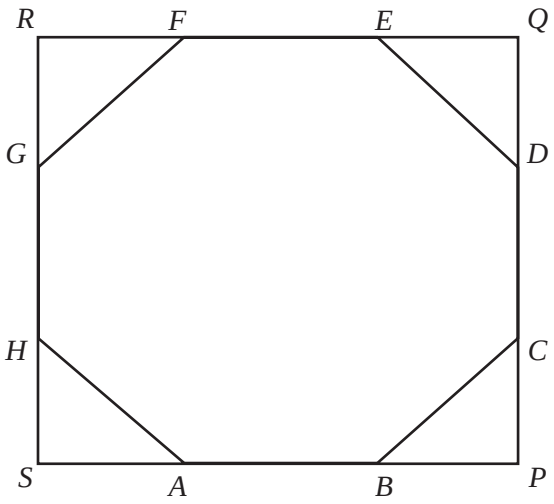
Answer(b)(i) Angle *DEB* = ... [1]

(ii) angle *FEB*.

Answer(b)(ii) Angle *FEB* = ... [1]

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(c)



NOT TO SCALE

For Examiner's Use

The sides of the octagon are extended to form the square *PQRS*.
The length of each side of the octagon is 12 cm and the length of *BP* is 8.485 cm.

Calculate the area of

(i) triangle *BPC*,

Answer(c)(i) ..... cm^2 [2]

(ii) the octagon *ABCDEFGH*.

Answer(c)(ii) ..... cm^2 [3]

Question 11 is printed on the next page.

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11 (a) (i)

0, 1, 1, 2, 3, 5, 8, ….

This sequence has the rule:

After the first two terms, any term is the sum of the two previous terms.

The first two terms are 0 and 1,
the 3rd term is 0 + 1 = 1,
the 4th term is 1 + 1 = 2,
the 5th term is 1 + 2 = 3 and so on.

Show that the 8th term is 13.

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

(ii) Each of the following sequences have the same rule as **part (a)(i)**.

For each sequence write down the missing terms.

2, 5, 7, ..., ... [1]

4, 3, 7, ..., ... [1]

5, 2, ..., ... [1]

0, ..., 3, ... [1]

1, ..., ..., 9, [1]

....., ..., 5, 7 [1]

(b) For the following sequences find the next term and the *n* th term.

(i) 1, 3, 5, 7, 9, ... *n* th term = ... [3]

(ii) 1, 4, 9, 16, 25, ... *n* th term = ... [2]

(iii) 1, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, ... *n* th term = ... [2]

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