Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

General Certificate of Secondary Education
June 2008

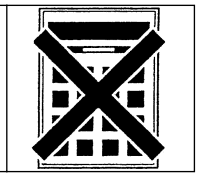
MATHEMATICS (SPECIFICATION A) **4301/1F**
Foundation Tier
Paper 1 Non-calculator

F

Monday 19 May 2008 9.00 am to 10.30 am

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.



Time allowed: 1 hour 30 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.

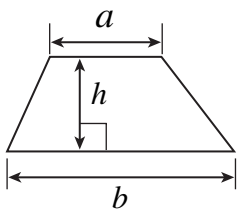
Information
- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- Additional answer paper, graph paper and tracing paper will be issued on request and must be tagged securely to this answer booklet.
- You **must** not use a calculator.

Advice
- In all calculations, show clearly how you work out your answer.

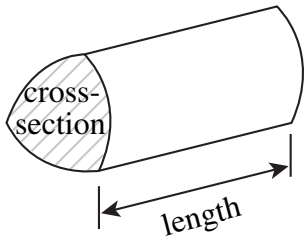
For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
TOTAL	
Examiner's Initials	

Formulae Sheet: Foundation Tier

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



Volume of prism = area of cross-section × length



Answer **all** questions in the spaces provided.

1 Here is a list of numbers

8 10 11 16 20 27 33

From this list, write down

1 (a) a multiple of 9

Answer ..... *(1 mark)*

1 (b) a factor of 30

Answer ..... *(1 mark)*

1 (c) a square number

Answer ..... *(1 mark)*

1 (d) a prime number.

Answer ..... *(1 mark)*

2 Write the number 15 382

2 (a) to the nearest 10

Answer ..... *(1 mark)*

2 (b) to the nearest 100.

Answer ..... *(1 mark)*

6

Turn over ▶

3 The table shows the heights of four mountains in the Lake District.

Mountain	Helvellyn	Scafell Pike	Scafell	Skiddaw
Height (in feet)	3118	3210	3162	3053

3 (a) Put the heights in order, starting with the lowest.

.....

Answer ..... , ... , ... , ... *(2 marks)*

3 (b) Find the difference in height between the highest and lowest mountains.

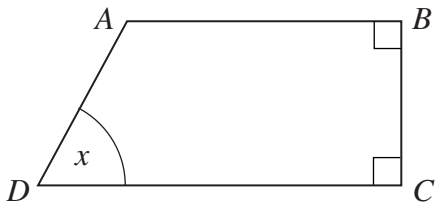
.....

.....

.....

Answer ..... feet *(2 marks)*

4 *ABCD* is a trapezium.



Not drawn accurately

Fill in the spaces from the words below.

acute obtuse parallel perpendicular straight

4 (a) *AB* is ..... to *DC* *(1 mark)*

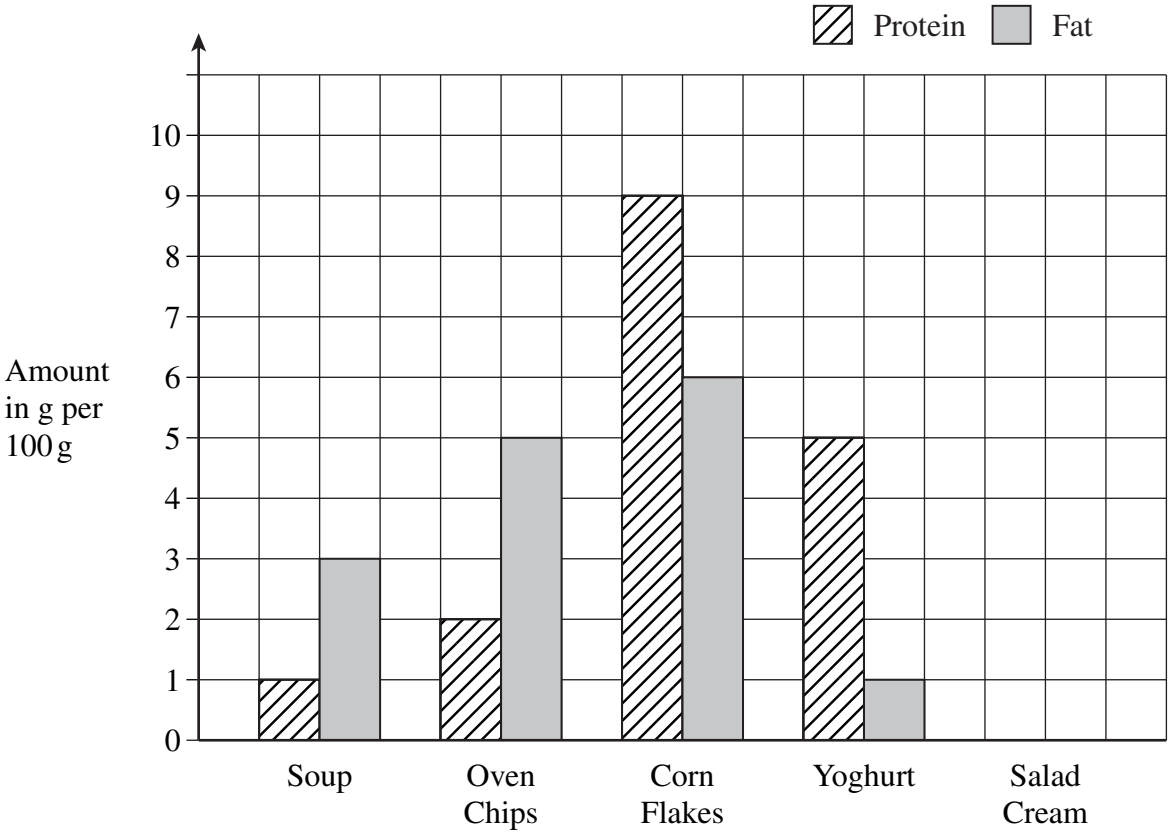
4 (b) *BC* is ..... to *DC* *(1 mark)*

4 (c) Angle *x* is an ..... angle. *(1 mark)*

5 Mary is collecting data to show how much protein and fat are in some food products. The table shows her results.

Product	Soup	Oven Chips	Corn Flakes	Yoghurt	Salad Cream
Amount of protein per 100 g	1g	2g	9g	5g	1g
Amount of fat per 100 g	3g	5g	6g	1g	10g

The bar chart shows some of the information above.



5 (a) Complete the bar chart for the Salad Cream.

(2 marks)

5 (b) Which product has the most protein per 100 g?

Answer ..... *(1 mark)*

5 (c) Which product has $2\frac{1}{2}$ times more fat than protein?
Explain your answer.

.....

.....

(1 mark)

11

6 Tick the correct box to indicate whether each of the following statements is True or False.

6 (a) *c* multiplied by 3 is written as 3*c*

☐ True ☐ False

(1 mark)

6 (b) *d* divided by 2 is written as $\frac{d}{2}$

☐ True ☐ False

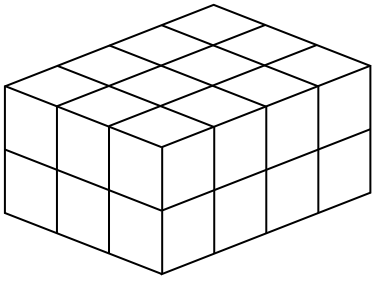
(1 mark)

6 (c) *a* subtracted from *b* is written as *a* - *b*.

☐ True ☐ False

(1 mark)

7 This cuboid is made from cubes of side one centimetre.



7 (a) Find the volume of the cuboid.

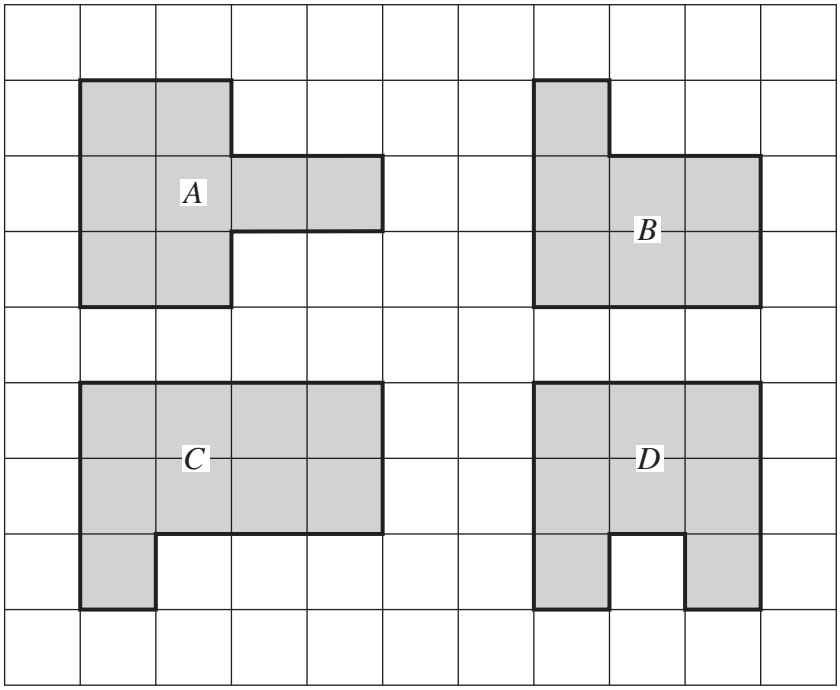
.....

Answer ..... cm^3 *(2 marks)*

7 (b) How many planes of symmetry does the cuboid have?

Answer ..... *(1 mark)*

8 These four shapes are drawn on a centimetre square grid.



8 (a) Write down the perimeter of shape *A*.

Answer ..... cm *(1 mark)*

8 (b) Which shape has the largest area?

.....

Answer ..... *(1 mark)*

8 (c) Which two shapes have the same area?

.....

Answer ..... and ..... *(1 mark)*

Turn over for the next question

9

9 (a) Write down the next two numbers in the following sequences.

9 (a) (i) 60 54 48 42 36 …… ……

9 (a) (ii) 1 2 4 8 16 …… …… *(4 marks)*

9 (b) Another sequence begins 1 3 7 15 31

Explain the rule for continuing this sequence.

Answer .....

.....

.....

(1 mark)

10 The following number cards are placed in a bag.

1	2	3	4	5	6	7	8	9

A card is taken out at random.

Find the probability that the number on the card is:

10 (a) 5

Answer ..... *(1 mark)*

10 (b) an even number

Answer ..... *(1 mark)*

10 (c) a number greater than 10

Answer ..... *(1 mark)*

11 Lindsey buys five kilograms of potatoes at 56p per kilogram.

How much change does she get from £10?

.....

.....

.....

Answer £ ..... *(2 marks)*

12 (a) Find 30% of £80

.....

.....

Answer £ ..... *(2 marks)*

12 (b) Find $\frac{3}{5}$ of 20 minutes.

.....

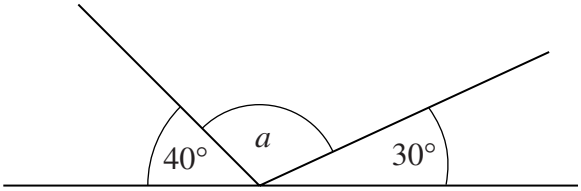
.....

Answer ..... minutes *(2 marks)*

Turn over for the next question

14

13 (a) The diagram shows three angles on a straight line.



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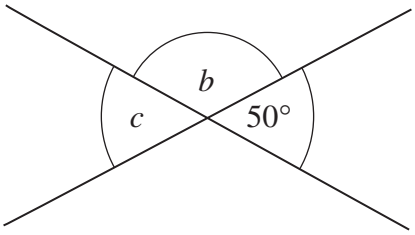
Work out the value of *a*.

.....

Answer *a* = ... degrees *(1 mark)*

13 (b) The diagram shows two intersecting straight lines.



Not drawn accurately

13 (b) (i) Work out the value of *b*.

.....

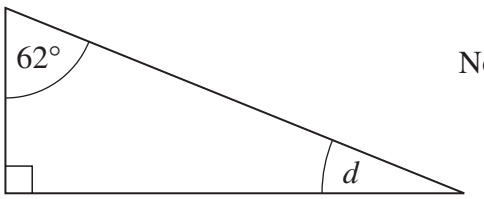
Answer *b* = ... degrees *(1 mark)*

13 (b) (ii) Work out the value of *c*.

.....

Answer *c* = ... degrees *(1 mark)*

13 (c) The diagram shows a right angled triangle.



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Work out the value of *d*.

.....

Answer *d* = ... degrees *(2 marks)*

14 Dipak travels a distance of 30 miles.
Wendy travels a distance of 40 kilometres.

Who travels further?
You **must** show your working.

.....

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(3 marks)

15 (a) Find the value of $3(a + b)$ when $a = 4$ and $b = 5$

.....

Answer ..... *(2 marks)*

15 (b) Find the value of $6x + 3y$ when $x = 2$ and $y = -3$

.....

Answer ..... *(2 marks)*

16 Work out

16 (a) 5^2

Answer ..... *(1 mark)*

16 (b) $\sqrt{100}$

Answer ..... *(1 mark)*

16 (c) $4^2 + 2^3$

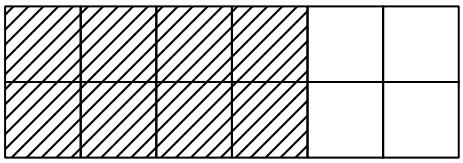
.....

Answer ..... *(2 marks)*

16

Turn over ▶

17 (a)



What fraction of the shape is shaded?
Give your answer in its simplest form.

.....

Answer ..... *(2 marks)*

17 (b) Fill in the missing number.

$$\frac{3}{4} = \frac{\square}{20}$$

(1 mark)

17 (c) Work out

17 (c) (i) $\frac{2}{3} + \frac{1}{4}$

.....

.....

Answer ..... *(2 marks)*

17 (c) (ii) $3\frac{3}{4} - 1\frac{2}{5}$

.....

.....

.....

Answer ..... *(3 marks)*

18 Solve the following equations.

18 (a) $x + 3 = 8$

Answer $x =$ ..... *(1 mark)*

18 (b) $3y + 4 = 16$

.....

.....

Answer $y =$ ..... *(2 marks)*

18 (c) $2(3z - 1) = 13$

.....

.....

.....

Answer $z =$ ..... *(3 marks)*

19 Mark is organising a trip for his running club.
He hires a coach which normally costs £400.
The coach firm gives a discount of 10% on this amount.
Mark shares the cost equally between the 30 members of the club.

How much does each member pay?
You **must** show your working.

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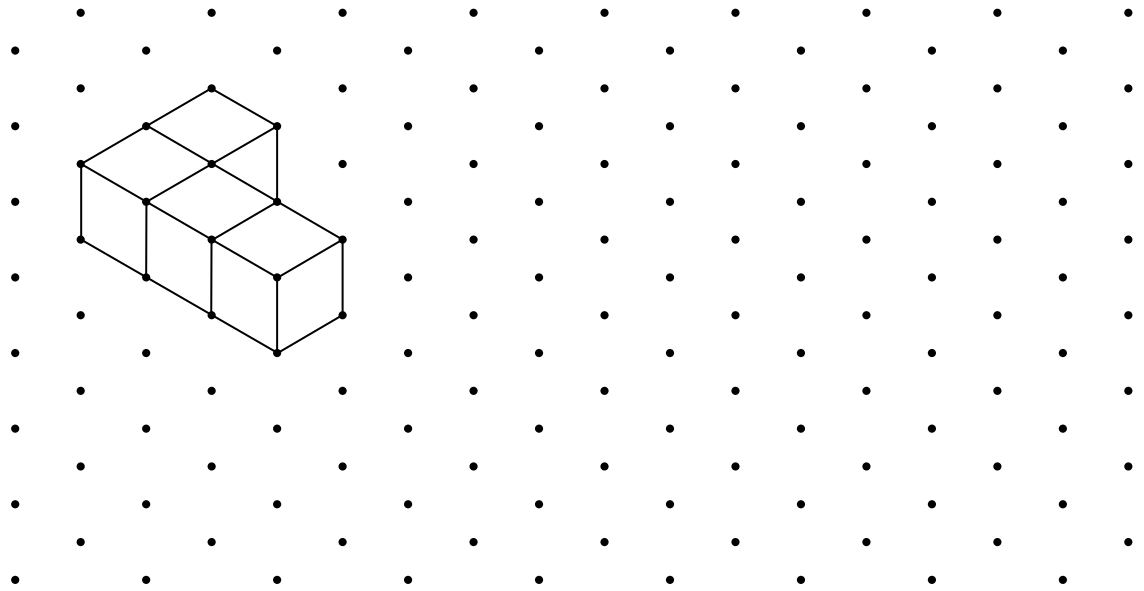
Answer £ ..... *(4 marks)*

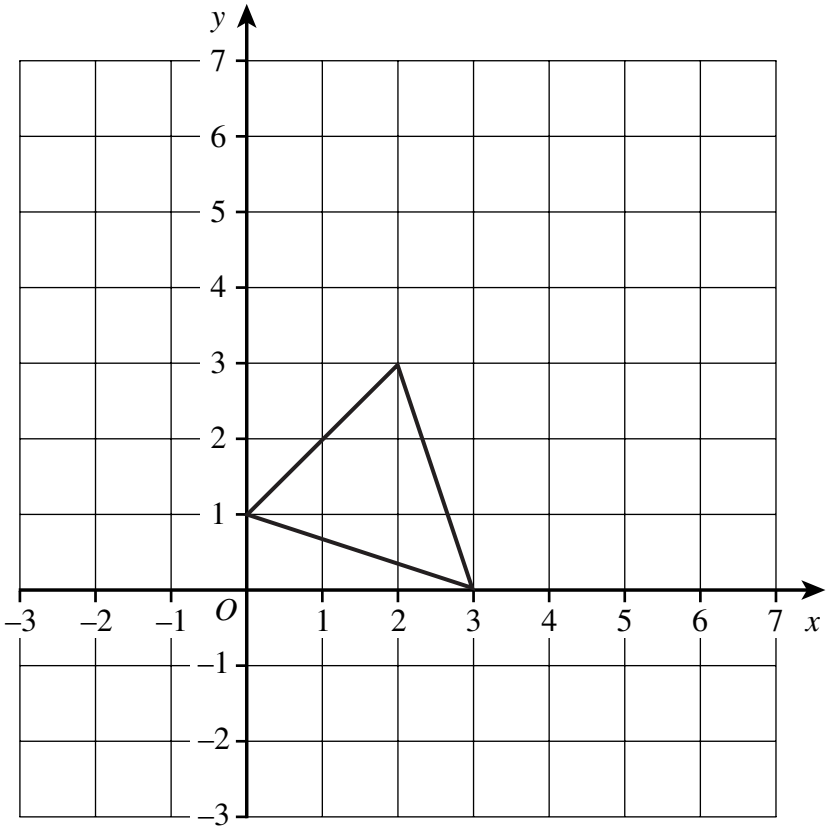
18

20 The diagram shows how four cubes can be arranged to form a 3-D shape.



On the triangular grid, show a different way that the four cubes can be arranged to form a 3-D shape. *(2 marks)*

21 The vertices of a triangle are at (0, 1), (2, 3) and (3, 0)



Enlarge the triangle by scale factor 2, with (0, 2) as the centre of enlargement. *(2 marks)*

22 The stem-and-leaf diagram shows the marks of 15 students in a Science test.

Key | 2 | 8 represents a mark of 28

1	0
2	8 8 9 9
3	1 2 3 7 8 9
4	5 8 9
5	4

22 (a) What is the range of the marks?

.....

Answer ..... *(1 mark)*

22 (b) What is the median mark?

.....

.....

Answer ..... *(1 mark)*

22 (c) Explain why the median is a suitable average to use.

.....

.....

(1 mark)

23 Dylan wants to buy this computer.

The price of £600 is reduced by $\frac{1}{3}$ in a sale.

He then pays $\frac{1}{4}$ of the sale price as a deposit.

How much is the deposit?
You **must** show your working.

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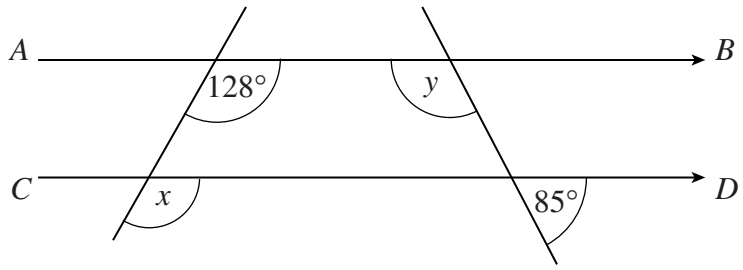
Answer £ ..... *(3 marks)*

10

Turn over ▶

24 In the diagram *AB* is parallel to *CD*.



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24 (a) Write down the value of *x*.
Give a reason for your answer.

Answer ..... degrees

Reason ..... *(2 marks)*

24 (b) Work out the value of *y*.

.....

.....

Answer ..... degrees *(2 marks)*

25 The house price index for a flat in Leeds was 190 in August 2006, compared with a base of 100 in April 2000.

25 (a) Write down the percentage increase in the price of flats in Leeds in that period.

Answer ..... % *(1 mark)*

25 (b) A flat cost £80 000 in April 2000.

What was its likely value in August 2006?

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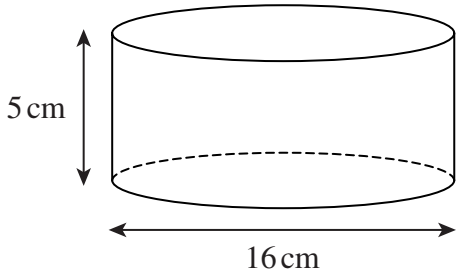
.....

Answer £ ..... *(2 marks)*

26 The diagram shows a cylinder with a height of 5 cm and a diameter of 16 cm.



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Calculate the volume of the cylinder.
Give your answer in terms of π.
State the units of your answer.

.....

.....

.....

.....

Answer ..... *(4 marks)*

Turn over for the next question

11

27 (a) Complete the table of values for $y = x^2 - x - 5$

x	–2	–1	0	1	2	3	4
y	1		–5	–5	–3	1	

.....

.....

.....

.....

(2 marks)

27 (b) On the grid opposite, draw the graph of $y = x^2 - x - 5$ for values of x from –2 to 4

(2 marks)

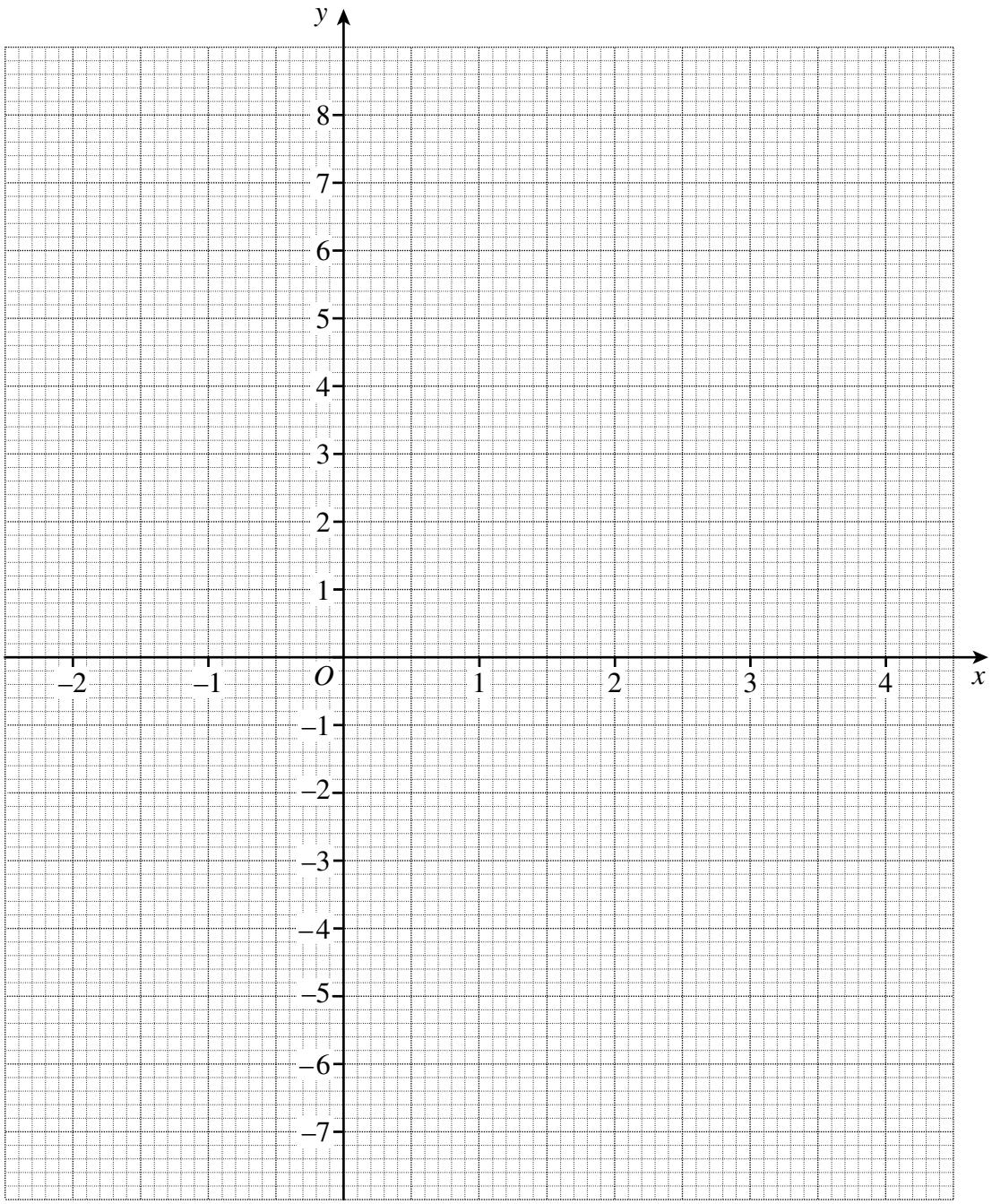
27 (c) An approximate solution of the equation $x^2 - x - 5 = 0$ is $x = 2.8$

Explain how you can find this from the graph.

.....

.....

(1 mark)



END OF QUESTIONS

5

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