Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

7778696333

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/33**

Paper 3 (Core) **May/June 2023**

1 hour 45 minutes

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You should use a graphic display calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly and you will be given marks for correct methods, including sketches, even if your answer is incorrect.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use your calculator value.

INFORMATION

- The total mark for this paper is 96.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages. Any blank pages are indicated.

© UCLES 2023

Formula List

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Curved surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

© UCLES 2023

Answer **all** the questions.

1 **(a)** Work out.

(i) $\frac{2}{3} \times \frac{2}{5}$

..... [1]

(ii) $5^3 - 2^4$

..... [2]

(b) Write 80 as a product of its prime factors.

..... [2]

(c) Work out $4500000000 - 5.8 \times 10^7$.
Give your answer in standard form.

..... [2]

(d) Write 3.9×10^{-4} as an ordinary number.

..... [1]

© UCLES 2023

2 **(a)** These are the highest temperatures, in °C, each day during one month.

5	4	3	1	2	4	6	6	7	7
5	8	9	8	10	9	10	10	9	10
9	8	8	9	8	7	7	9	10	9

(i) Complete the frequency table.

Temperature (°C)	1	2	3	4	5	6	7	8	9	10
Frequency	1	1	1							5

[2]

(ii) Find how many days there are in this month.

..... [1]

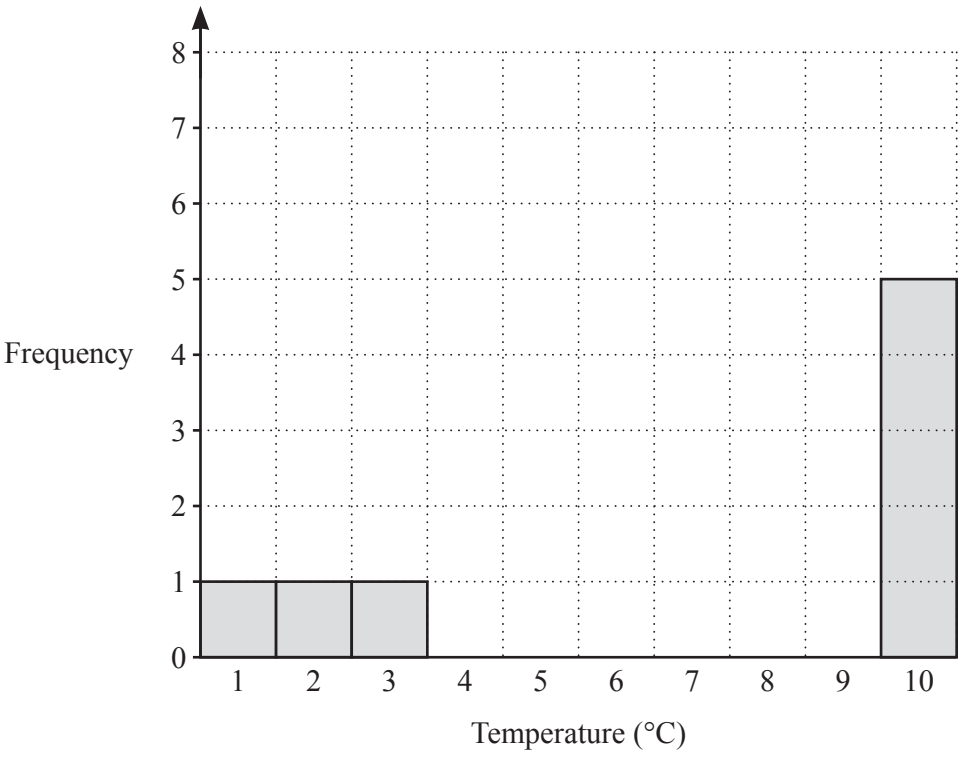
(iii) What is the most common highest temperature this month?

..... °C [1]

(iv) Find how many **more** days have a highest temperature of 9 °C than have a highest temperature of 6 °C.

..... [1]

(v) Complete the bar chart to show the information in the table.



[2]

© UCLES 2023

(b) These are the amounts of rainfall, in mm, measured during one week.

13 6 7 11 4 6 9

(i) Work out the range.

..... mm [1]

(ii) Work out the mean.

..... mm [1]

(iii) Work out the median.

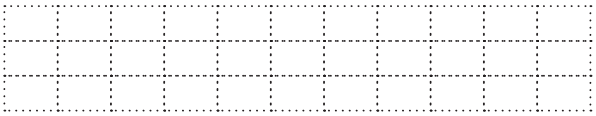
..... mm [2]

3 **(a)** These are the first three patterns in a sequence of grey tiles and black tiles.



Pattern 1 Pattern 2 Pattern 3

(i) On the grid below, draw Pattern 4 in the sequence of grey and black tiles.



[1]

(ii) Complete the table.

Pattern number	1	2	3	4	5
Number of black tiles	1	2	3	4	5
Number of grey tiles	4				

[2]

(iii) One of the patterns in this sequence has 16 grey tiles.

Work out how many black tiles there are in this pattern.

..... [1]

(iv) One of the patterns in this sequence has 10 black tiles.

Work out how many grey tiles there are in this pattern.

..... [1]

(b) **(i)** Find the first term and the sixth term of this sequence of numbers.

..... 3 9 15 21 .....

[2]

(ii) Write down the rule for continuing this sequence.

..... [1]

(iii) Find the nth term of this sequence.

..... [2]

© UCLES 2023

4 **(a)** **(i)** Find the value of $5y^2 - 10y$ when $y = 3$.

..... [2]

(ii) Factorise completely.

$5y^2 - 10y$

..... [2]

(b) Solve.

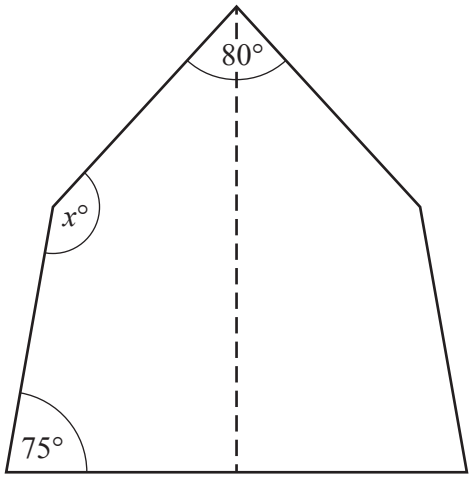
(i) $x - 4 = 9$

$x =$ ..... [1]

(ii) $3x - 5 = 7$

$x =$ ..... [2]

5 **(a)** This pentagon has one line of symmetry, shown dashed in the diagram.

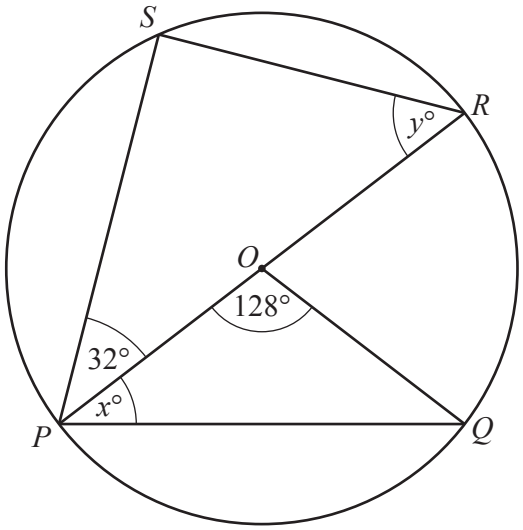


NOT TO SCALE

Work out the value of x.

$x =$ ..... [4]

(b)



NOT TO SCALE

P, *Q*, *R* and *S* are points on the circle, centre *O*.
POR is a straight line.

(i) Give a reason why triangle *OPQ* is isosceles.

.....

..... [1]

(ii) Work out the value of *x*.

x = ... [2]

(iii) Work out the value of *y*.

y = ... [2]

6 **(a)** At a fast food restaurant, a burger costs \$6.40 and a milkshake costs \$2.50 .

(i) Work out the total cost of 4 burgers and 3 milkshakes.

\$ ..... [2]

(ii) Toby buys one burger and one milkshake.

Work out how much change he gets from \$10.

\$ ..... [2]

(iii) Some friends buy 2 burgers and a number of milkshakes.
They pay a total of \$30.30 .

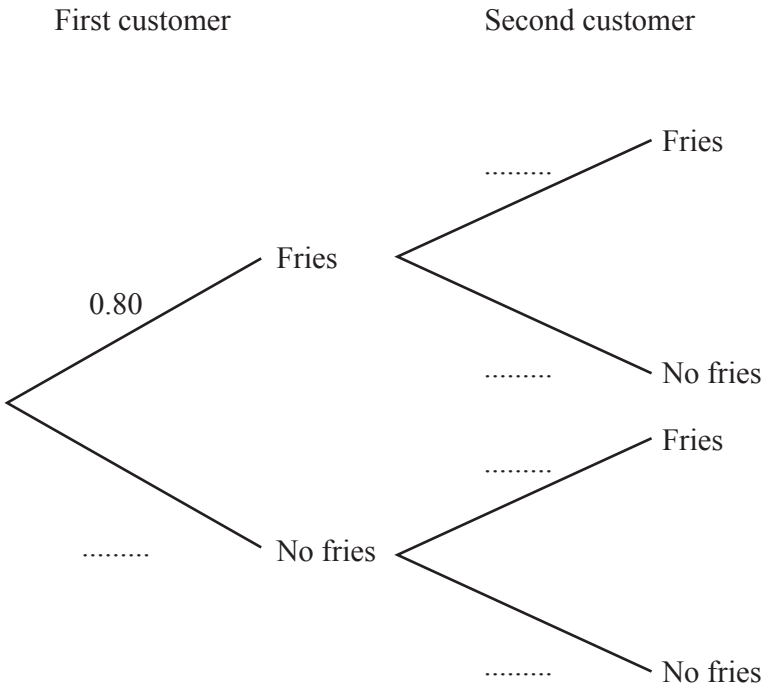
Work out how many milkshakes they buy.

..... [3]

© UCLES 2023

(b) Toby notices that 80% of all customers in this fast food restaurant order fries.

(i) Complete this tree diagram for the next two customers at the restaurant.

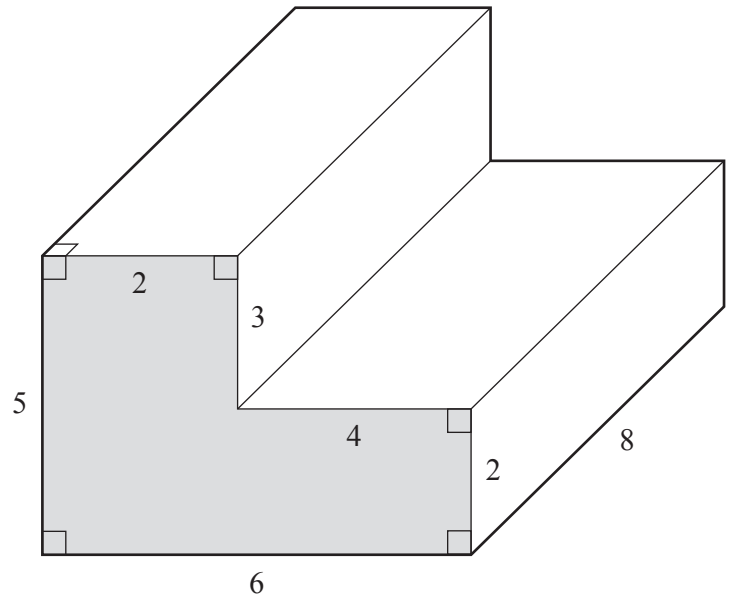


[2]

(ii) Find the probability that both customers **do not** order fries.

..... [2]

7 **(a)** The diagram shows a prism.
All measurements are in centimetres.



NOT TO SCALE

(i) Find the total number of faces of this prism.

..... [1]

(ii) Work out the perimeter and area of the shaded face.
Give the units of each answer.

Perimeter = ...

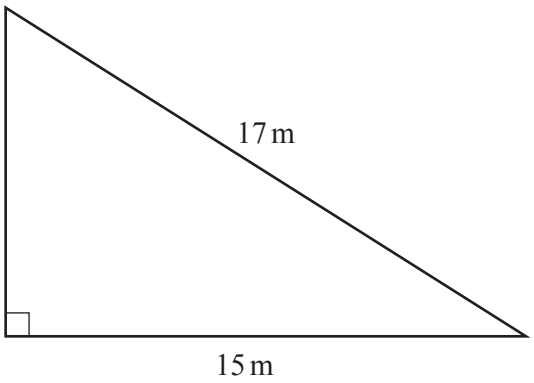
Area = ... [4]

(iii) Work out the volume of the prism.

..... cm^3 [1]

© UCLES 2023

(b)



NOT TO SCALE

Work out the area of this triangle.

..... m^2 [5]

8 **(a)** Atif and Faiza share \$5000 in this ratio.

Atif : Faiza = 3 : 7

Work out how much they each receive.

Atif \$ .....

Faiza \$ ..... [2]

(b) Atif earns \$2200 each month.

Each month he gives $\frac{1}{8}$ of his earnings to charity.

Work out how much Atif has left each month after giving to charity.

\$ ..... [2]

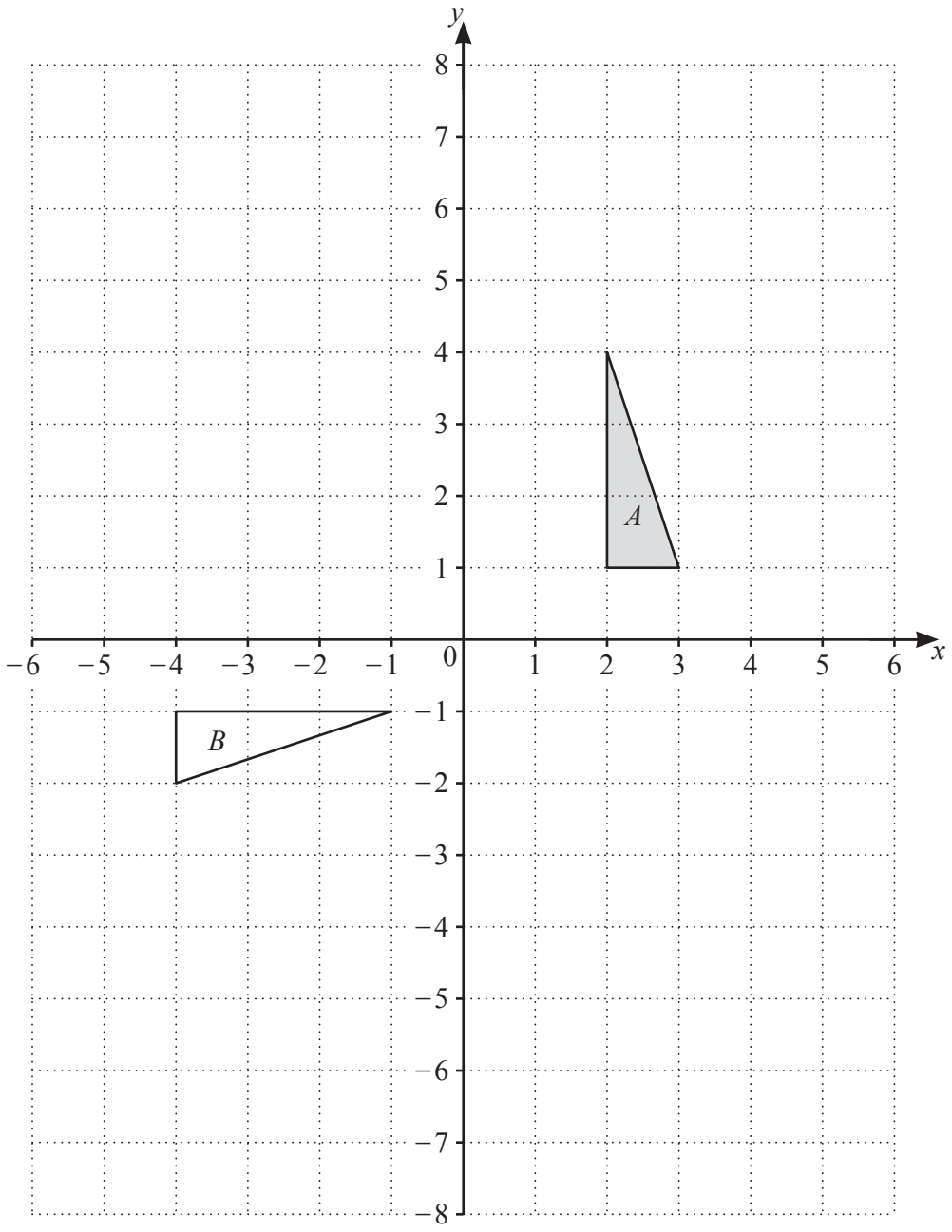
(c) Faiza gives \$40 to charity each month.
She increases this amount by 14%.

Work out how much Faiza now gives to charity each month.

\$ ..... [2]

© UCLES 2023

9



(a) Reflect triangle A in the y-axis.
Label the image X.

[1]

(b) Rotate triangle A by 90° clockwise about (0, 0).
Label the image Y.

[2]

(c) Describe fully the **single** transformation which maps triangle Y onto triangle B.

.....

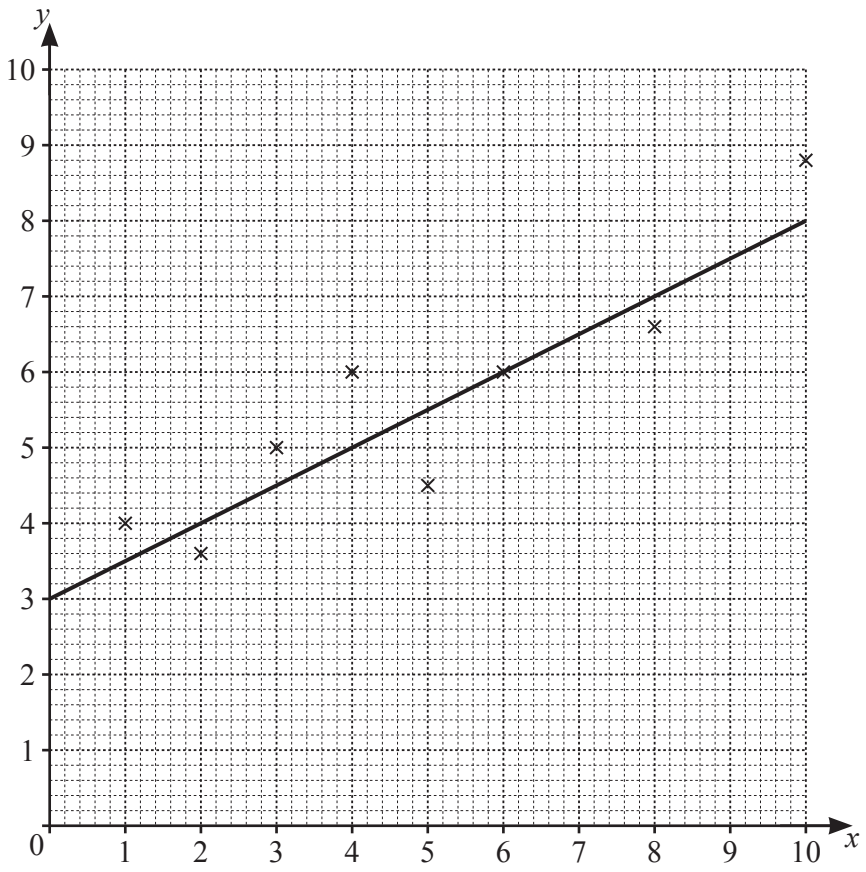
..... [2]

(d) Enlarge triangle A by scale factor 2 from centre (1, 1).
Label the image Z.

[2]

© UCLES 2023

10 Jonah draws a line of best fit on a scatter diagram.



(a) What type of correlation is shown in the diagram?

..... [1]

(b) Use the line of best fit to find y when $x = 5.6$.

$y =$ ..... [1]

(c) Find the equation of the line of best fit.
Give your answer in the form $y = mx + c$.

$y =$ ..... [3]

© UCLES 2023

(d) Jonah finds information for two more points for his scatter diagram.

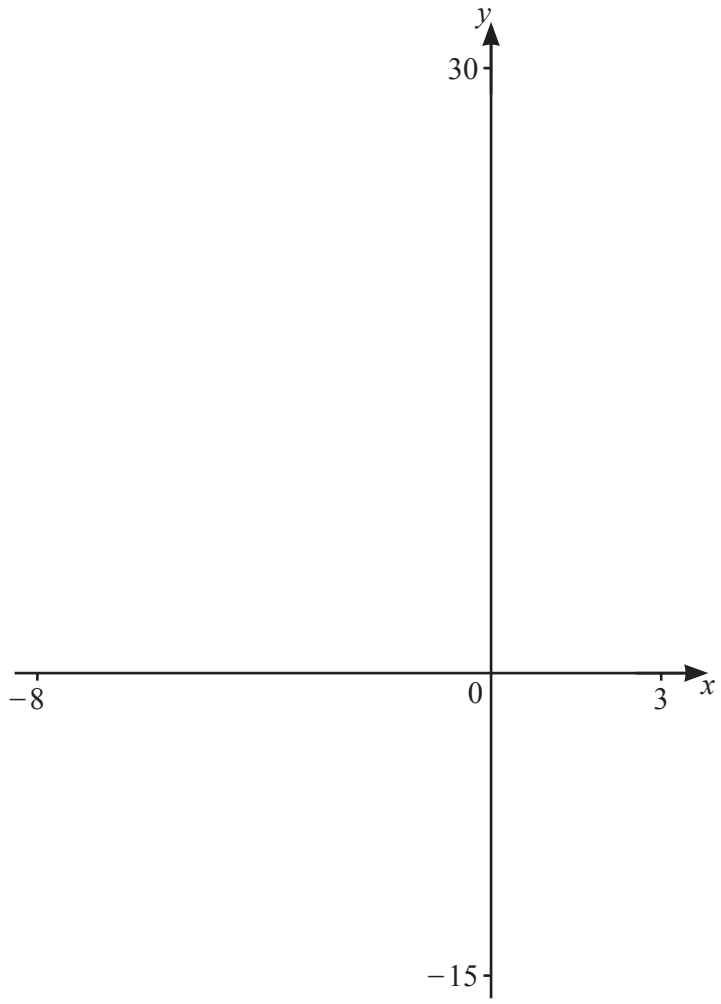
x	6.8	9
y	8	9.4

(i) Plot these points on the scatter diagram. [1]

(ii) How should Jonah now alter his line of best fit?

..... [1]

11



(a) **(i)** On the diagram, sketch the graph of $y = x^2 + 7x$ for $-8 \leqslant x \leqslant 3$. [2]

(ii) Find the coordinates of the local minimum.

(..... , ...) [2]

(b) On the diagram, sketch the graph of $y = \frac{36}{x}$ for values of x between -8 and 3. [2]

(c) Find the x-coordinate of each point of intersection of $y = x^2 + 7x$ and $y = \frac{36}{x}$.

$x =$ ..... and $x =$ ..... and $x =$ ..... [3]

BLANK PAGE

© UCLES 2023

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2023