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.

DC (PQ/CB) 311915/2

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.	$V = \frac{4}{3}\pi r^3$

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]

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]

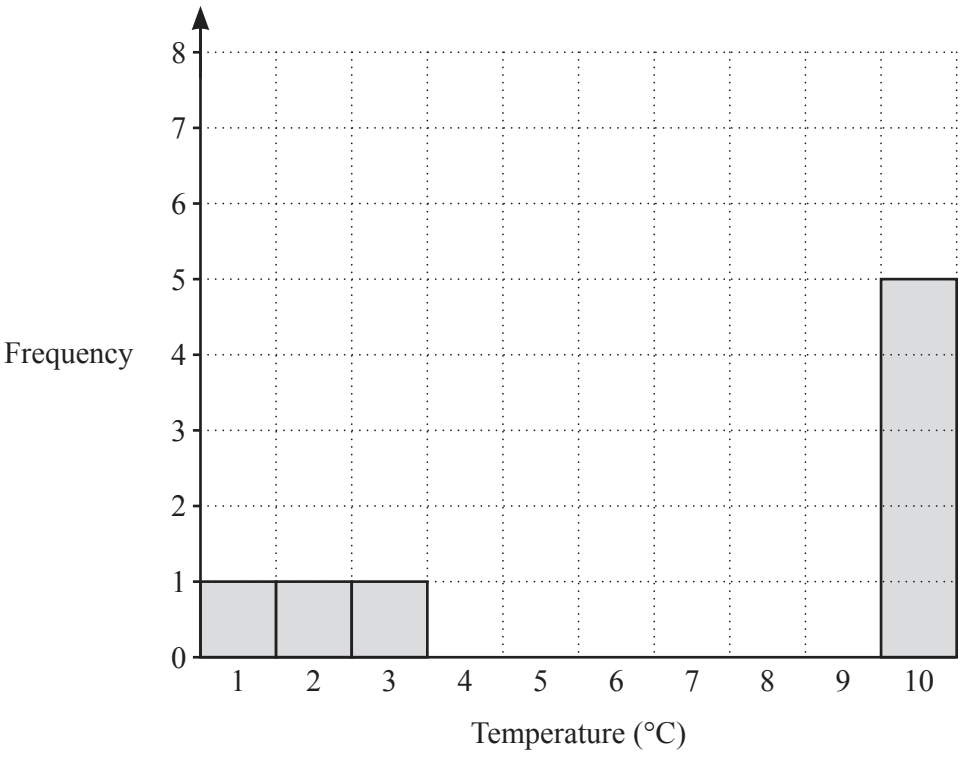
(iii) What is the most common highest temperature this month?

..... °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]

(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]

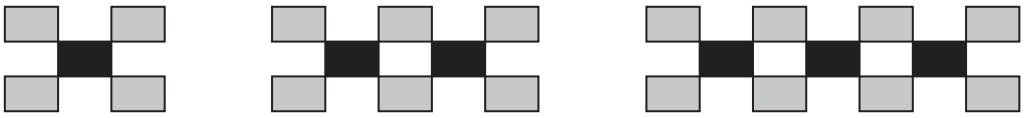
(ii) Work out the mean.

..... mm [1]

(iii) Work out the median.

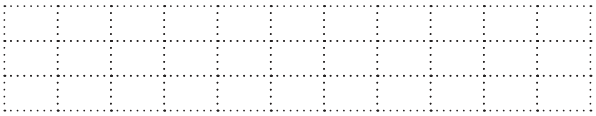
..... mm [2]

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]

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

..... [2]

(ii) Factorise completely.

$5y^2 - 10y$

..... [2]

(b) Solve.

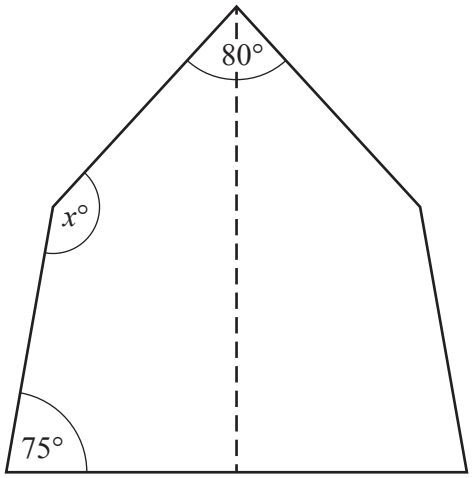
(i) $x - 4 = 9$

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

(ii) $3x - 5 = 7$

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

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

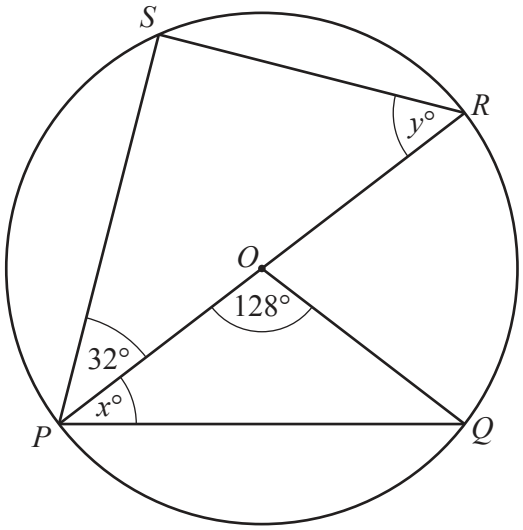


NOT TO SCALE

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]

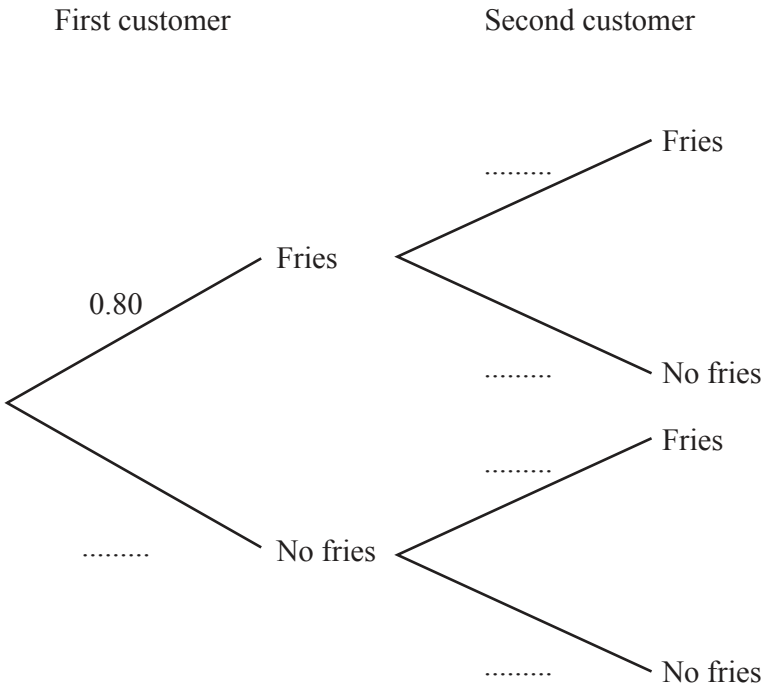
(iii) Some friends buy 2 burgers and a number of milkshakes.
They pay a total of \$30.30 .

Work out how many milkshakes they buy.

..... [3]

(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.

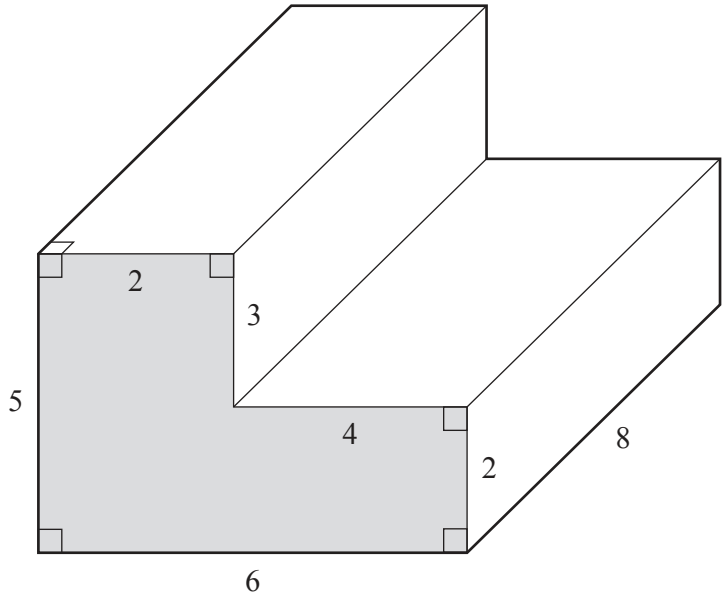


[2]

(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.

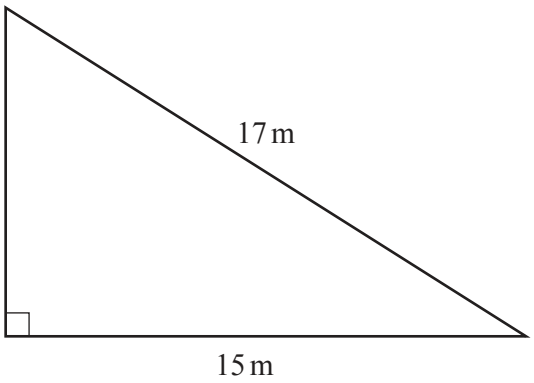
Perimeter = ...

Area = ... [4]

(iii) Work out the volume of the prism.

..... cm^3 [1]

(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.

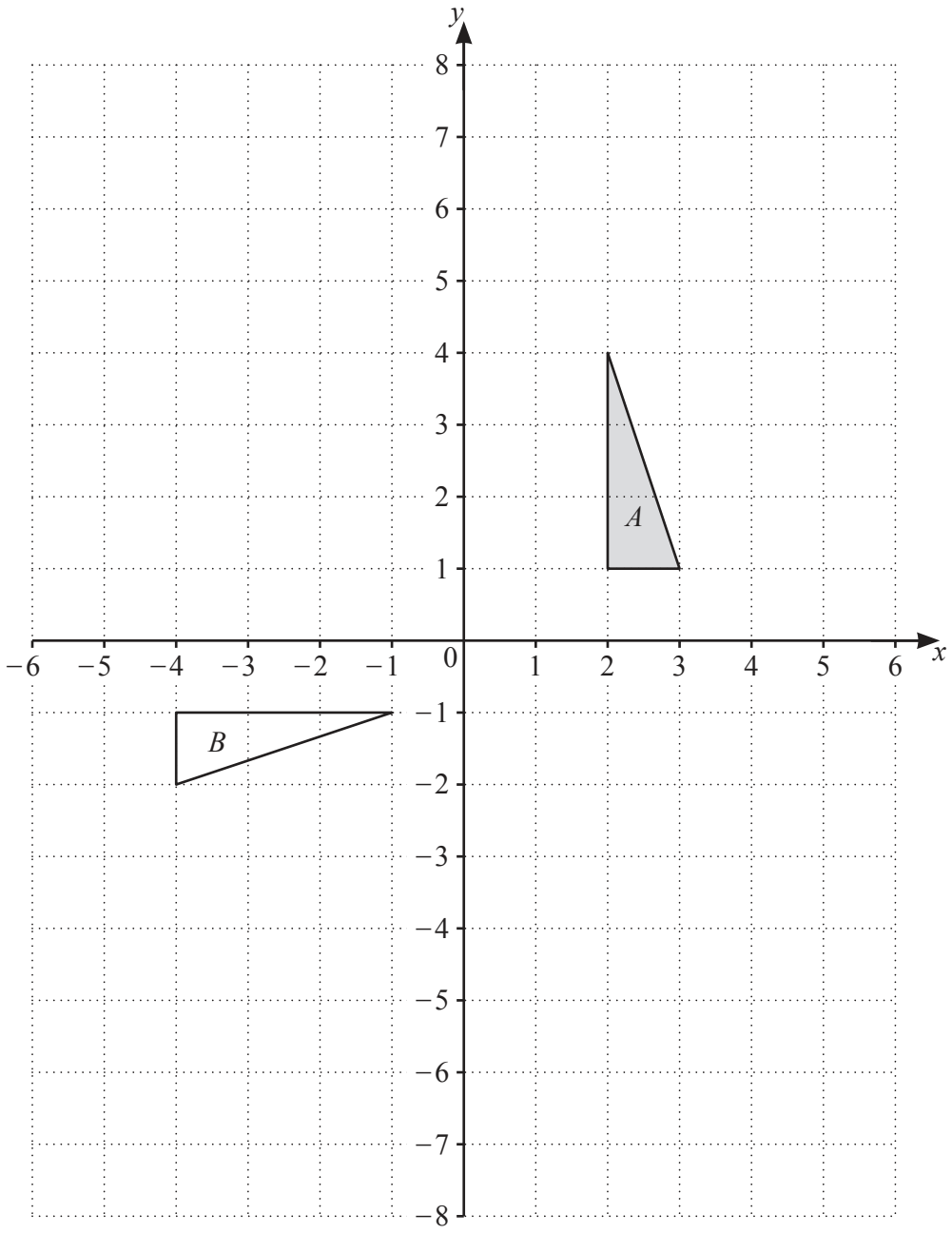
\$ ..... [2]

(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]

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.

.....

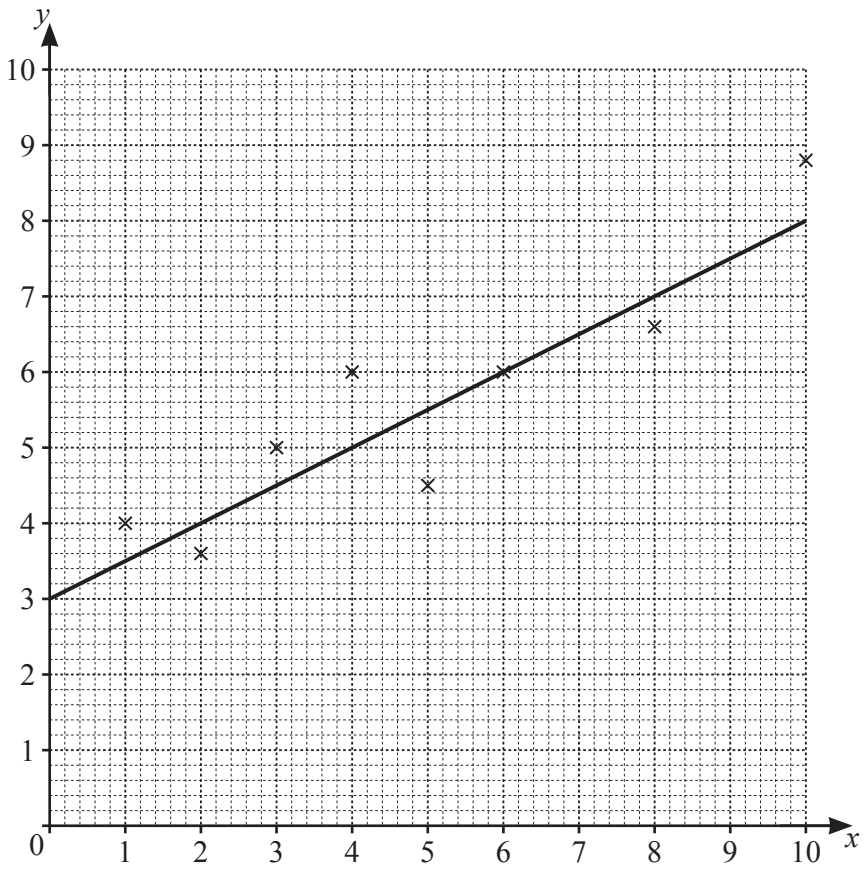
..... [2]

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

[2]

[Turn over

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]

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

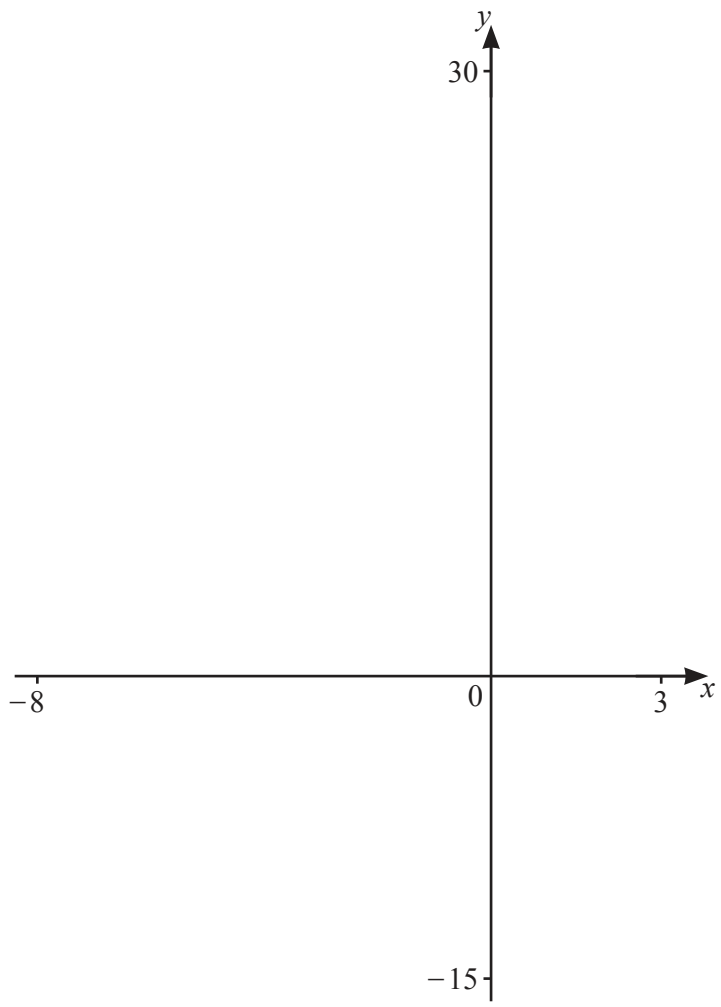
x	6.8	9
y	8	9.4

(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]

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