Cambridge Assessment International Education

Cambridge IGCSE™

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CENTRE NUMBER						CANDIDATE NUMBER				

2714541401

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **May/June 2021**

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 **16** pages.

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

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Answer **all** the questions.

1 **(a)** Ruri buys these items.

1 bag of lettuce	$1.20
1 cucumber	$0.90
1 box of 8 tomatoes	$1.60
1 bag of 3 peppers	$1.50
1 bag of 6 avocados	$3.00

(i) Work out the total cost of the items.

$ ..... [1]

(ii) Ruri makes a salad.
The items she uses are shown in the table.

Complete the table.

Item	Cost ($)
1 bag of lettuce	
$\frac{1}{2}$ a cucumber	0.45
4 tomatoes	
1 pepper	
1 avocado	
Total	

[3]

(b) Roses cost $1.50 each.
Ruri has $10.00 to spend.

(i) Work out the greatest number of roses she can buy.

..... roses [1]

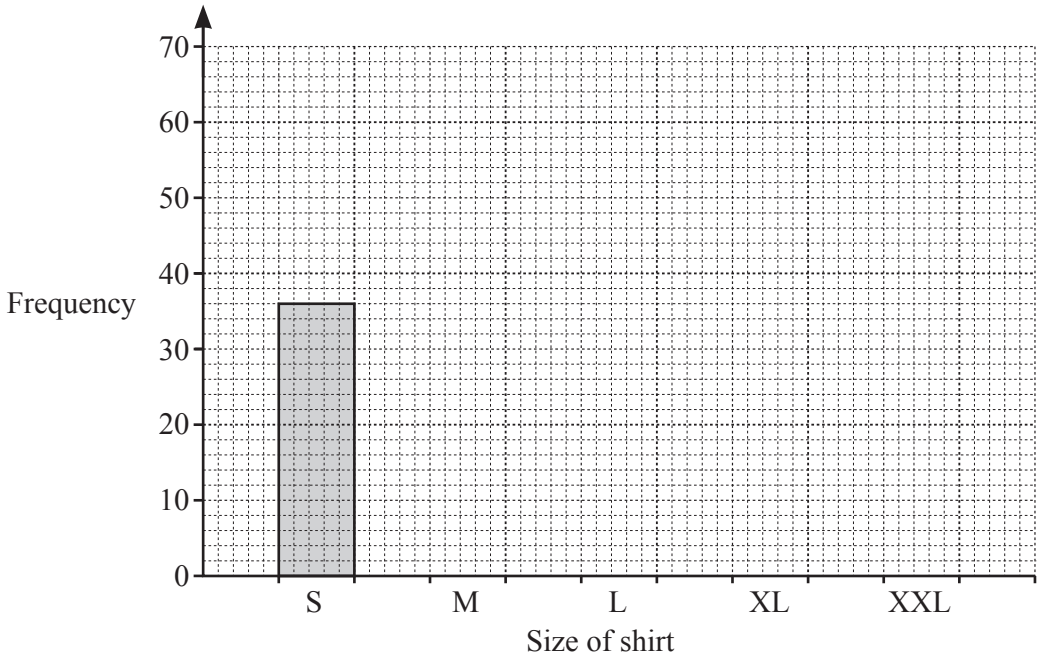
(ii) Work out how much money she has left.

$ ..... [1]

2 There are 200 shirts in the school shop.
Lotem counts the number of shirts of each size.

Size	S	M	L	XL	XXL
Frequency	36	64	48	32	20

(a) Complete the bar chart to show this information.



[2]

(b) Which size is the mode?

..... [1]

(c) Work out how many more shirts are size S than size XL.

..... [1]

(d) Complete the relative frequency table.
Write each value as a decimal.

Size	S	M	L	XL	XXL
Relative frequency					

[2]

(e) Find the probability that a shirt, chosen at random, is **not** size L.

..... [1]

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3 **(a)** Write the number 30 062 in words.

..... [1]

(b) Write down all the factors of 50.

..... [2]

(c) Write $\frac{1}{6}$, 17% and 0.16 in order of size, starting with the smallest.

..... , ... , ... [1]
smallest

(d) Find the value of $\sqrt{62}$.
Give your answer correct to 3 decimal places.

..... [2]

(e) Work out $\frac{6.4+9.3}{8.4}$.

Give your answer correct to 2 significant figures.

..... [2]

(f) These are the first four terms of a sequence.

60 53 46 39

(i) Find the next two terms of this sequence.

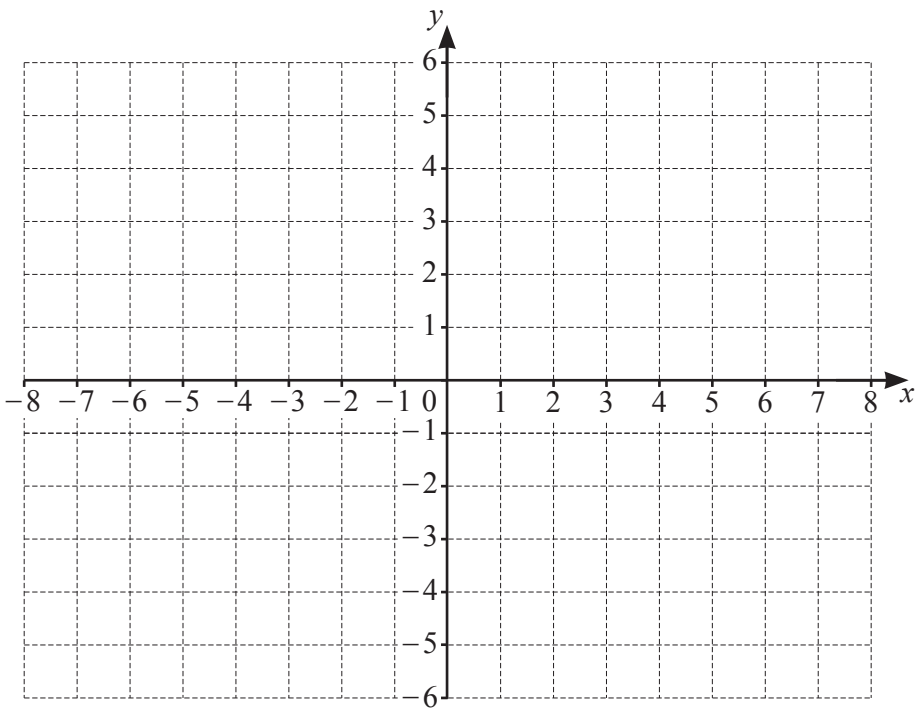
..... , ... [2]

(ii) Find the nth term of this sequence.

..... [2]

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4



(a) On the grid, plot the points A (2, 1), B (6, 1) and C (6, −3). [2]

(b) $ABCD$ is a square.

(i) On the grid, plot point D and draw the square. [1]

(ii) Write down the coordinates of point D.

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

(c) Write down the coordinates of the mid-point of BC.

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

(d) Write down the equation of the line AB.

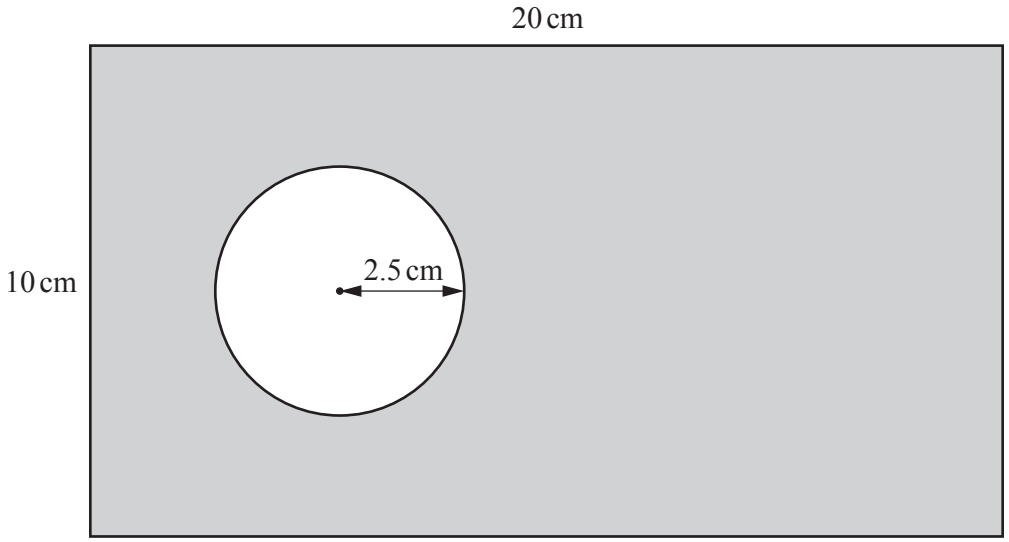
..... [1]

(e) Reflect square $ABCD$ in the y-axis. [1]

(f) Translate square $ABCD$ by the vector $\begin{pmatrix} -1 \\ 5 \end{pmatrix}$. [2]

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5



NOT TO SCALE

The diagram shows a sign made from card.
The card is in the shape of a rectangle with a circle cut from it.

(a) Work out the perimeter of the rectangle.

..... cm [1]

(b) Some of these signs are cut from a sheet of card measuring 1.8 metres by 1.6 metres.

Work out the maximum number of these signs that can be cut from this sheet of card.

..... [3]

(c) The radius of the circle is 2.5 cm.

Work out the shaded area.

..... cm^2 [3]

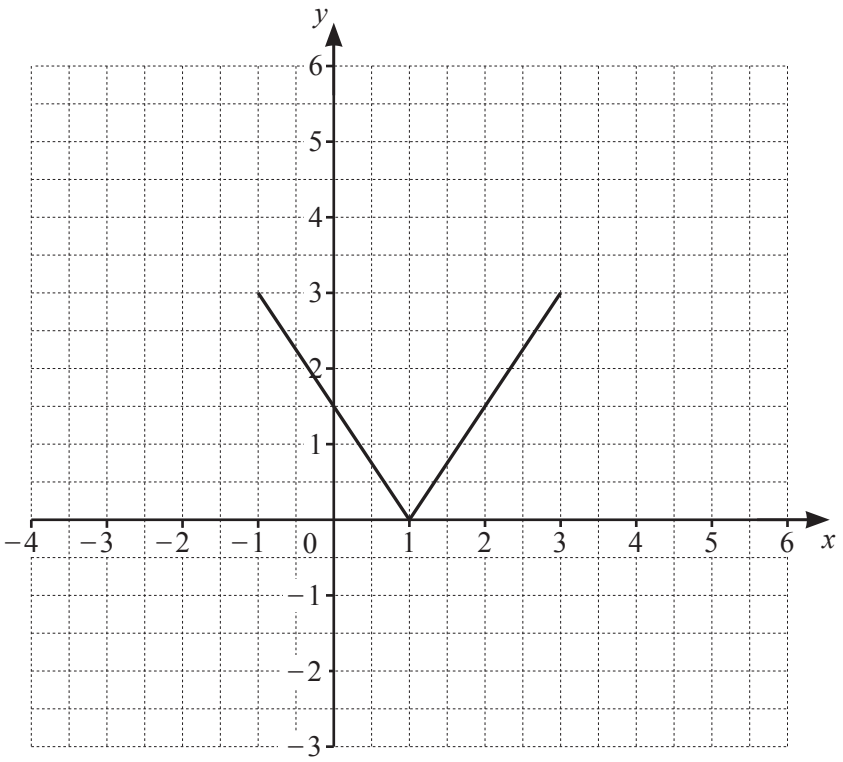
(d) The rectangle is enlarged by scale factor 3.

Work out the length and width of the enlarged rectangle.

..... cm and ..... cm [2]

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6 (a)

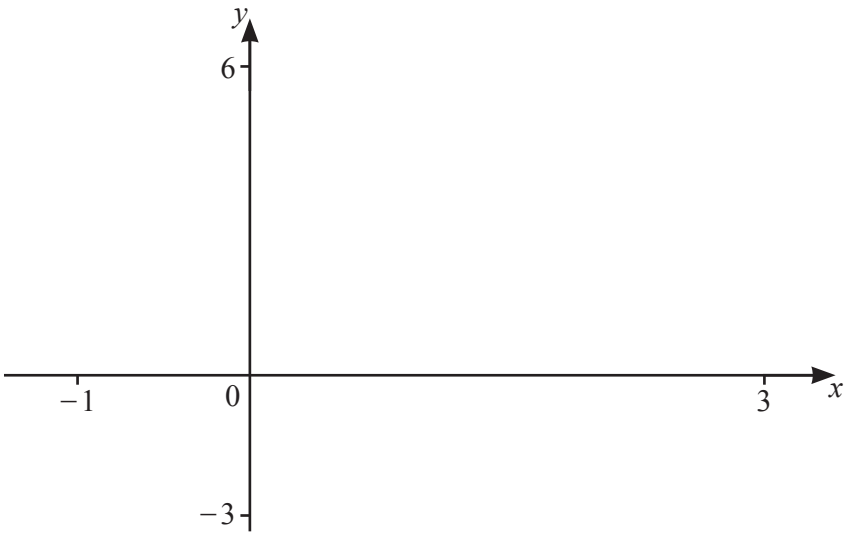


The diagram shows the graph of $y = f(x)$.
On the same diagram, sketch the graph of

(i) $y = f(x) + 2$, [1]

(ii) $y = f(x + 3)$. [1]

(b)



(i) On the diagram, sketch the graph of $y = 2x^2 - 4x$ for $-1 \leqslant x \leqslant 3$. [2]

(ii) Find the coordinates of the local minimum.

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

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7 An unbiased blue die has a cross on 2 faces and a circle on the other 4 faces.
An unbiased red die has a cross on 1 face and a circle on the other 5 faces.

(a) Micha rolls the blue die.

Find the probability that he rolls

(i) a circle,

..... [1]

(ii) a tick.

..... [1]

(b) Derk rolls both dice.

(i) Find the probability that he rolls a cross on the blue die and a cross on the red die.

..... [2]

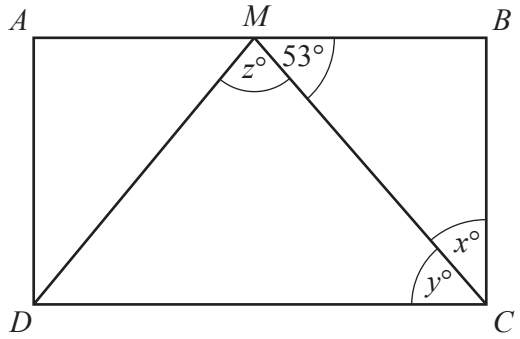
(ii) Derk rolls the two dice 360 times.

Find the expected number of times he rolls a cross on the blue die and a cross on the red die.

..... [1]

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8 (a)



NOT TO SCALE

The diagram shows a rectangle, $ABCD$.
M is the mid-point of AB and angle $BMC = 53°$.

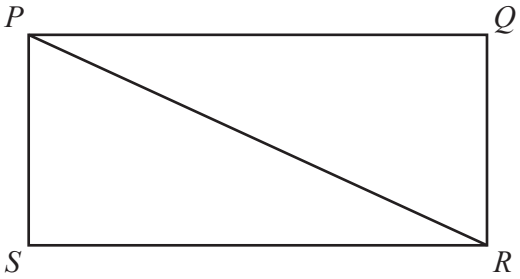
Find the value of each of x, y and z.

$x =$ .....

$y =$ .....

$z =$ ..... [3]

(b) The diagram shows another rectangle $PQRS$.



NOT TO SCALE

Complete each statement using one word from this list.

similar congruent acute obtuse right reflex alternate corresponding

The angle QPS is .....

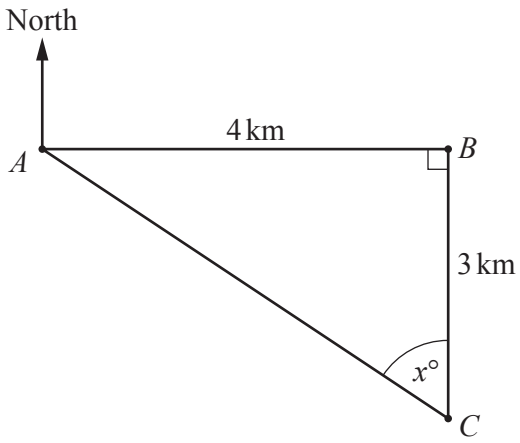
The angle QRP is .....

Triangle PQR is ..... to triangle PSR.

Angle QPR is equal to angle PRS because they are ..... angles. [4]

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9 (a)



NOT TO SCALE

The diagram shows the positions of three houses, A, B and C.
B is 4 km due East of A.
C is 3 km due South of B.

(i) Use trigonometry to calculate the value of x.

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

(ii) Find the bearing of A from C.

..... [1]

(b) Inez walks from home to Hindy's house.
The distance is 7 km.
Inez walks at a speed of 4 km/h.

(i) Work out how long this takes.
Give your answer in hours and minutes.

..... hours ..... minutes [2]

(ii) Inez leaves home at 13 20.

Work out the time that she arrives at Hindy's house.

..... [1]

10 **(a)** Solve.

$$4x + 7 = 8x - 9$$

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

(b) Expand and simplify.

$$2(x + 3y) - (2x - y)$$

..... [2]

(c) Factorise fully.

$$3p^2q - 6pq^3$$

..... [2]

(d) $2^n \times 2^{2n} = 2^{12}$

Find the value of n.

$n =$ ..... [1]

(e) $\dfrac{5^6}{5^t} = 5^4$

Find the value of t.

$t =$ ..... [1]

(f) Write as a single fraction in its simplest form.

(i) $\frac{a}{2} + \frac{2a}{5}$

..... [2]

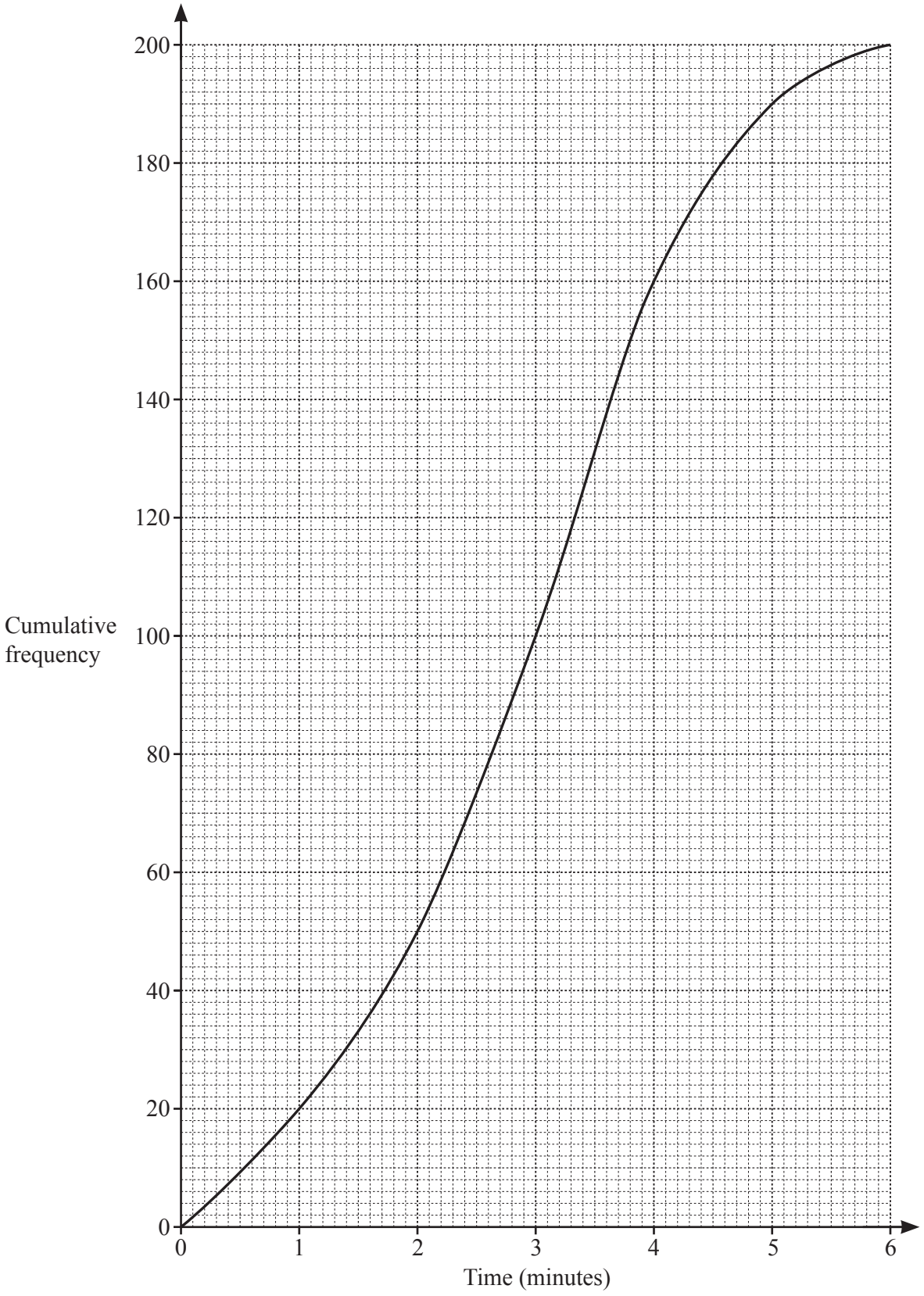
(ii) $\frac{t}{9} \times \frac{3t}{2}$

..... [2]

(iii) $\frac{3m}{5} \div \frac{m^2}{4}$

..... [2]

11 The cumulative frequency curve shows the time, in minutes, that 200 customers waited to be served in a restaurant.



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(a) Use the curve to find

(i) the median,

..... minutes [1]

(ii) the lower quartile,

..... minutes [1]

(iii) the interquartile range.

..... minutes [1]

(b) (i) Complete the frequency table.

Time (t minutes)	Frequency
$0 < t \leqslant 1$	
$1 < t \leqslant 2$	
$2 < t \leqslant 3$	
$3 < t \leqslant 4$	
$4 < t \leqslant 5$	
$5 < t \leqslant 6$	10

[2]

(ii) Write down the modal class.

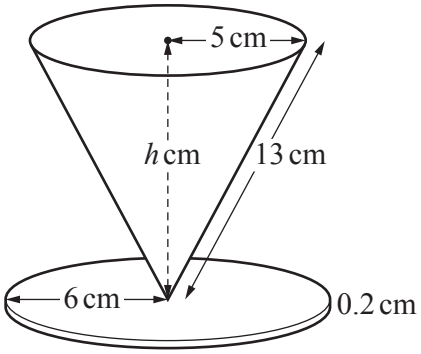
..... $<$ t $\leqslant$ ..... [1]

(iii) Work out an estimate of the mean.

..... minutes [2]

Question 12 is printed on the next page.

12



NOT TO SCALE

A trophy is in the shape of a solid cone on top of a solid cylinder.
The cone has radius 5 cm and slant height 13 cm.
The cylinder has radius 6 cm and height 0.2 cm.

(a) Work out the volume of the cylinder.

..... cm^3 [2]

(b) Use Pythagoras' Theorem to show that the vertical height, h cm, of the cone is 12 cm.

[2]

(c) Work out the volume of the cone.

..... cm^3 [2]

(d) Work out the curved surface area of the cone.

..... cm^2 [2]

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