Cambridge Assessment
International Education

Cambridge IGCSE™

CANDIDATE NAME

CENTRE NUMBER

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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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2

Formula List

Area, A, of triangle, base b, height h. $\qquad A = \dfrac{1}{2}bh$

Area, A, of circle, radius r. $\qquad A = \pi r^2$

Circumference, C, of circle, radius r. $\qquad C = 2\pi r$

Curved surface area, A, of cylinder of radius r, height h. $\qquad A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $\qquad A = \pi rl$

Curved surface area, A, of sphere of radius r. $\qquad A = 4\pi r^2$

Volume, V, of prism, cross-sectional area A, length l. $\qquad V = Al$

Volume, V, of pyramid, base area A, height h. $\qquad V = \dfrac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\qquad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\qquad V = \dfrac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\qquad V = \dfrac{4}{3}\pi r^3$

3

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.
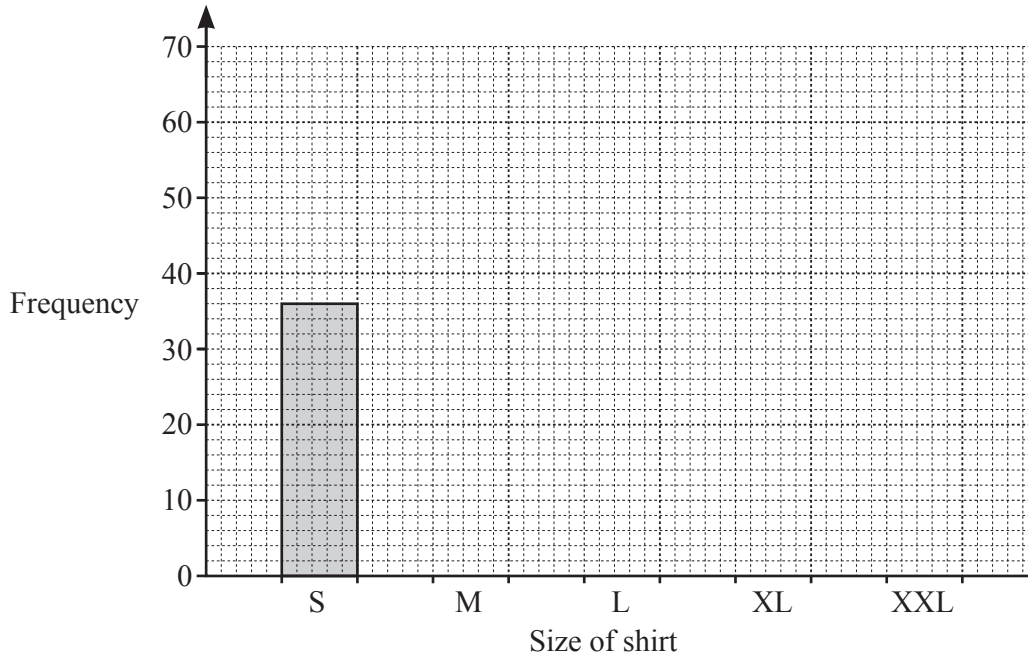
.... roses [1]

(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]

5

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 *n*th term of this sequence.

.... [2]

 [Turn over

6

4
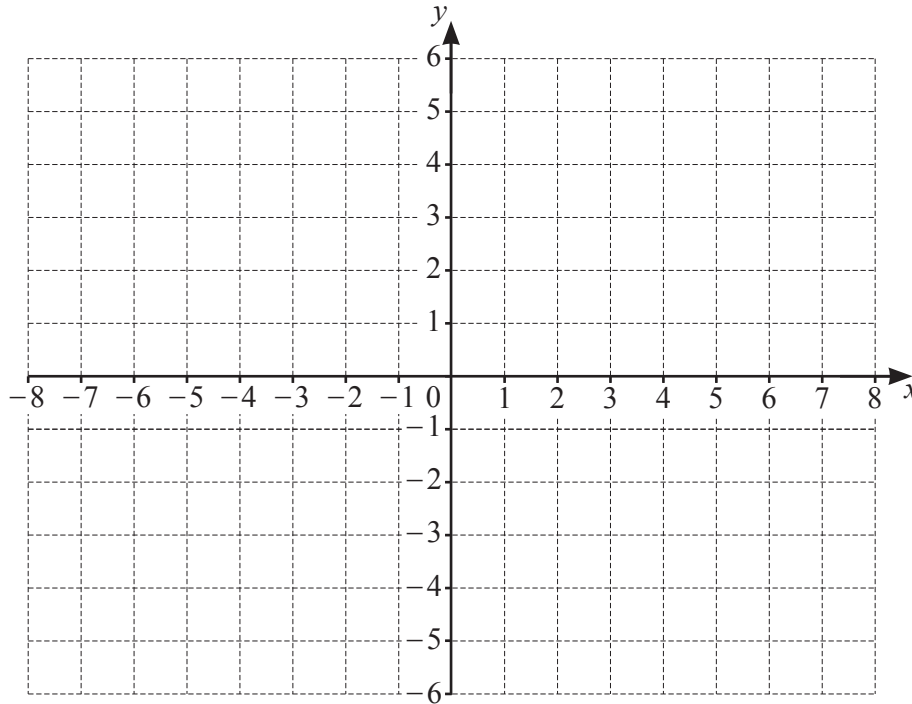
(a) On the grid, plot the points A (2, 1), B (6, 1) and C (6, −3). [2]

(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]

5

20 cm

10 cm

2.5 cm

NOT TO SCALE
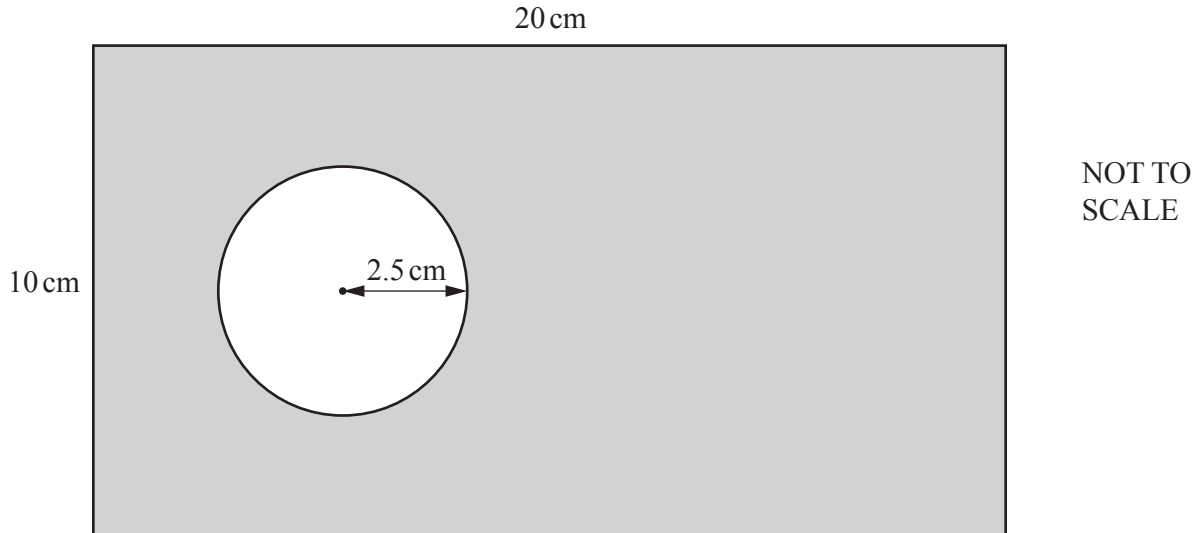
The diagram shows a sign made from card.
The card is in the shape of a rectangle with a circle cut from it.

(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.
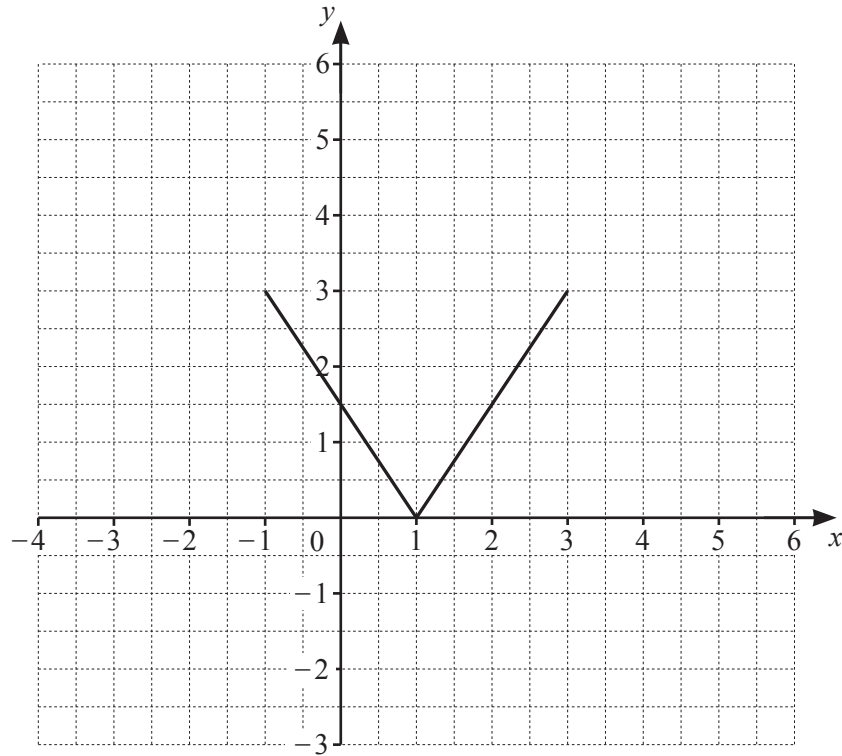
.... cm^2 [3]

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

Work out the length and width of the enlarged rectangle.

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

[Turn over

6 **(a)**
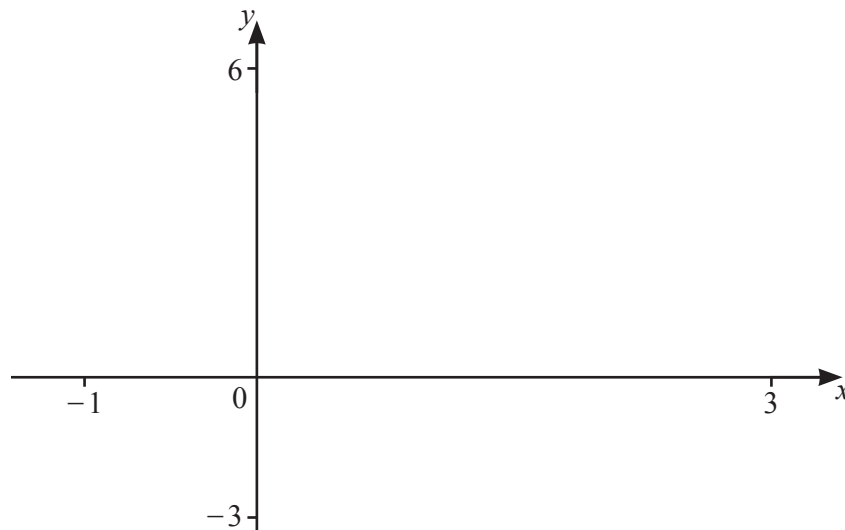

The diagram shows the graph of $y = \mathrm{f}(x)$.
On the same diagram, sketch the graph of

(i) $y = \mathrm{f}(x) + 2$,   [1]

(ii) $y = \mathrm{f}(x + 3)$.   [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]

9

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]

8 (a)

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*.

NOT TO SCALE

x = ...

y = ...

z = ... [3]

(b) The diagram shows another rectangle *PQRS*.
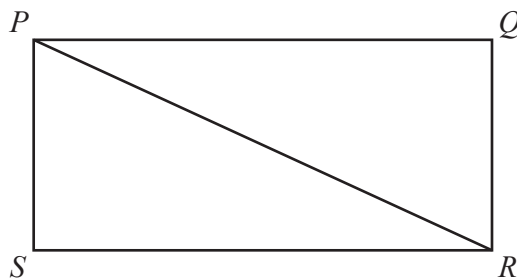
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Complete each statement using one word from this list.

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]

9 **(a)**

North

4 km

A

B

3 km

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$x°$

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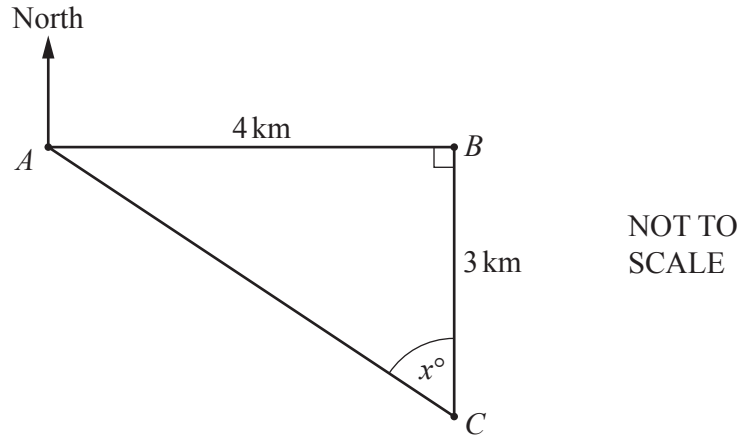
The diagram shows the positions of three houses, *A*, *B* and *C*.
B is 4 km due East of *A*.
C is 3 km due South of *B*.

(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) $\dfrac{a}{2} + \dfrac{2a}{5}$

    .... [2]

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

    .... [2]

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

    .... [2]

 [Turn over

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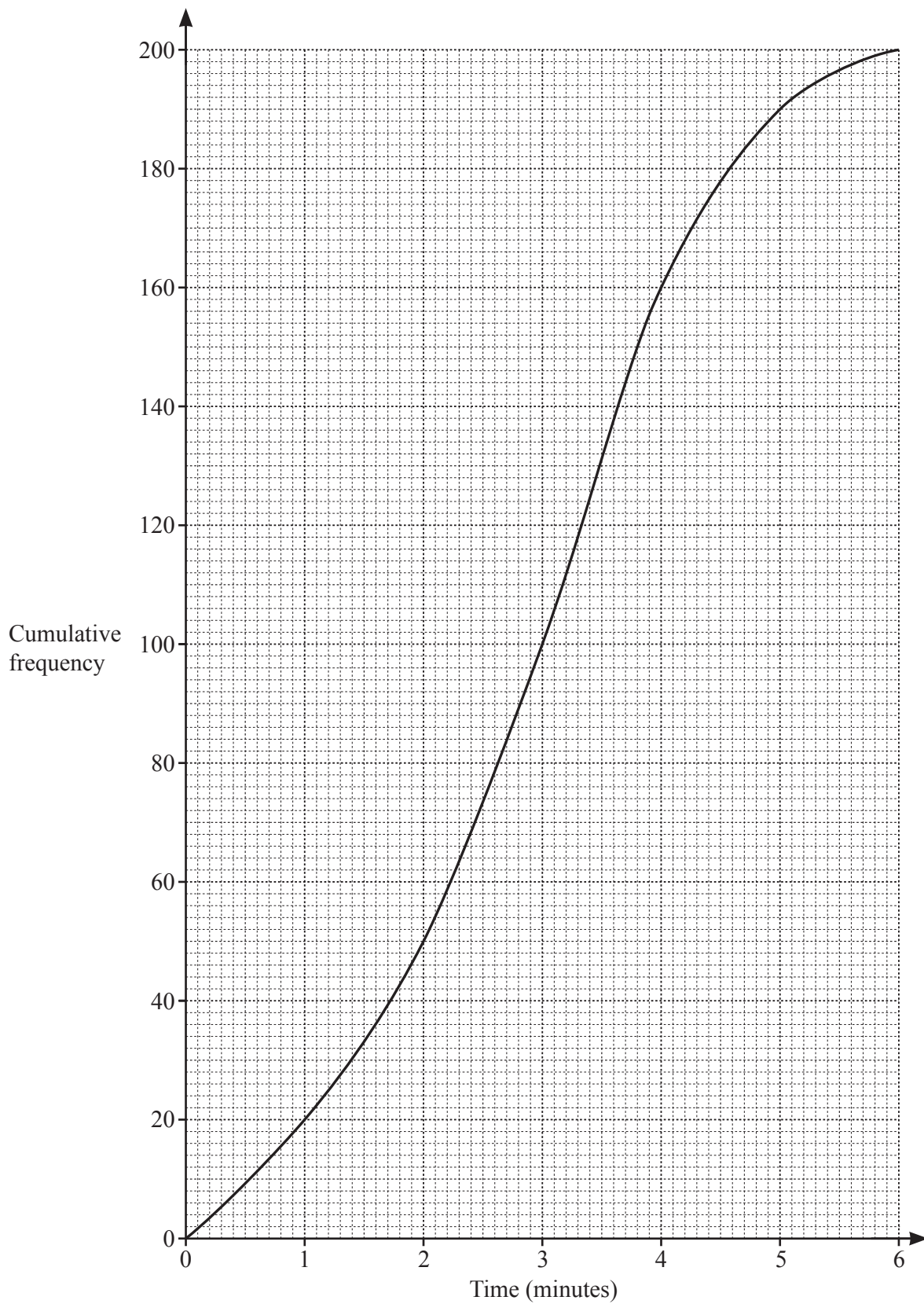
(a) Use the curve to find

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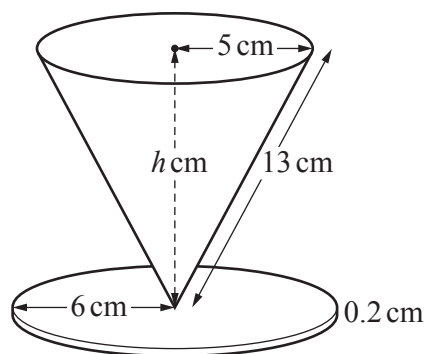
A trophy is in the shape of a solid cone on top of a solid cylinder.
The cone has radius 5 cm and slant height 13 cm.
The cylinder has radius 6 cm and height 0.2 cm.

(a) Work out the volume of the cylinder.

.... cm³ [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.

.... cm³ [2]

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

.... cm² [2]