



# Cambridge IGCSE™

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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  $\pi$ , 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.

**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) 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]

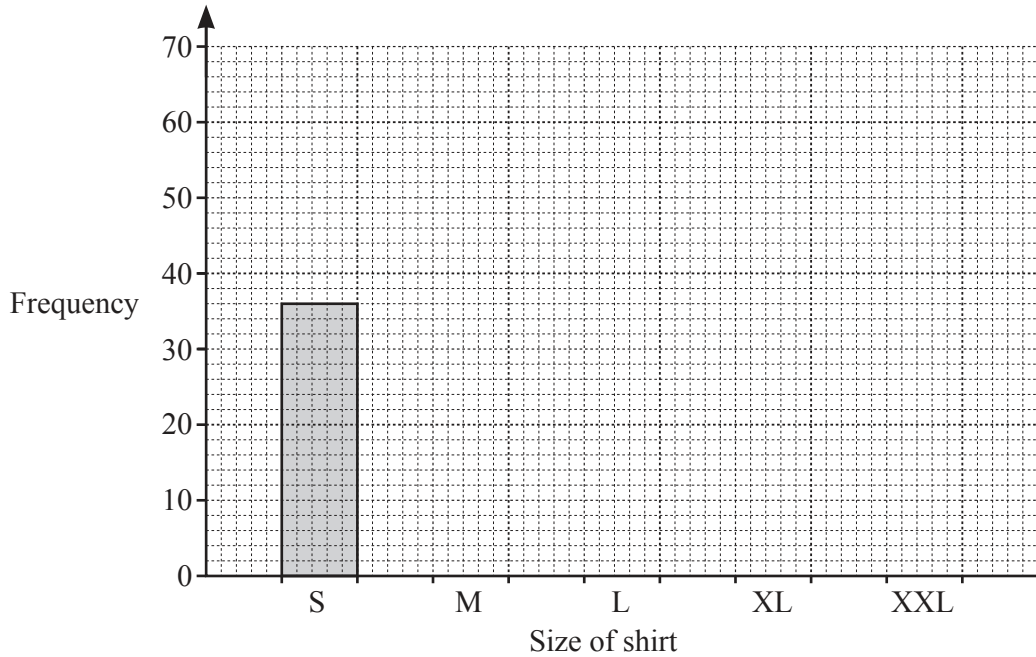
(ii) Work out how much money she has left.

\$ ..... [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]

- 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.

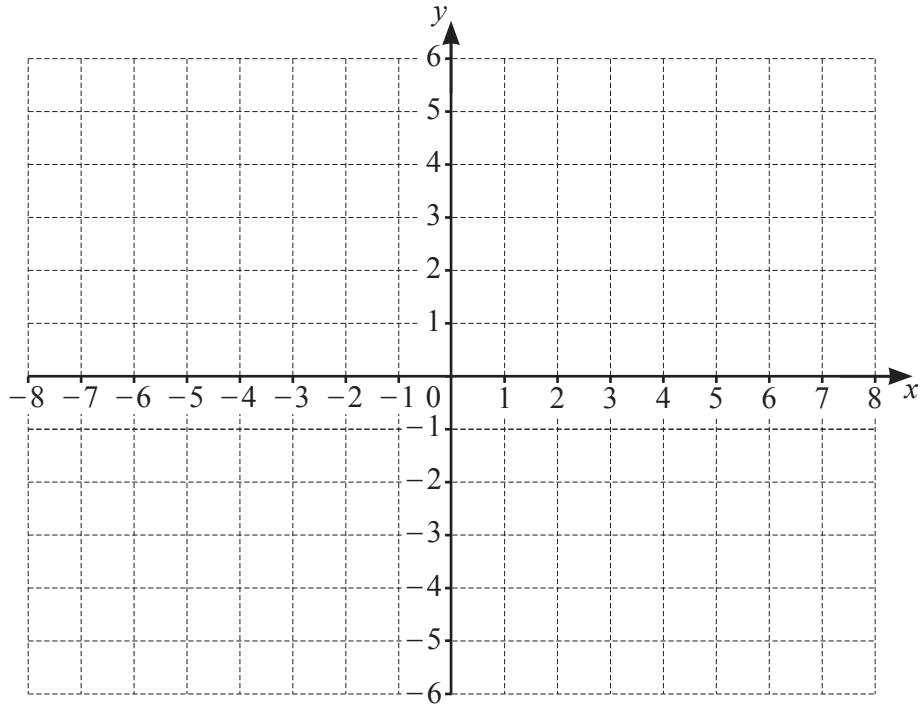
60    53    46    39

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

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

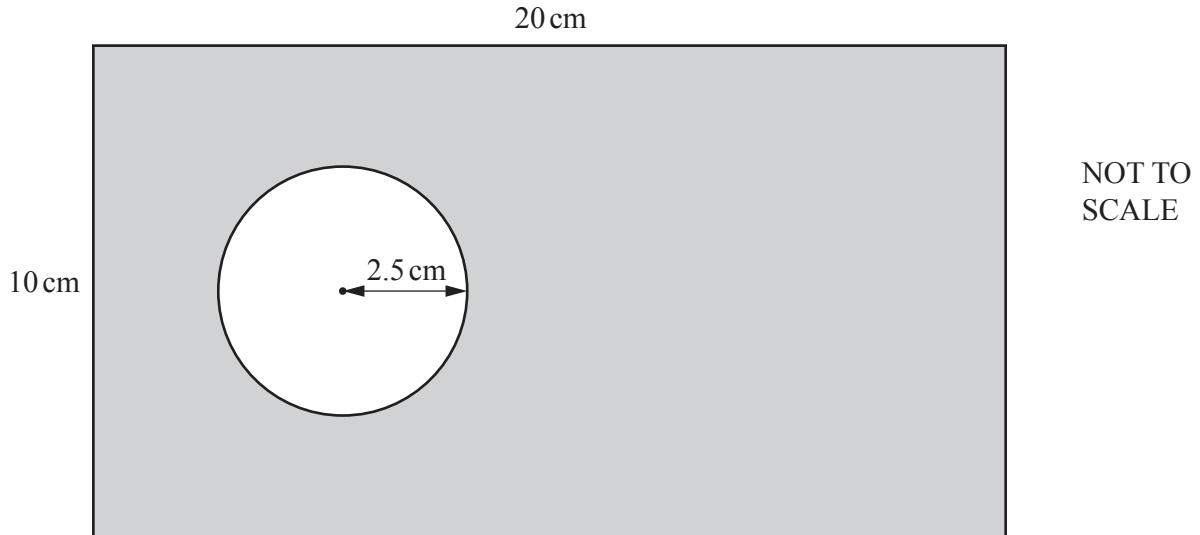
- (ii) Find the  $n$ th term of this sequence.

..... [2]



- (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



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.

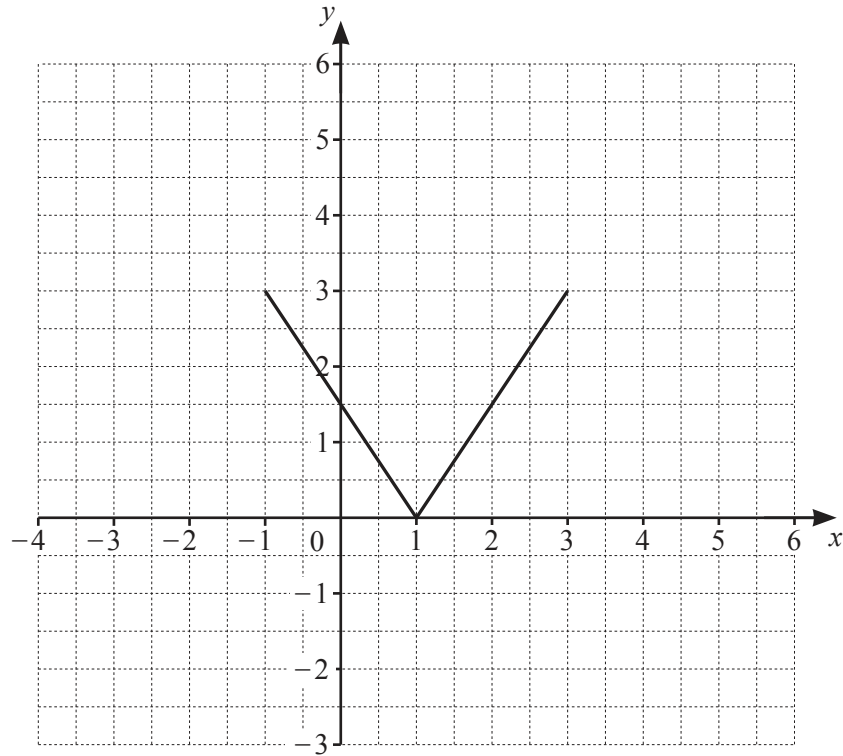
..... cm<sup>2</sup> [3]

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

Work out the length and width of the enlarged rectangle.

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

6 (a)



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

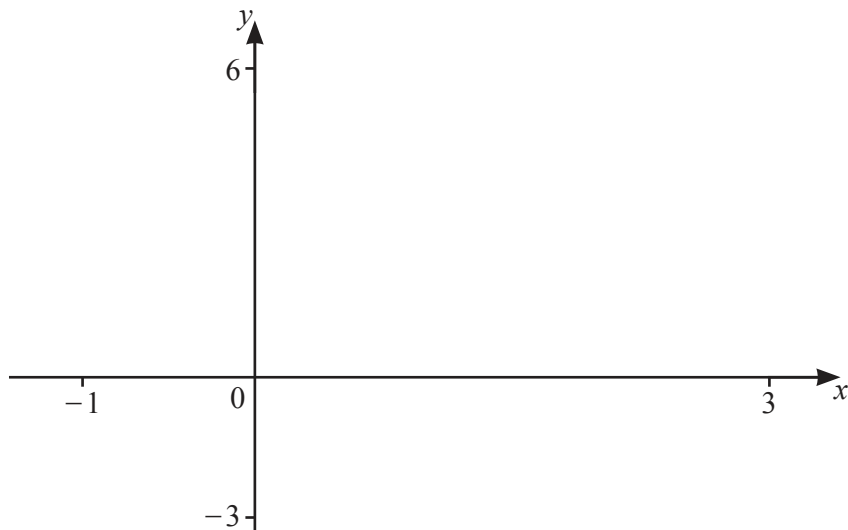
(i)  $y = f(x) + 2$ ,

[1]

(ii)  $y = f(x + 3)$ .

[1]

(b)



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

[2]

(ii) Find the coordinates of the local minimum.

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



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.

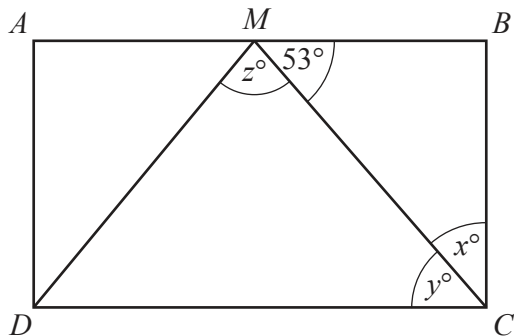
..... [2]

(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)



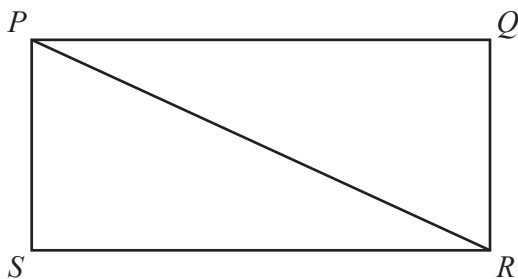
NOT TO SCALE

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

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

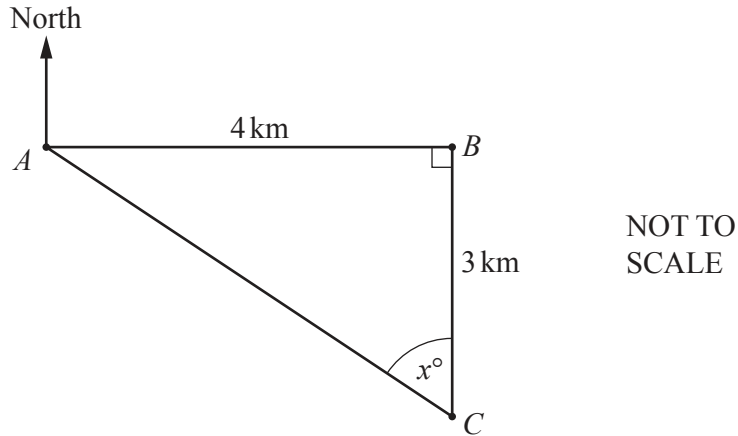
The angle  $QPS$  is .....

The angle  $QRP$  is .....

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

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

9 (a)



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  $x$ .

$x = \dots\dots\dots$  [2]

(ii) Find the bearing of  $A$  from  $C$ .

$\dots\dots\dots$  [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.

$\dots\dots\dots$  hours  $\dots\dots\dots$  minutes [2]

(ii) Inez leaves home at 13 20.

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

$\dots\dots\dots$  [1]

10 (a) Solve.

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

$$x = \dots\dots\dots [2]$$

(b) Expand and simplify.

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

$$\dots\dots\dots [2]$$

(c) Factorise fully.

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

$$\dots\dots\dots [2]$$

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

Find the value of  $n$ .

$$n = \dots\dots\dots [1]$$

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

Find the value of  $t$ .

$$t = \dots\dots\dots [1]$$

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

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

..... [2]

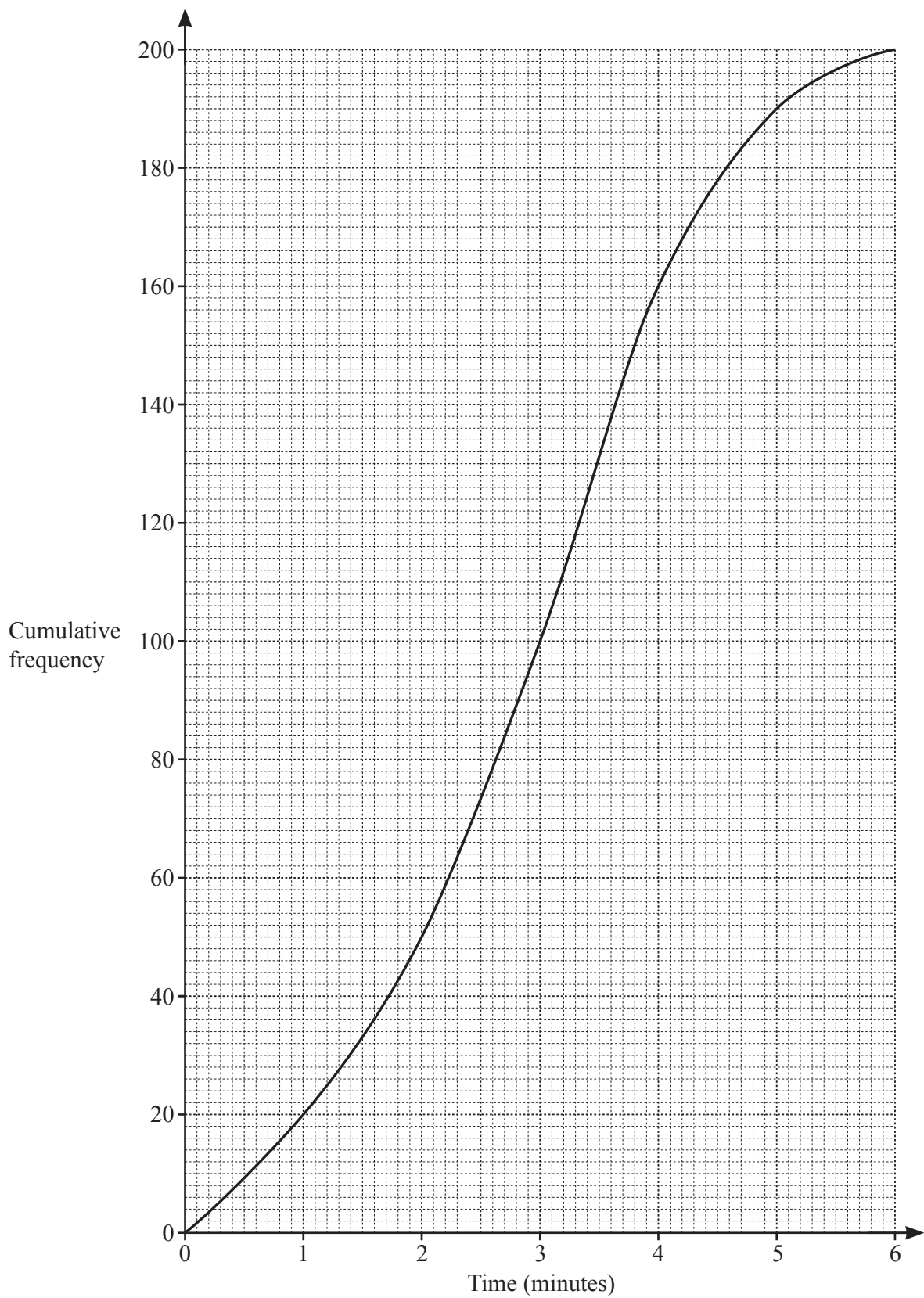
(ii)  $\frac{t}{9} \times \frac{3t}{2}$

..... [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.



(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
$0 < t \leq 1$	
$1 < t \leq 2$	
$2 < t \leq 3$	
$3 < t \leq 4$	
$4 < t \leq 5$	
$5 < t \leq 6$	10

[2]

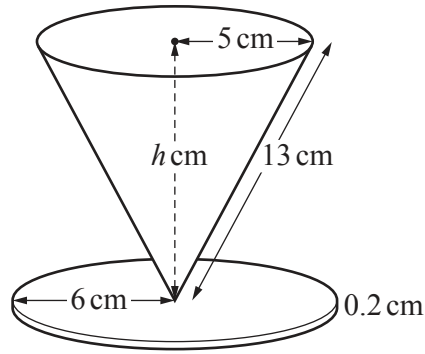
(ii) Write down the modal class.

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

(iii) Work out an estimate of the mean.

..... minutes [2]

**Question 12 is printed on the next page.**



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.

.....  $\text{cm}^3$  [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.

.....  $\text{cm}^3$  [2]

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

.....  $\text{cm}^2$  [2]

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