Cambridge Assessment International Education

Cambridge IGCSE™

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

6240978390

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/32**

Paper 3 (Core) **October/November 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.

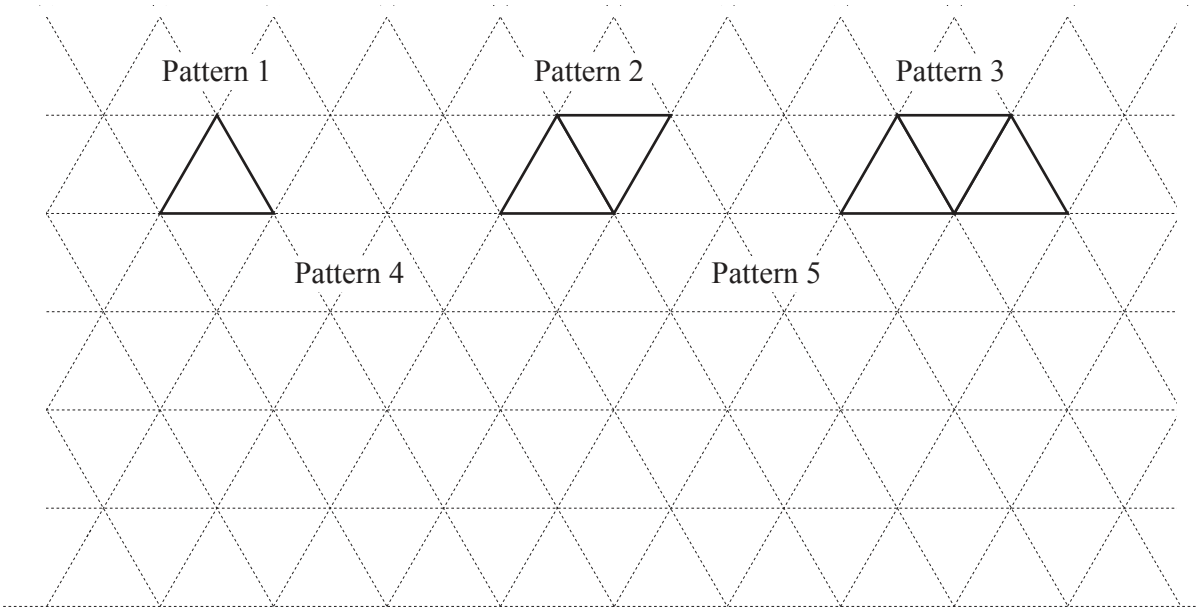
[Turn over

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)** These are the first three patterns of a sequence made using lines.



(i) In the space above, draw Pattern 4 and Pattern 5. [2]

(ii) Complete the table.

Pattern number	1	2	3	4	5	6
Number of lines	3	5				

[2]

(iii) Write down the rule for continuing the sequence of lines.

..... [1]

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

23 17 11 5

Write down the next two terms of this sequence.

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

(c) The nth term of another sequence is $n^2 + 5n$.

Find the first three terms of this sequence.

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

2 **(a)** Wilfred went to a shop to buy plants for his garden.

Complete the bill.

Item	Cost ($)
8 shrubs at $9.95 each	.....
12 bushes at $..... each	207.00
..... plants at $1.60 each	25.60
Total	$ .....

[4]

(b) The shop bought 960 tomato plants.

(i) In the first week they sold 800 of the tomato plants.

Write $\frac{800}{960}$ as a fraction in its simplest form.

..... [1]

(ii) In the second week,

5% of the remaining 160 plants died

and

$\frac{3}{5}$ of the remaining 160 plants were sold.

Work out how many tomato plants **are left** at the end of the second week.

..... [3]

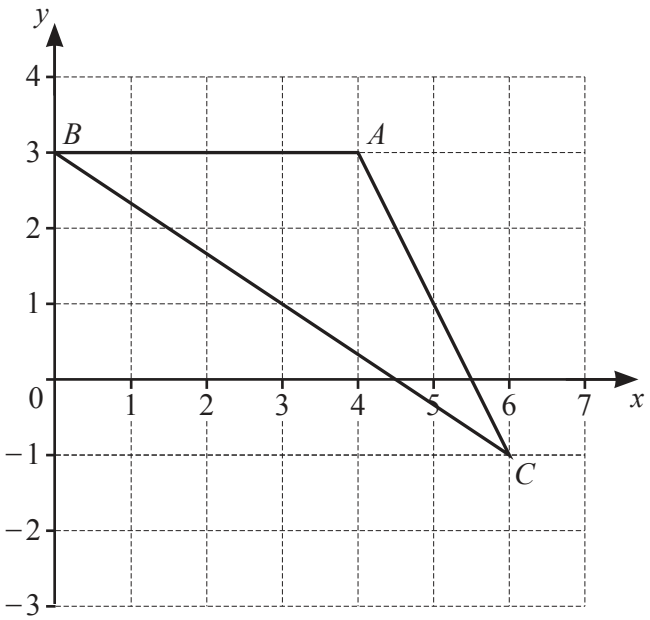
(c) Olga and Zak each buy some plants.
These plants are all the same price.

Olga pays $67.95 for 15 plants.
Zak buys 12 plants.

Work out how much Zak pays for his plants.

$ ..... [2]

3 (a)



(i) Write down the coordinates of

(a) point A,

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

(b) point B,

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

(c) point C.

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

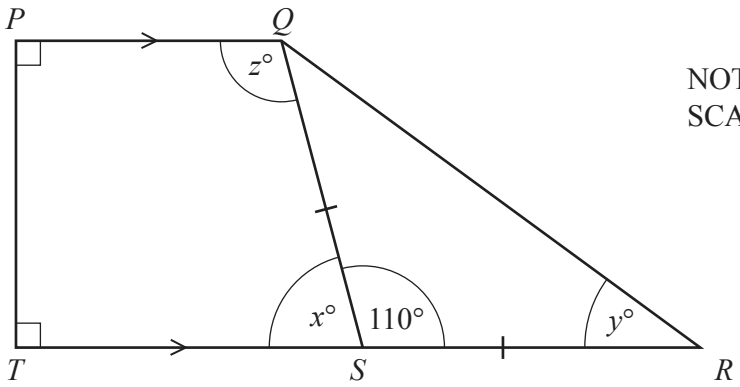
(ii) Write down the coordinates of the mid-point of AC.

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

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

..... [1]

(b)



In the diagram, PQ is parallel to TS and $QS = SR$.
TSR is a straight line.

(i) Write down the mathematical name of quadrilateral $PQRT$.

..... [1]

(ii) Find the value of x.

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

(iii) Find the value of y.

$y =$ ..... [2]

(iv) Find the value of z.

$z =$ ..... [1]

4 **(a)** Simplify.

$5p - 7p + 4p$

..... [1]

(b) Solve.

$4x - 1 = 9$

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

(c) Factorise fully.

$15x + 9xy$

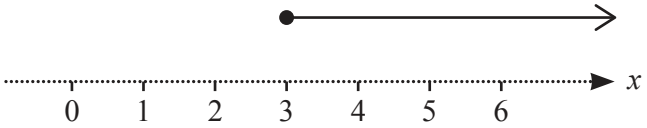
..... [2]

(d) Complete this statement with either $>$ or $<$.
Show clearly how you decide.

11^2 ..... 5^3

[1]

(e) Write down the inequality shown on the number line.



..... [1]

5 The results of 24 matches played by a football team are recorded below.
They can Win (W), Lose (L) or Draw (D).

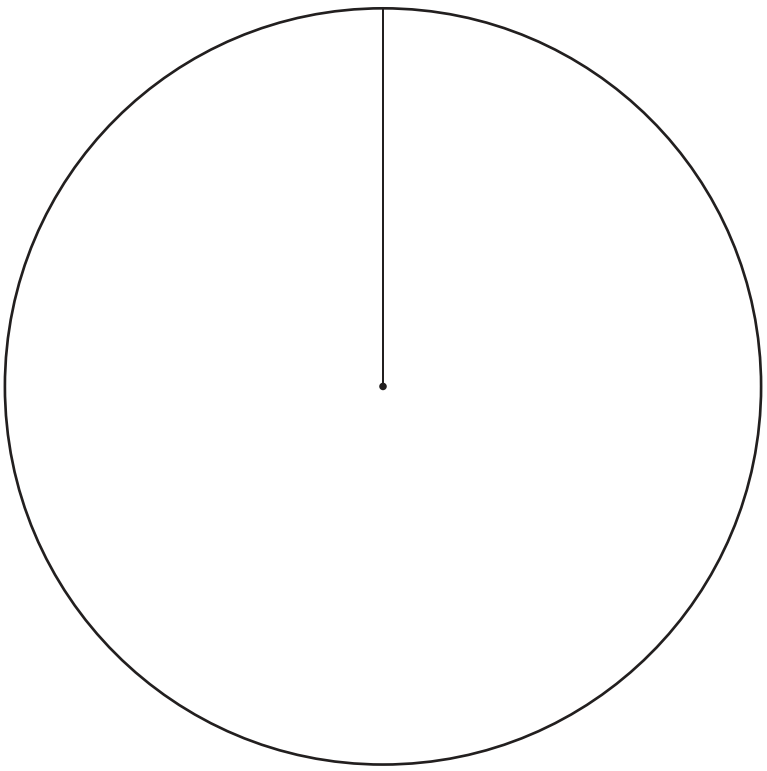
W	L	W	L	D	W	L	L
L	W	W	L	L	D	L	L
W	L	L	D	W	L	L	W

(a) Complete the table.

Result	Frequency	Pie chart angle
W		
D		
L		
Total	24	360°

[6]

(b) Draw a pie chart to show this information.



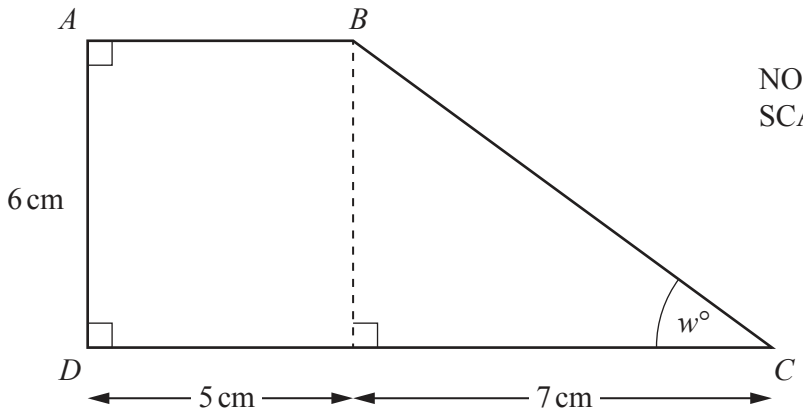
[3]

(c) One of these matches is chosen at random.

Find the probability that the result is a Win.

..... [1]

6



(a) Work out the area of quadrilateral *ABCD*.
Give the units of your answer.

.... [3]

(b) Work out the perimeter of quadrilateral *ABCD*.

..... cm [3]

(c) Use trigonometry to work out the value of *w*.

w = ... [2]

7 An aircraft flies 40 000 km around the Earth.

(a) Write 40 000 in words.

..... [1]

(b) Change 40 000 km to metres.
Give your answer in standard form.

..... m [2]

(c) The flight takes 67 hours.

(i) Change 67 hours to seconds.
Give your answer correct to 2 significant figures.

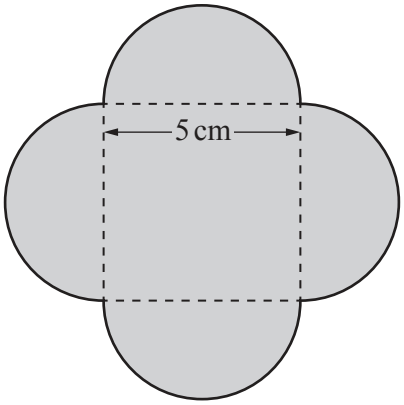
..... s [3]

(ii) Calculate the average speed of the aircraft.
Give your answer in metres per second.

..... m/s [1]

[Turn over

8



This shape is made by joining four identical semi-circles to the sides of a square.

(a) Work out the perimeter of the shape.

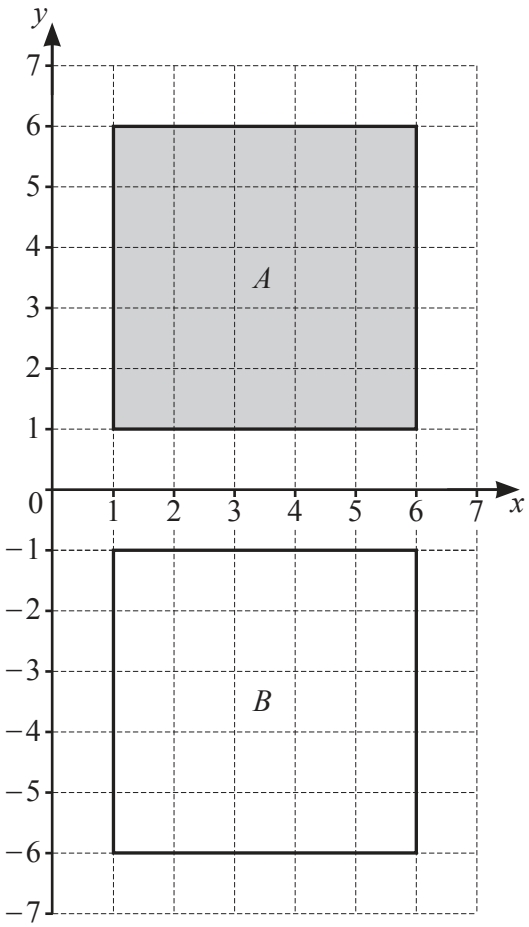
..... cm [2]

(b) Write down the order of rotational symmetry of the shape.

..... [1]

(c) On the diagram, draw all the lines of symmetry. [2]

9



Shape *A* is mapped onto shape *B* by a **single** transformation.

Describe fully three **different types** of transformation that will map shape *A* onto shape *B*.

1 .....

.....

2 .....

.....

3 .....

..... [7]

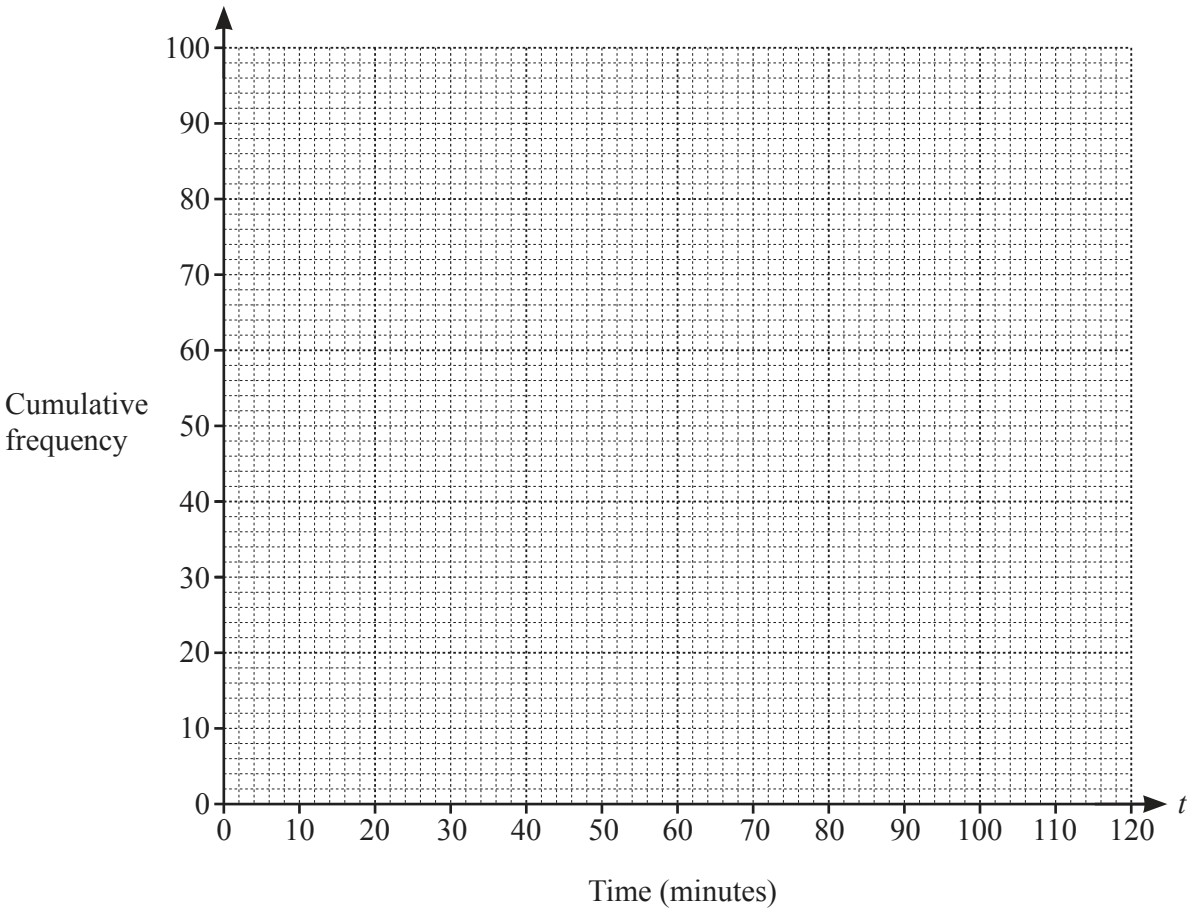
10 Tilda recorded the time, in minutes, that each of 100 cars was parked in a hospital car park. Her results are shown in the frequency table.

Time (t minutes)	Frequency
$0 < t \leqslant 20$	0
$20 < t \leqslant 40$	12
$40 < t \leqslant 60$	18
$60 < t \leqslant 80$	16
$80 < t \leqslant 100$	38
$100 < t \leqslant 120$	16

Time (t minutes)	Cumulative frequency
$t \leqslant 20$	
$t \leqslant 40$	
$t \leqslant 60$	
$t \leqslant 80$	
$t \leqslant 100$	
$t \leqslant 120$	100

(a) Complete the cumulative frequency table. [2]

(b) On the grid, draw a cumulative frequency curve to show the information.



[3]

(c) Use your cumulative frequency curve to find an estimate of

(i) the median,

..... min [1]

(ii) the interquartile range.

..... min [2]

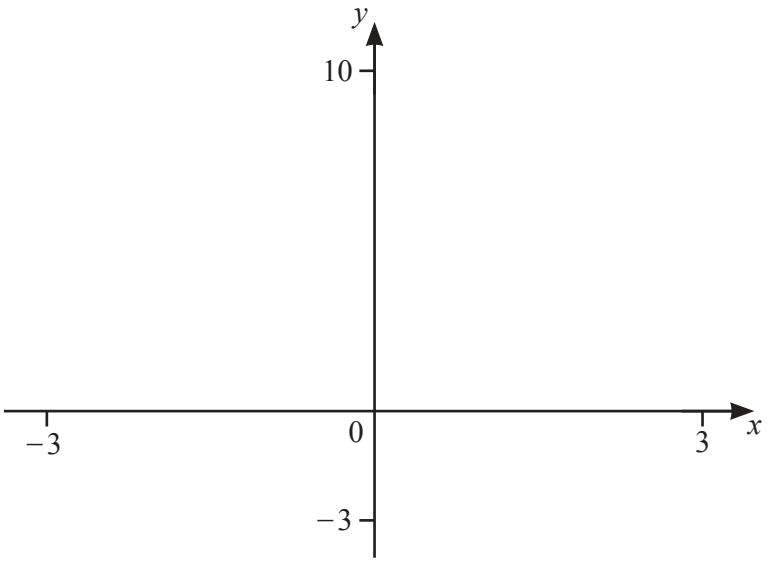
(d) Tilda thinks that approximately three quarters of the cars were parked in the car park for between 50 and 110 minutes.

Is Tilda correct?
Use information from the curve to justify your answer.

[4]

Question 11 is printed on the next page.

11



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

(ii) Find the coordinates of the local maximum.

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

(b) (i) On the diagram, sketch the graph of $y = \frac{6}{x^2}$ for values of x from -3 to 3. [2]

(ii) Write down the equation of each asymptote of $y = \frac{6}{x^2}$.

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

(c) Find the x-coordinate of each point of intersection of $y = 7 - x^2$ and $y = \frac{6}{x^2}$.

..... [4]