

Cambridge IGCSE[™]

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

8701230420

CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/33

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. Any blank pages are indicated.

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[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.

 $A = \pi r l$

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)	(i)	Write in words 78 616.	17
		(ii)	Write 78 616 correct to the nearest thousand.	1]
		(***)		1]
		(iii)	Write 78 616 correct to 3 significant figures.	1]
	(b)	Wo	ork out.	
		(i)	$\frac{2.45 + 1.474}{4.25 - 3.53}$	
		(ii)	[3\sqrt{729}	1]
		(11)		1]
		(iii)	$\sqrt{2.43^2 + 1.65^2}$ Give your answer correct to 2 decimal places.	-1
	(c)	(i)	Write down all the factors of 12.	2]
			г	21
		(ii)		2] 8.
			HCF	
			LCM	31

Owen carried out a survey of the weather in 2020. He randomly chose some days from each month and recorded the type of weather for each day. The results are shown in the table.

Type of weather	Tally	Frequency
Cloud	жт II	
Rain	MI III	
Sun	111 111 111 111	
Snow	II	
Fog	Ж	

(a)	Complete	the frequency	column	of the	table.
-----	----------	---------------	--------	--------	--------

[1]

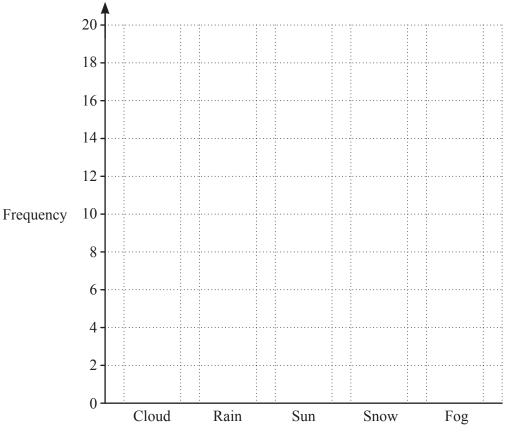
(b) Work out the total number of days Owen chose in his survey.

[1]
 1 + 1

(c) Write down the most common type of weather in Owen's survey.

																					Γ	1	٦
		 						 						 							Ι.	1	

(d) On the grid, draw a bar chart to show the information in the table.



Type of weather

[2]

(e)	One of these days is chosen at random.
	Work out the probability that the type of weather on this day is Sun.
(6)	[1]
(f)	Use the information in the table to estimate how many days in one year (365 days) will have Rain.
	[2]
(g)	Owen makes a pie chart using the information in the table.
	Work out the sector angle for Cloud.
	[2]

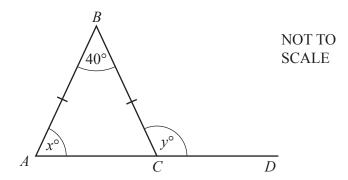
The	ese are the fi	irst four ter	ms of a so	equence.				
			800	400	200	100		
For	this sequen	ce, write do	own					
(i)	the next tv	vo terms,						
								[0]
(**)	.1 1 0	,• •	d				,	[2]
(11)	the rule fo	r continuin	g the sequ	uence.				
								F43
- TO	.1 .0		0 11			•••••		[1]
The	ese are the fi							
				3 –1	1	3	5	
Fin	d the <i>n</i> th ter	m of this se	equence.					
								[2]
The	nth term of	f another se	equence is	6n+5	5.			
(i)	Work out	the first thro	ee terms	of this se	quence.			
							,	[2]
(ii)	Rearrange	the formul	a $P = 6n$	n+5 to	make <i>n</i>	the subj	ject.	
						n =	=	[2]
	For (i) (ii) The (i)	For this sequent (i) the next two (ii) the rule for These are the first find the <i>n</i> th term of the sequent o	For this sequence, write do (i) the next two terms, (ii) the rule for continuin These are the first six term Find the <i>n</i> th term of this so The <i>n</i> th term of another se (i) Work out the first three	For this sequence, write down (i) the next two terms, (ii) the rule for continuing the sequence are the first six terms of a difference of this sequence. The <i>n</i> th term of this sequence is (i) Work out the first three terms of the sequence is (ii) where the sequence is (iiii) where the sequence is (iv) where the s	For this sequence, write down (i) the next two terms, (ii) the rule for continuing the sequence. These are the first six terms of a different set -5 -3 -1 . Find the <i>n</i> th term of this sequence. The <i>n</i> th term of another sequence is $6n + 5$. (i) Work out the first three terms of this set	For this sequence, write down (i) the next two terms, (ii) the rule for continuing the sequence. These are the first six terms of a different sequence. $-5 -3 -1 1$ Find the <i>n</i> th term of this sequence. The <i>n</i> th term of another sequence is $6n + 5$. (i) Work out the first three terms of this sequence.	For this sequence, write down (i) the next two terms, (ii) the rule for continuing the sequence. These are the first six terms of a different sequence. $-5 -3 -1 1 3$ Find the <i>n</i> th term of this sequence. The <i>n</i> th term of another sequence is $6n + 5$. (i) Work out the first three terms of this sequence.	For this sequence, write down (i) the next two terms, (ii) the rule for continuing the sequence. These are the first six terms of a different sequence. $-5 -3 -1 1 3 5$ Find the <i>n</i> th term of this sequence. The <i>n</i> th term of another sequence is $6n + 5$. (i) Work out the first three terms of this sequence.

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3

4	(a)	A packet of breakfast cereal costs \$2	.80 .
		(i) Work out the greatest number o	f these packets that can be bought with \$20.
			[2
		(ii) Work out how much of the \$20	is left.
			\$[
	(b)	The breakfast cereal contains only grateriatio, by mass, is	rain, fruit and nuts.
			uts = 16:7:2.
		Work out the mass of each ingredien	t in a box containing 500 g of cereal.
			Grain g
			Fruit g
			Nuts g [3
	(c)	A box of the cereal normally contain In a special offer, the mass of cereal	
		Work out the total mass of cereal in	a special offer box.
			g [2

5 (a)



ABC is an isosceles triangle and ACD is a straight line.

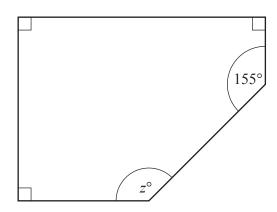
(i) Find the value of x and the value of y.

x =	
y =	 [2]

(ii) Find the size of the reflex angle at B.

 	[1]

(b)



NOT TO SCALE

Find the value of z.

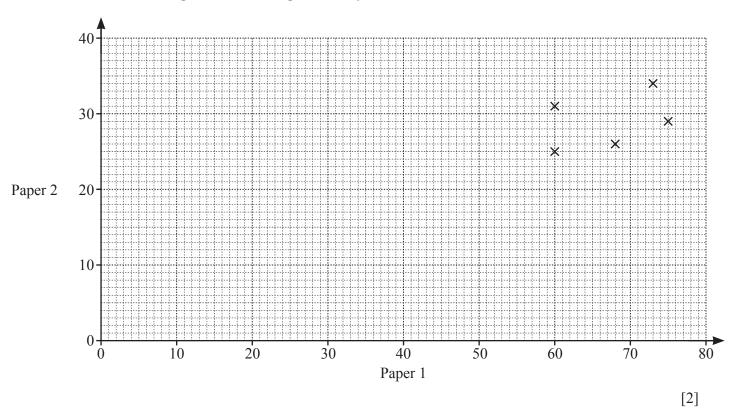
$$z = \dots$$
 [3]

6 An examination consists of two papers, Paper 1 and Paper 2. The scores for each of nine candidates are shown below.

Paper 1	75	73	68	60	60	55	47	33	15
Paper 2	29	34	26	31	25	19	20	17	6

(a) Complete the scatter diagram.

The first five points have been plotted for you.



(b) What type of correlation is shown in the scatter diagram?

.....[1]

(c) (i) Work out the mean of the Paper 1 scores and the mean of the Paper 2 scores.

Mean Paper 1 =

Mean Paper $2 = \dots$ [2]

(ii) On the scatter diagram, draw a line of best fit.

[2]

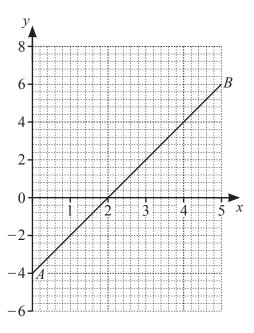
(d) Sajid scored 22 on Paper 2.

Use your line of best fit to estimate his score on Paper 1.

.....[1]

7	(a)	Simplify.		
		2x + 3y + 4x - y		
	(b)	Solve. $4x - 3 = 9$		[2]
	(c)	Multiply out the brackets. $3x(2x^2 - 5x)$	<i>x</i> =	[2]
	(d)	Write as a single fraction in its simplest form. (i) $\frac{3y^2}{8} \div \frac{2y}{5}$		[2]
		(ii) $\frac{4x}{7} + \frac{x}{3}$		[2]

.....[2]



(a) Work out the coordinates of the mid-point of line AB.

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۱	(_	_	ı

(b) Find the equation of line AB.

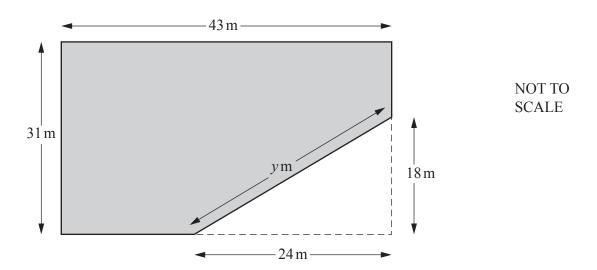
.....[3]

(c) (i) On the grid, draw the line y = 2.

[1]

(ii) Write down the coordinates of the point where the line y = 2 crosses line AB.

(.....) [1]



The diagram shows a rectangle with a triangular corner cut off.

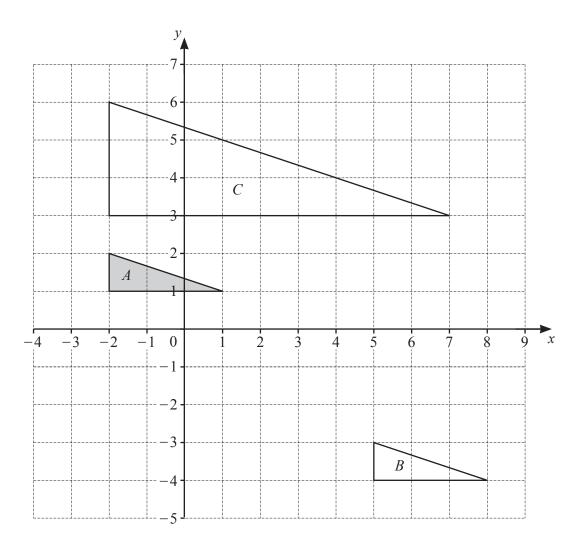
(a) Work out the area of the shaded shape. Give the units of your answer.

		[5]
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(b) Use Pythagoras' Theorem to work out the value of y.

(c) Work out the perimeter of the shaded shape.

..... m [3]

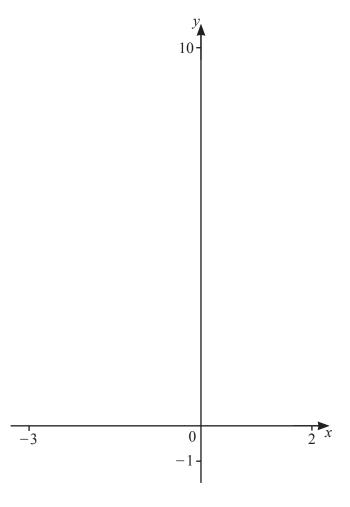


(a)	Describe fully the single transformation which maps triangle A onto triangle B .	
		[2]
(b)	Describe fully the single transformation which maps triangle A onto triangle C .	
		[3]
(c)	Reflect triangle A in the line $x = 3$. Label the image X .	[2]

[2]

(d) Rotate triangle A by 90° clockwise about (0, 0).

Label the image Y.



- (a) (i) On the diagram, sketch the graph of $y = x^2 + 2x + 1$ for $-3 \le x \le 2$. [2]
 - (ii) Find the coordinates of the local minimum.

(.....) [1]

- **(b)** On the diagram, sketch the graph of $y = 2^x$ for $-3 \le x \le 2$. [2]
- (c) Find the x-coordinate of each point of intersection of $y = x^2 + 2x + 1$ and $y = 2^x$.

..... and [2]

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