



Cambridge IGCSE[™]

CANDIDATE NAME					
CENTRE NUMBER			CANDIDATE NUMBER		

339467881

MATHEMATICS 0580/32

Paper 3 (Core) October/November 2021

2 hours

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 calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- 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 either your calculator value or 3.142.

INFORMATION

- The total mark for this paper is 104.
- The number of marks for each question or part question is shown in brackets [].

This document has 20 pages. Any blank pages are indicated.

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1	(a)	In a café at a train station, a cup of coffee costs \$3.25 and a glass of cola costs \$2.15.
		Gary buys 2 cups of coffee and 4 glasses of cola.

Work out how much change he receives from a \$20 note.

•	Γ2
D	10

(b) Roy spends \$37.80 in the café on food and drink in the ratio food: drink = 7:2.

Work out how much he spends on food.

(c) The price of a \$48 train ticket is increased by 12%.

Find the new price of the ticket.

\$[2]

(d) Here is part of the timetable for trains from Washby to Dunstley. All trains take the same time to travel from Washby to Dunstley.

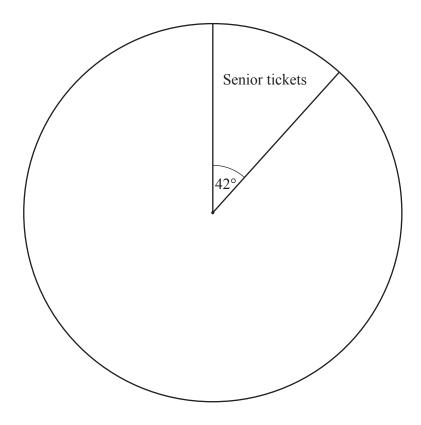
Washby	09 18	11 05
Dunstley	10 03	

Complete the timetable.

[2]

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(e) On one day, Washby station sells 28 senior tickets, 192 adult tickets and some child tickets.



Complete the pie chart to show this information.

[3]

.....[1] (ii) a square number,[1] a cube number,[1] (iv) a prime number.

(b) Write 420 as a product of its prime factors.

.....[2]

.....[1]

© UCLES 2021 0580/32/O/N/21 (c) Find the lowest common multiple (LCM) of 30 and 84.

.....[2]

(d) By writing each number correct to 1 significant figure, show that an estimate for this calculation is 40.

$$\frac{9.875 + 18.305}{3.418} + 27.837$$

[2]

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5 (a) Simone completes one lap of a 400 metre running track in 77 seconds.	3	(a)	Simone completes one lap of a 400 metre running track in 79 seconds.	
--	---	-----	--	--

Work out how long it will take her to run 6 km at the same rate. Give your answer in minutes and seconds.

						•••			minutes	seconds	[4]
(b)	The	probability t	hat she d	oes not	win a r	ace is 0	.94 .				
	Find	the probabil	lity that s	she win	s a race						
											Г1]
(c)		n day she rec e is her recor			of laps	she rui	18.				[1]
			15	42	28	16	24	15	32		
	(i)	Write down	the mod	e.							
	(ii)	Find the me	dian.								[1]
											[2]
	(iii)	Find the ran	ige.							•••••	(~]
											Г11

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								_		_	
"	4)	Wilfred	records	his	times	in	seconds,	for	each	$\alpha f 5$	lans
,,	4,	WILLIAM	records	1110	unitos,	111	becomus,	101	Cucii		Iups.

59 74 69 63 65

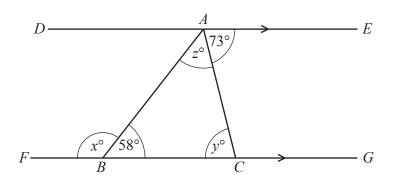
After running a 6th lap his mean time is 67 seconds.

Find his time for the 6th lap.

..... seconds [3]

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4 (a)



NOT TO SCALE

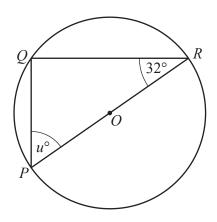
In the diagram, *ABC* is a triangle. Line *DAE* is parallel to line *FBCG*.

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

x =	 	
<i>y</i> =	 	

 $z = \dots [3]$

(b)



NOT TO SCALE

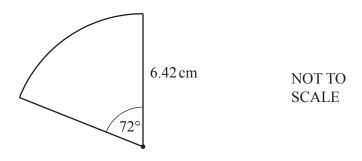
Points P, Q and R lie on a circle, centre O.

Find the value of *u*.

 $u = \dots$ [2]

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(c)



The diagram shows a sector of a circle with radius 6.42 cm and sector angle 72°.

Calculate the perimeter of this sector.

cm	[3]

$$5a - 3b + 7a + 2b$$

[2]
 141

(b) Find the value of
$$8x-3y$$
 when $x=5$ and $y=-2$.

(c) Solve.

$$6x - 3 = 2x + 8$$

$$x = \dots [2]$$

(d)
$$P = 6t - 11$$

Make *t* the subject of this formula.

$$t =$$
 [2]

(e) Solve the simultaneous equations. You must show all your working.

$$3x - 4y = 30$$

$$2x + 5y = -3$$

$$x = \dots$$

$$y = \dots$$
[4]

6 (a) Write these in order, starting with the smallest.

$$0.5806$$
 $\frac{11}{19}$ $\frac{17}{29}$ 58%

	<	<	<	[2]
smallest				

- **(b)** Write 0.004 973 correct to
 - (i) 3 decimal places,

(ii) 2 significant figures.

(c) The height of a flag pole, *h* metres, is measured as 37.84 metres, correct to 2 decimal places.

Complete this statement about the value of *h*.

$$....$$
 $\leq h <$ [2]

My.		
nnn. M.	31	Volty's
	nath.	Sity. The same of
	O.C.	%

(d)	The population	of Nigeria	is 201 000 000,	correct to 3	significant	figures.
-----	----------------	------------	-----------------	--------------	-------------	----------

Write this population in standard form.

ı	11
	11
	- 1

(e) The table shows the populations of some countries given in standard form, correct to 3 significant figures.

Country	Population
Brazil	2.12×10^{8}
China	1.42×10^9
Eritrea	5.31×10^6
France	6.55×10^7
Maldives	4.52×10^5
New Zealand	4.79×10^6

Use the information in this table to find

(i) the country with the smallest population,

[1			
---	---	--	--	--

(ii) the country with the population that is nearest to 5 million,

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	1	. 1	

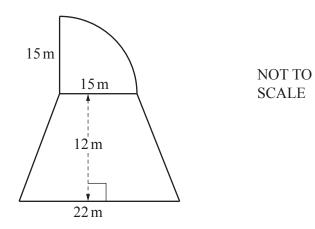
(iii) the difference between the population of Brazil and the population of France,

(iv) the value of k, correct to 2 significant figures, where

the population of China = $k \times$ the population of Eritrea.

$$k = \dots$$
 [2]

7 (a)



The diagram shows a shape made from a quarter circle and a trapezium.

Find the total area of this shape.

	m^2	[4]
•••••		Γ.1

(b)

<i>h</i> cm	_	
	15.8 cm	NOT TO SCALE

The diagram shows a rectangle. The area of the rectangle is 387.1 cm².

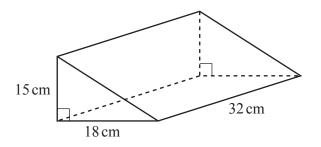
Find the value of *h*.

$$h = \dots [2]$$

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(c)



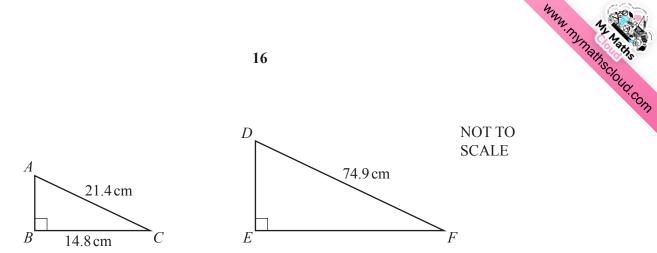
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The diagram shows a right-angled triangular prism.

Find the volume of the prism.

cm ³ [3

8 (a)



Right-angled triangles ABC and DEF are similar.

(i) Calculate EF.

$$EF = \dots cm [2]$$

(ii) Calculate angle *BCA*.

(b) The diagram shows two congruent rectangular tiles placed together.



The width of each tile is $32.5 \,\mathrm{cm}$ and $GH = 84.5 \,\mathrm{cm}$.

Find the length of each tile.

	cm	[4]
--	----	-----

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- (c) Town B is 72 km from town A on a bearing of 058°. Town C is 60 km due east of town B.
 - (i) Using a scale of 1 cm to represent 12 km, complete the scale drawing to show the positions of town *B* and town *C*.



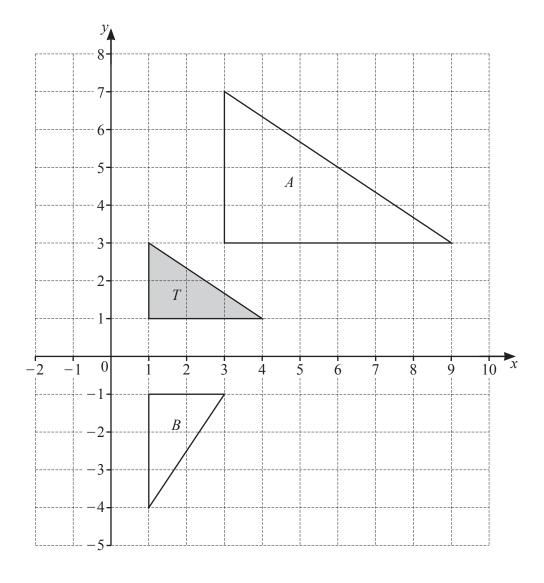
Scale: 1 cm to 12 km

[3]

(ii) Measure the bearing of town C from town A.

.....[1]

9 Triangles A, B and T are shown on the grid.



6	a)	Describe fully	v the single	transformation	that mans	triangle T	onto triangle A .
١,	aj	Describe full	y the single	uansionnauon	mat maps	urangic i	onto triangle 71.

.....[3]

(b) Describe fully the **single** transformation that maps triangle T onto triangle B.

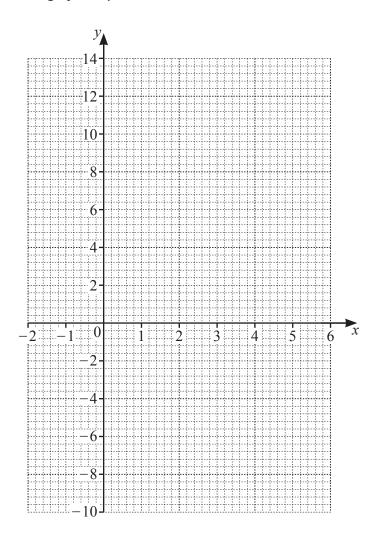
(c) On the grid, draw the image of triangle T after a translation by the vector $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$. [2]

х	-2	-1	0	1	2	3	4	5	6
у		4	-2		-8	-8		-2	4

[2]

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(b) On the grid, draw the graph of $y = x^2 - 5x - 2$ for $-2 \le x \le 6$.



[4]

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

[1]

(d) Use your graph to solve the equation $x^2 - 5x - 2 = 2$.

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

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