Surname	Centre Number	Candidate Number
First name(s)		0



GCSE

C300U20-1

A23-C300U20-1



FRIDAY, 10 NOVEMBER 2023 – MORNING

MATHEMATICS – Component 2 Calculator-Allowed Mathematics FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS

An additional formulae sheet.

A calculator will be required for this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer all the questions in the spaces provided.

If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3.142 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.



For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	7	
2.	3	
3.	5	
4.	4	
5.	3	
6.	4	
7.	6	
8.	3	
9.	4	
10.	6	
11.	5	
12.	4	
13.	5	
14.	9	
15.	5	
16.	4	
17.	4	
18.	4	
19.	3	
20.	4	
21.	5	
22.	5	
23.	8	
24.	4	
25.	6	
Total	120	

Formula list

2

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

```
Curved surface area of a cone = \pi rl
Surface area of a sphere = 4\pi r^2
Volume of a sphere = \frac{4}{3}\pi r^3
Volume of a cone = \frac{1}{3}\pi r^2h
```

Kinematics formulae

Where *a* is constant acceleration, *u* is initial velocity, *v* is final velocity, *s* is displacement from the position when t = 0 and *t* is time taken:

v = u + at $s = ut + \frac{1}{2}at^{2}$ $v^{2} = u^{2} + 2as$



he t	able below shows the costs	to post letters and pa	arcels.	
		Cost of posting		
		1st class	2nd class	-
	Small letter	95p	68p	
	Large letter	£1.45	£1.05	
	Parcel	£4.45	£3.35	
se (a)	costs from the table to answe Maria posts one 2nd class What is the total cost of po	er the following. small letter and one sting these two items	1st class parcel. ?	[2]
b)	How much less does it cos letters 1st class?	t to post three large l	etters 2nd class th	an to post three large [2]
<u>c</u>)	Gareth spent £15.95 postir How many letters did he po	ng large letters 1st cla ost?	ISS.	[2]
c)	Gareth spent £15.95 postin How many letters did he po Lee has £3.50. Does he have enough mor Yes	ng large letters 1st cla ost? ney to post five small No	Ietters?	[2]
(c) d)	Gareth spent £15.95 postin How many letters did he po Lee has £3.50. Does he have enough mor Yes Give the reason for your ar	ng large letters 1st cla ost? ney to post five small No	Ietters?	[2]



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		Exan
(b)	The formula shown below can be used to convert between temperatures in degrees Fahrenheit (F) and temperatures in degrees Celsius (C).	or
	F = 1.8C + 32	
	On a particular day in Greece, the temperature was 25°C. Use the formula to convert this temperature to degrees Fahrenheit (F).	[2]
•••••		
·····		
]
∎∎∎∥∎ 11	© W.IEC CBAC Ltd (C3000U20-1) Turn o	ver.

12	1E;
Alex and Louise buy some cereal bars and drinks at a shop. The image below shows the items that Alex and Louise bought and their total cost.	
Louise CHIELDOID CHIELDOID CHIELDOID CHIELDOID Total cost £5	
Alex CHIELDERS Total cost £5.60	
Assume that:	
 each cereal bar is identical each drink is identical. 	
Find the cost of one cereal bar and the cost of one drink.	[3]
One cereal bar costs One drink costs	







Turn over.

(a)	He spent £500 and gave 37% of the remaining money to charity. This was shared equally between five different charities	
	How much did each charity receive?	[4]
	Each charity received	
(b)	Jarrad saves £600 of the £3000. What percentage of the £3000 does Jarrad save?	[2]
	Jarrad saves % of the £3000.	

11.	(a)	Simplify each of the following.	ľ	Examiner only
		(i) $a + 7b + 5a - 9b$	[2]	
		(ii) $6w \div 2w$	[1]	
	(b)	Amanda buys 5 bags of apples. Each bag contains n apples. She gives away 2 apples from each bag .		
		Write an expression for the total number of apples Amanda has left.	[2]	
				-
				C300U20



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They can either pay for a package deal or pay for return flights, accommodation and food			
separately.			
The costs are shown below.			
\wedge	Pay Sonaratoly		
Package Deal	Return flights, accommodation,		
£2300	under 2 vears old.		
	Return flights		
Spain for a family of four.	£352 per person		
Return flights, accommodation	Accommodation		
and food included.	£43 per person, per day		
	Food		
	£85 per person, for seven days		
On the holiday there will be two adults and tw The children are aged 8 and 1 years old. They each require return flights, accommoda The Cowell family wish to choose the cheape	vo children. ation and food. er option		
On the holiday there will be two adults and tw The children are aged 8 and 1 years old. They each require return flights, accommoda The Cowell family wish to choose the cheape Which option should they choose?	wo children. ation and food. er option.		
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. ,	I nree fair coins are tr	rown at the same til	ne.	
	(i) Complete the ta The first row ha	able to list all the diff s been completed fo	erent possible outco or you.	omes. [2]
	Coin 1	Coin 2	Coin 3	
	н	Н	Н	
				You may
				- the lines in the table
	(ii) Write down the	probability that the c	outcome is three he	ads. [1]
b)	When four fair coins a	are thrown at the sar	ne time, the probab	ility that the outcome is two
~)	heads and two tails is	0.375.	··· ··· · · · · · · · · · · · · · · ·	,
	If the same four coins the outcome two head	are thrown 136 time ds and two tails?	es, how many times	would you expect to get [2]



			Exam
14.	(a)	The amount of electricity and gas used in a home is measured in units.	on
		In the first week of May, the Singh family used 56 units of electricity and 245 units of	
		The cost per unit of electricity is 32p.	
		The total cost for the units of electricity and gas the Singh family used in the first week of May was £39.97.	
		What is the cost of one unit of gas?[4]	
	•••••		
		One unit of gas costs	

	 They pay a fixed charge of 28p per day. VAT at 5% is added to the total of these costs 	
	VAT at 5% is added to the total of these costs. Calculate the total cost of the Singh family's electricity bill for June	[5]
		[0]
		••••••
		••••••
Th	ne total cost of the Singh family's electricity bill for June is	
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Th	ne total cost of the Singh family's electricity bill for June is	



(C)	(i)	Rhiannon left the park at 11:30 and cycled back along the same road to a friend's house that is 5 miles from her home. This journey took 45 minutes. Draw this journey on the graph. [1]	examiner only
	(ii)	Calculate the average speed of Rhiannon's journey from the park to her friend's house. Give your answer in miles per hour. [2]	
	•••••		
	••••••		
	•••••		













Char	thread bigguite are made from flour butter and super	E>
Shor Thei	r masses are in the ratio 4 : 3 : 2 respectively.	
(a)	What fraction of a shortbread biscuit is made up of sugar?	[1]
(b)	1400g of flour is used to make a batch of shortbread biscuits. How many grams of butter is used for this batch of shortbread biscuits?	[2]
	g of butter.	

20.	Lucy bought a car 9 years ago for £12250.	Examined only
	By how much has the car decreased in value in the last 9 years?	1
		1
		•
	Lucy's car has decreased in value by	
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	hows his results.		
	Length, <i>l</i> (centimetres)	Number of fish	
	$60 \leqslant l < 65$	19	
	65 <i>≤ l</i> < 70	17	
	70 <i>≤ l <</i> 75	23	
	$75 \leqslant l < 80$	10	
	80 <i>≤ l <</i> 85	1	
b) Rega Is Re	an thinks that the median length of fi egan correct?	sh is in the group $70 \leq l < 75$.	
Give	Yes	No	[1]







			Examine
(b)	Jan cuts out the maximum number of circles from the card. What area of card is left over?	[4]	only
••••••			
••••••			
••••••			
	Area of card left over		



23.	(a)	Expand and simplify $(x+3)(x+7)$.	[2]
	(b)	Solve $7x + 6 = 4x + 7$.	[2]
	(C)	Factorise $y^2 - 400$.	[1]
	(d)	Solve the following simultaneous equations. 7x - 3y = 26	[3]
		x + y = 3 You must show all your working.	
	······		
	······		
		x = v -	
		<i>x</i> = <i>y</i> =	





Turn over.



Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Exar or
		1



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