* WORKED SOLLTIONS *

Surname

First name(s)

Centre Number Candidate Number 0

wjec

GCSE

C300U20-1

S23-C300U20-1



WEDNESDAY, 7 JUNE 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.

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.	8							
2.	7							
3.	5							
4.	4							
5.	5							
6.	8							
7.	5							
8.	5							
9.	3							
10.	3							
11.	5							
12.	3							
13.	4							
14.	9							
15.	5							
16.	2							
17.	4							
18.	4							
19.	5	nimi - unimidikin						
20.	7							
21.	8							
22.	4							
23.	7							
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 = πrl 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 $s = ut + \frac{1}{2}at^{2}$ $v^{2} = u^{2} + 2as$



Examiner 1. The table shows the menu at a café. Menu Drinks Main Items Snacks Roll £3.60 Tea £1.20 Packet of crisps £1 Sandwich £3.49 Coffee £1.85 Piece of fruit 60 p £4.23 Salad Soft drink 95p Cereal bar 86 p Lucy buys a cereal bar, a coffee, a salad and a piece of fruit. (a) Write down the prices for these items in order of cost. Start with the cheapest. [2] 60p 86p E1.85 E4.23 Cheapest The café offers a Meal Deal. (b) Buy any main item with a drink and snack for £5. Jason buys a sandwich. Later he buys a tea and a packet of crisps. E3.49 E1.20 E1How much less would he have paid if he had bought these three items using the Meal Deal? [2] 3.49 + 1.20 + 1.00 = £5.695.69-5.00=69p less (C) On Monday, Emma buys 8 soft drinks. (i) What is the total cost for this? [2] $8 \times 95p = £7.60$ On Tuesday, Emma only buys coffees. (ii) She spends £12.95. How many coffees does she buy? [2] $12.95 \div 1.85 = '7 //$

3



only

C300U201 03







Turn over.

(a)	Poter uses numbers and a symbol to correctly write	Ex
. (a)	one equation is greater than and eighth	
	Oische Just Put auf	F 4 7
	Circle what Peter writes.	[1]
	$\frac{1}{7} \le \frac{1}{8} \qquad \frac{1}{7} \ge \frac{1}{8} \qquad \frac{1}{7} = \frac{1}{8} \qquad \left(\frac{1}{7} > \frac{1}{8}\right) \qquad \frac{1}{7} < \frac{1}{8}$	
(b)	A large jar contains 8571 jellybeans. 2857 of the jellybeans in the jar are blue.	
	Use one of the five options shown below to complete the sentence.	[1]
	One fifth One quarter One third One half Two thirds	
	One third of the jellybeans in the jar are blue.	
(c)	$\frac{2857}{8571} = \frac{1}{3}$ Three of the factors of 18 have a sum of 17. Write these three factors in the boxes below. $\frac{18}{571}$	[3]
	1×18 2 × 9 3 × 6	
	269	



	Key: represents 12 cupcakes	$\frac{12}{4} = 3 = \mathbb{A}$
Monday	$\bigcirc \diamondsuit \diamondsuit$	36
Tuesday	$\bigoplus \bigoplus$	21
Nednesday	$\bigoplus \bigoplus \bigoplus \bigoplus$	48
Thursday	$\bigcirc \diamondsuit \triangleleft$	30
Friday		42.
a) Rhys sold (i) Com (ii) How 、ろん+つ	42 cupcakes on Friday. The pictogram for Friday. $42 \div i2 = 3 \cdot i2$ The many cupcakes did Rhys sell in total from Monday to F $1 \pm 48 \pm 30 \pm 42 = 177$	5 [Friday? [2
	177. cupcakes sold in total from Monday to Frid	ay.
b) On Saturd Explain wh	ay, Rhys sold 17 cupcakes. ny the key used for the pictogram is not suitable to shov つた divisible by る	v this. [





6.	Philin	p has 250 coins in his money box.	Examine only
	•	22% are f1 coins	
	•	$\frac{2}{2}$ are 20p coins	
	•	5 The rest are 10p coins.	
	(a)	How many £1 coins are there in Philip's money box? [2]	
	<u>.</u> c	$22 \times 250 = 55$	
		00 "	
	(b)	How many 20p coins are there in Philip's money box? [2]	
		5	
	(c)	What is the total value of the coins in Philip's money box? [4]	
		55+100=155	
	2	$150 - 155 = 95 \rightarrow 10p$ coins	
		$95 \times 0.10 = 9.50$ Total =	
	1	100×0.20=20.00 + E84.50	
		$55 \times 1.00 = 55.00$	









C300U201









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PLEASE DO NOT WRITE ON THIS PAGE



(C300U20-1)



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	Hours of exercise per week	2	4	1	7	5.5	
	Resting heart rate (bpm)	70	58	60	55	57	
	Plot these results o	n the scatter	r diagram.				[2]
)	Ken recorded one p	erson's rest	ing heart rate	e incorrectly.			
	Circle the point on t	he scatter d	iagram that t	his is most li	kely to be.		[1]
	Describe the relatio	nahin hatur	an hauna af i		week and re	ating boart r	into of
)	the people Ken ask	ed.	ded incorrect		week and re	isting neart r	ate of
	· ·	at was record		uy.			[1]
				mat	ind ha	- dina	te
4	nes the	MALLER	their		<i>IIC C C U U</i>	TTVXYV	
sk 	ces,the	lower	their				<u></u>
	oes "the	lower.	their				



	i vvaik	Bus	Bike	Car	Train	Oth
Probability	0.2	0.35	0.3			0
(i) A stud	ent is chosen a	t random				
What is	s the probability	y that this st	udent walks t	to school or	r travels to so	chool b
bus?		- ~ ~				
0·2	+ 0.35	= 0.5	5 jj			
(ii) How m	any of the 740	students tra	ivel to school	by bus?		
0.35	5 X 74C) = 20	Ч //			
(iii) The pr a stude	obability that a ent travels to so	student trav chool by trai	rels to school n.	by car is <u>t</u>	wice the pro	bability
Calcula	ate the probabi	lity that a stu	udent travels	to school b	y train.	
0.2	+0.35	+0.3	= 0.8	5		
	0.85 =	= 0.15				
0.1	5-3=	0.05				
P(c	ar)=0.	05×2	= 0,1			
	· ` -	C C V I	- 0.00			



Examiner only

Examiner only The Venn diagram shows information about the number of students who study (b) Music and Drama in Year 11 at Geomet High School. ε Music Drama 17 14 11 62 There are 104 students in Year 11. (i) Complete the Venn diagram to show the number of students in Year 11 who do not study Music or Drama. [1] 17 + 14 + 11 = 42 104 - 42 = 62-----..... What is the probability that a student chosen at random from Year 11 studies (ii) Music? [2] # students study music = 17+14 = 31 P(music) = 31104 "

19



Turn over.

15.	A shop sells storage boxes. A stack of four of these boxes is shown below.	Examine only
	5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6	
	The height of a single box is 35.2 cm.	
	A different stack of these boxes has a height of 85.6 cm . How many boxes are in this stack? [5 $52 - 35.2 = 16 \cdot 8$	5]
	$16.8 \div 3 = 5.6 \text{ cm}$ height of top lip.	
	50.6 - 35.2 = 50.4 7 $50.4 \div 5.6 = 9$ boxes + 1 base box	
	9+1= 10 boxes altogether	
	[other methods]	
	20 @WIEC CBAC Ltd (C3001/20-1)]







Examiner only 18. Use: Pressure = $\frac{\text{Force (N)}}{\text{Area (cm^2)}}$ The base of a filing cabinet is a rectangle. It measures 45 cm by 60 cm. The whole of the base is in contact with the horizontal ground. (a) The empty filing cabinet exerts a force of 675N on the ground. What is the pressure exerted on the ground by the empty filing cabinet? Give your answer in N/cm². [2] $L \times W = 45 \times 60 = 2700 \text{ cm}^2$ Area $F = 675 = 0.25 \text{ N/cm}^2$ 2700 (b) When the filing cabinet is full, the pressure it exerts on the ground is 0.75 N/cm^2 . What is the force that the full filing cabinet exerts on the ground? Give your answer in newtons (N). [2] $F = P \times A$ $= 0.75 \times 2700$ =2025 N





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	"The graph	n shows th	hat 70% c	of people (owned a d	lesktop co	omputer i	n 2009
	Decuase II	pusses 11	a ough m	ai point.			00	ad ye
	Is Jane cor	rect?	[]					/
		Yes	5	No				
	Explain how	w you deci	ide.					[
r	Je onl	y ha	ave c	lata	for	ever	n yr	ars
r	nct ad		200				J	
			WS.					
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	1-11.1				C 1			
b) The inter	table shows i rnet connectic	informatio	n about th even-num	e percenta	age of hou rs from 20	useholds ii 106 to 201	n Eduvale 8	that had a
n ito						00 10 201	0.	
Y	ear	2006	2008	2010	2012	2014	2016	2018
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iternet co	nnection (%) On the diag	45 jram on pa	53 age 24, plo	66 ot the infor	79 mation fo	84 r internet o	88 connectior	89 n. [
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Examine only 20. The diagram shows a circle inside a square of side 8.2 cm. (a) 8.2 cm $C = \frac{d}{2} = \frac{8.2}{2} = 4.1$ 4.1cm Diagram not drawn to scale The sides of the square are tangents to the circle. Find the area of the shaded region. You must show all your working. [4] Area circle = $\pi r^2 = \pi \times 4 \cdot l^2 = 52 \cdot 81 \text{ cm}^2$ Area square = $8.2 \times 8.2 = 67.24 \text{ cm}^2$ region = 67.24 - 52.81Shaded $= 14.43 \text{ cm}^2$

Examiner only The diagram shows a parallelogram. It is the cross-section of a prism. (b) 7 cm 8 cm 9.8 cm Diagram not drawn to scale The length of the prism is 16 cm. Find the volume of the prism. [3] Volume = Area x Length = (9.8×7) × 16 1097.6 cm3 روسیسی میسین

. (a)	Solve $7x - 5 = 2x + 3$.	[2]
	<u>-22 -22</u> 57 - 5 = 3	
	+5 +5	
	5x = 8	
	5 5	
	$\gamma = 1^{\circ}G$	
(b)	Roza is buying bananas and apples.	
	She buys x bananas which cost 30 pence each. She buys 2 more apples than the number of bananas she buys. $x + 2$ Her apples cost 25 pence each.	
	She pays a total of £5.45.	
	Use an algebraic method to find the number of bananas Roza buys.	[4]
	30x + 25(x+2) = 545	
	30x + 25x + 50 = 545	
	55x + 50 = 545	
	-50 -50	
	55x = 495	
	-55 ÷55	
	x = 9	
(C)	Factorise $x^2 + 5x + 4$.	[2]
. ,	(x + 4)(x + 1)	







	30	
23. H N H	eath has £3000 to invest for five years. o extra money will be paid in or withdrawn during these five years. e is going to choose one of these accounts.	Exam
	Account A 4% compound interest per year * Interest rates can vary * A Account B Guaranteed interest at the end of 5 years of £190 for each £1000 invested	
(;	a) Which account gives Heath the greater percentage increase in his money at the end of 5 years and by how much is it greater?	
	Show how you decide. State any assumption that you make. [6	6]
A) $100\% + 4\% = 104\% = 1.04$	
	3000 × 1.04 = £3649.96	
(P) $190 \times 3 = 570$	
	$ (A) \frac{649.96}{3000} \times 100 = 21.7\% $	
	$(B) \frac{570}{3000} \times 100 = 19\%$	
	21.7 - 19 = 2.7%	
Ac	ccount A gives the greater percentage increase by $2 \cdot 7$ %	
As	ssumption Interest rate will not change	
(t	b) Comment on the effect that your assumption in part (a) has had on your decision.	1]
IF	interest rate in (A) goes down, then (A) may	
α	t have the greater increase,	
		I

