Centre Number

First name(s)

GCSE



3300U60-1

TUESDAY, 14 JUNE 2022 - MORNING

MATHEMATICS UNIT 2: CALCULATOR-ALLOWED HIGHER TIER

1 hour 35 minutes

ADDITIONAL MATERIALS

A calculator will be required for this examination.

A ruler, a 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 at the back of the booklet. Question numbers must be given for all work written on the additional page.

Take π as 3.14 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.

In question **4**, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.



For Ex	aminer's us	e only
Question	Maximum Mark	Mark Awarded
1.	2	
2.	4	
3.	5	
4.	8	
5.	5	
6.	1	
7.	6	
8.	6	
9.	4	
10.	3	
11.	6	
12.	3	
13.	2	
14.	3	
15.	3	
16.	6	
17.	3	
Total	70	

Formula List – Higher Tier
Area of trapezium =
$$\frac{1}{2}(a + b)h$$

Volume of prism = area of cross-section × length
Volume of sphere = $\frac{4}{3}\pi x^3$
Surface area of sphere = $4\pi x^2$
Volume of cone = $\frac{1}{3}\pi x^2 h$
Curved surface area of cone = πx^2
In any triangle *ABC*
Sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
Cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$
Area of triangle = $\frac{1}{2}ab \sin C$
The Quadratic Equation
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by $x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$

AER, as a decimal, is calculated using the formula $\left(1 + \frac{i}{n}\right) - 1$, where *i* is the nominal interest rate per annum as a decimal and *n* is the number of compounding periods per annum.







Turn over.

(a) Make <i>m</i> the subject of the formula $w = 8m - 3$.	[2]
(b) Expand and simplify $(y+5)(y-4)$.	[2]
The height of a cylinder is 24.8 cm. The ratio of the diameter of the cylinder to the height of the cylinder is 3 : 2. Find the volume of the cylinder. Give your answer correct to 2 significant figures. You must show all your working.	[5]







(a)	Fact	orise $8x^2 + 6xy$.					[2]	0
(b)	(i)	Factorise x^2 +	13 <i>x</i> + 40.				[2]	
	(ii)	Explain how yo	u can che	eck that your answ	ver to part (i) is cor	rect.	[1]	
Calcu Circle 3·64	late the d 48 ×	$5.7 \times 10^5 \times 6.4 \times 0$ orrect answer. $0^8 \qquad 3.648 \times 0^{-8}$	< 10 ⁻² .	-3.648×10^6	3.648 × 10 ³	3·648 × 10 ⁶	[1]	











(ii) He	ence, find the height of the cubo	id.	Exami only
	Height of the cuboid =	cm	

	10	
).	Calculate the total surface area of a solid hemisphere with a radius of 34 cm. [4]	ixami only
	Diagram not drawn to scale	
	lotal surface area = cm ²	

10.	The value of y is found using the formula $y = \frac{t}{2}$.	Examir only
	t = 98, correct to 2 significant figures.	
	w = 0.5, correct to 1 significant figure.	
	Calculate the least value of <i>y</i> . Give your answer correct to 1 decimal place	
	You must show all your working.	[3]
	Least value of <i>y</i> =	



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Express the following as a single fraction in its simplest form.	[3]
$\frac{4}{3x-7} + \frac{5}{2x+9}$	











				CIUW.		
				В	2.	x cm
(7-2x) cm	A		(5x +	1) cm		
					Diag draw	grams not /n to scale
The area of squar	re A is equal to the	e area of re	ctangle B.			
Form an equation Give your answer You must show al	in <i>x</i> and hence of correct to 1 decired your working.	calculate the mal place.	e value of x.			[6]

Solid A has a volume of 8000 cm ³ and a height of 30 cm. Solid B has a volume of 4913 cm ³ . Calculate the height of Solid B.	[3]
Calculate the height of Solid B.	[3]
Height of Solid B =cm	
END OF PAPER	

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Examiner only



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PLEASE DO NOT WRITE ON THIS PAGE

