

Print copy of Braille text (UEB)

WJEC Eduqas GCSE
C300UB0-1
Mathematics – Component 2
Calculator-Allowed Mathematics
Higher Tier

Wednesday 4 June 2025 – Morning
2 hours 15 minutes **plus your additional time allowance**

ADDITIONAL MATERIALS

You must have: Calculator, tactile ruler and protractor, pair of compasses and drawing equipment e.g. geometry board, rubber mat, mapping pins, rubber bands, drawing stylus and spur wheel.

ITEMS INCLUDED WITH QUESTION PAPER

- A separate Formula List.
- A separate Diagram Booklet.
- Models for Question 8, Question 13, Question 15 and Question 20
- Bump on for Question 1 (b) and Question 23
- Sticky label for Question 23
- Wikki Stix for Question 21, Question 23 and Question 24

INSTRUCTIONS TO CANDIDATES

- **On your paper**, write your name, centre number and candidate number.
- Answer ALL the questions **on your paper**.
- 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.

Answer ALL questions.

1. (a) Solve $3(4x - 2) = 7 - 8x$

Ans: ____ [3 marks]

(b) Look at the diagram for Question 1 (b) in the separate Diagram Booklet. The diagram is a number line.

Represent the solution to the inequality $-2 \leq 4n < 4$ on the number line. A spare tactile diagram, bumpons and drawing film are available for this question.

Ans: ____ [2 marks]

(c) Factorise $2x^2 - 14x$

Ans: ____ [2 marks]

2. Look at the diagram for Question 2 in the separate Diagram Booklet. The diagram is a scatter diagram.

When selling an apartment, the selling price can be calculated using the price per square metre of floor area.

The scatter diagram shows the price per square metre of 12 apartments and their distance from Educastle city centre. It also shows the line of best fit for the data.

(a) Describe the relationship between the price per square metre of an apartment and its distance from Educastle city centre.

Ans: ____ [1 mark]

(b) Use the line of best fit to estimate the price per square metre of an apartment that is 4 miles from Educastle city centre.

Ans: ____ [1 mark]

(c) Ellie says,

“All apartments 7.5 miles from Educastle city centre cost £4000 per square metre.”

Is Ellie’s statement correct?

Yes OR No

Ans: ____

Give the reason for your answer

Ans: ____ [1 mark]

(d) Look at the table below for Question 2 (d).

The table shows information about the house prices of 35 houses on a street outside Educastle city centre.

Price, p , thousand pounds	Frequency
$100 < p \leq 150$	8
$150 < p \leq 200$	12
$200 < p \leq 250$	9
$250 < p \leq 300$	5
$300 < p \leq 350$	1

Calculate an estimate for the mean house price on the street.

Ans: ____ [4 marks]

3. Look at the diagram for Question 3 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

The diagram shows a square inside a circle.

Each corner of the square lies on the circumference of the circle.

The length of each side of the square is 13 cm.

Calculate the area of the circle.

Give your answer correct to 1 decimal place.

You must show all your working.

Ans: Area of the circle = ____ cm^2 [5 marks]

4. Yasmin has two bags, Bag A and Bag B.
Each bag contains some red counters and some blue counters.

Bag A contains 2 red counters and 3 blue counters.
In Bag B the number of red counters is three times the number of blue counters.

Yasmin randomly chooses one counter from Bag A and then one counter from Bag B.

(a) Look at the diagram for Question 4 (a) in the separate Diagram Booklet. The diagram shows an incomplete probability tree diagram.

Complete the probability tree diagram.

Ans: (i) ____ (ii) ____ (iii) ____ (iv) ____ (v) ____ (vi) ____ [3 marks]

(b) Calculate the probability that Yasmin chooses at least one blue counter.

Ans: ____ [3 marks]

5. (a) Look at the diagram for Question 5 (a) in the separate Diagram Booklet. The diagram shows five straight-line graphs: Graph A, Graph B, Graph C, Graph D and Graph E.

Their equations are shown in the table below.

Complete the table to match each graph to its equation.

One has been completed for you.

Equation	Graph
$y = 2x + 1$	(i)
$y = x$	Graph A
$y = -x - 1$	(ii)
$y = 2x$	(iii)
$y = -2x + 1$	(iv)

Ans: (i) ____ (ii) ____ (iii) ____ (iv) ____ [2 marks]

(b) Choose the equation of the straight line that is parallel to $y = 3x + 5$

P. $3y = x + 5$

Q. $y = -3x$

R. $2y = 6x + 8$

S. $y = \frac{1}{3}x + 5$

T. $y + 3x = 7$

Ans: ____ [1 mark]

(c) Make y the subject of the following formula.

$$\frac{y}{t} + u = x$$

Ans: ____ [2 marks]

6. (a) Look at the diagram for Question 6 (a) in the separate Diagram Booklet. The diagram is NOT drawn to scale.
The diagram shows triangle ABC.

In the diagram:

$AC = 15 \text{ cm}$

$\text{Angle BAC} = 38^\circ$

Angle ABC is a right angle.

Calculate the length of AB.

Ans: ____ [3 marks]

(b) Look at the diagram for Question 6 (b) in the separate Diagram Booklet. The diagram is NOT drawn to scale.
The diagram shows triangle DFE.

In the diagram:

$DF = 19 \text{ cm}$

$FE = 17 \text{ cm}$

Angle DFE is a right angle.

Calculate the size of angle DEF.

Ans: ____ [3 marks]

7. Greg has been saving 10p and 20p coins in a money jar.

The ratio of the number of 10p coins to the number of 20p coins in Greg's money jar is 2:7

Greg gives all the 20p coins to his children, Rona and Jamie, in the ratio 3:4

The 20p coins that Rona was given have a total value of £3.60

What was the total value of the coins in Greg's money jar?

You must show all your working.

Ans: The total value of the coins in Greg's money jar was ____ [6 marks]

8. Ask for the models for Question 8

The models are NOT made to scale.

There are two models.

Model 1 represents a wooden block.

Zachary saws off a small block that is 30% of the original wooden block.

Model 2 represents the small block.

The mass of Zachary's small block is 5.4 kg.

The density of the wood is 0.75 g/cm^3

(a) Calculate the volume of the ORIGINAL wooden block.

Ans: ____ [5 marks]

(b) Zachary converts the volume of the wooden block from cubic centimetres (cm^3) to cubic inches (in^3).

He uses the conversion $2.5 \text{ cm} \approx 1 \text{ inch}$.

Zachary says,

"To convert the volume from cm^3 into in^3 I must divide the volume by 2.5"

Explain why Zachary's method is incorrect.

Ans: ____ [1 mark]

9. (a) **Choose** the expression that is equivalent to $(b \times 10^x) \div (c \times 10^{-y})$

L. $bc \times 10^{x-y}$

M. $\frac{b}{c} \times 10^{x-y}$

N. $\frac{b}{c} \times 10^{x+y}$

O. $\frac{b}{c} \times 10^{\frac{x}{-y}}$

P. $(b - c) \times 10^{x+y}$

Ans: ____ [1 mark]

(b) **Choose** the expression that is equivalent to $a \left(\sqrt{a}\right)^5$

Q. a^5

R. $5\sqrt{a}$

S. $\frac{1}{a^5}$

T. $a^2\sqrt{a}$

U. $a^4\sqrt{a}$

Ans: ____ [1 mark]

(c) Choose the expression that is equivalent to $a \left(\frac{f}{g} \right)^{-\frac{1}{3}}$

V. $\sqrt[3]{\frac{g}{f}}$

W. $\sqrt[3]{\frac{f}{g}}$

X. $\frac{g}{\sqrt[3]{f}}$

Y. $\frac{f}{\sqrt[3]{g}}$

Z. $\left(\frac{f}{g} \right)^3$

Ans: ____ [1 mark]

10. Look at the diagram for Question 10 in the Diagram Booklet.
The diagram is NOT drawn to scale.
The diagram shows triangle ABC.

In the diagram:

The lines AC and DE are parallel.

D is a point on the line AB such that AD:DB is in the ratio 5:2

The length of AC is 23.8 cm.

Calculate the length of DE.

Ans: ____ [2 marks]

11. Prove that $(n + 4)^2 - (n - 1)^2$ is a multiple of 5 for all integer values of n.

You must use an algebraic method (not trial and improvement).

Ans: ____ [3 marks]

12. Look at the diagram for Question 12 in the separate Diagram Booklet.
The diagram shows seven box plots.

Isaias recorded the number of hours of sleep he had each night last year.
The box plots show the results.

(a) On which day was the median number of hours of sleep the greatest?

Ans: ____ [1 mark]

(b) Calculate the range of the number of hours of sleep on Fridays.

Ans: ____ [1 mark]

(c) Complete the following sentence.

On 25% of Mondays Isaias slept longer than

Ans: ____ hours ____ minutes [1 mark]

(d) Isaias recorded the number of hours of sleep he had on the 52
Thursdays last year.

On how many Thursdays last year did Isaias sleep for 7 hours or less?

Ans: ____ [2 marks]

(e) Which day of the week is Isaias's sleep pattern the most consistent?
Give a reason for your answer

Ans: ____ [1 mark]

13. Ask for the models for Question 13

The models are NOT made to scale.

There are two models: Model A and Model B.

Model A is a hemisphere, centre O, with radius 9 cm cut into 10 equal
pieces.

One piece has been removed.

The removed piece is Model B.

Calculate the total surface area of the removed piece.

You must show all your working.

Ans: ____ [5 marks]

14. Simplify $\frac{y^2 + y - 12}{3y + 12}$

Ans: ____ [4 marks]

15. Ask for the models for Question 15

The models are NOT made to scale.
There are two models.
Model 1 represents a large tank.
Model 2 represents a tin of paint.

Paint is stored in large tanks.
The volume of paint in each tank is 1500 litres, CORRECT TO THE NEAREST 20 LITRES.

The paint from the tank is poured into tins.
Each tin has a capacity of 10 litres, CORRECT TO THE NEAREST 0.1 LITRE.

Calculate the maximum number of tins that can be filled using paint from one of the tanks.

Ans: ____ [4 marks]

16. Look at the diagram for Question 16 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

The diagram shows points A, B and C on the circumference of a circle with centre O.

The line DAE is a tangent to the circle.

In the diagram:

Angle EAC = 65°

Angle BOC = x°

Show that $\text{angle ABO} = \left(\frac{1}{2}x - 25\right)^\circ$

Give a reason for each step of your answer.

Ans: ____ [4 marks]

17. Look at the diagrams for Question 17 in the separate Diagram Booklet. The diagrams are NOT drawn to scale.
There are two diagrams: Diagram 1 and Diagram 2
Diagram 1 shows a kite labelled ABCD.

In the diagram:

$$AB = 11 \text{ mm}$$

$$\text{Angle DAB} = 107^\circ$$

Diagram 2 shows a logo created by arranging 8 of the kites inside an OCTAGON.

Calculate the area of one shaded triangle.

Hence, calculate the total area of the shaded region of the logo.

Ans: ____ [6 marks]

18. Rohan invests money in a compound interest account with interest paid annually.

The interest rate stays the same for the period of the investment.

In 4 years, his investment has increased in value from £7800 to £8950.70

How much will his investment be worth after a further 3 years?

Give your answer correct to the nearest pound.

Ans: After a further 3 years, Rohan's investment is worth ____ to the nearest pound. [5 marks]

19. y is directly proportional to the square root of x .

$$y = 0.14 \text{ when } x = 0.49$$

(a) Find the formula for y in terms of x .

Ans: ____ [3 marks]

(b) Calculate the value of y when $x = 5.29$

Ans: ____ [1 mark]

20. Ask for the models for Question 20

The models are NOT made to scale.

There are three models.

Model 1 is a large pyramid. The base of the large pyramid is a square with sides of length 40 cm.

A small pyramid is REMOVED from the top of the large pyramid.

Model 2 is the small pyramid that has been REMOVED. The base of the small pyramid is a square with sides of length 16 cm.

Model 3 is the part of the large pyramid that is left after the small pyramid has been removed.

What percentage of the large pyramid's volume has been removed?

Ans: ____ [3 marks]

21. Look at the diagram for Question 21 in the separate Diagram Booklet. The diagram is NOT drawn to scale.

A boat makes the following journey from Port A to Port C.

- It sails 30 km on a bearing of 108° from Port A to Port B.
- It then sails 42 km on a bearing of 065° from Port B to Port C.

On its return journey, the boat travels directly from Port C to Port A. This journey takes 1 hour and 45 minutes.

Calculate the average speed of the boat on its return journey.

A spare tactile diagram and Wikki Stix are available for this question.

Ans: The average speed of the boat is ____ km/h [6 marks]

22. Look at the diagram for Question 22 in the separate Diagram Booklet. The diagram is NOT drawn to scale.

The diagram shows Circle A and Circle B.

Circle A has its centre at the origin.

Circle B has its centre at (7,0) and passes through the origin.

Circle A and Circle B touch at the same point on the x axis.

Write down the equation of Circle A.

Ans: ____ [2 marks]

23. Look at the diagram for Question 23 in the separate Diagram Booklet.
The diagram shows a sketch of $y = f(x)$
It has a stationary point at (3,5)

On the same diagram, sketch $y = f(x + 4)$

Mark clearly the coordinates of the stationary point.

A spare tactile diagram, a bumpon, Wikki Stix, sticky label and drawing film are available for this question.

Ans: ____ [2 marks]

24. Look at the diagram for Question 24 in the separate Diagram Booklet.
The diagram is a graph.

The graph shows a curve and a straight line.

Use FIVE vertical strips of equal width to calculate an estimate for the area of the shaded region.

You must show all your working.

A spare tactile diagram and Wikki Stix are provided for this question.

Ans: ____ [5 marks]

25. A tank containing 1000 litres of water was emptied in two stages.
During the first stage, 400 litres were emptied out of the tank at a constant rate.

This took x minutes.

During the second stage, the remaining water was emptied out at a different constant rate. This took $x - 26$ minutes.

During the second stage, the rate of flow of the water from the tank was 17 litres per minute faster than the rate of flow during the first stage.

(a) Show that $17x^2 - 642x - 10,400 = 0$

Ans: ____ [5 marks]

(b) By solving $17x^2 - 642x - 10,400 = 0$ find the value of x .

You must show all your working.

Ans: ____ [3 marks]

TOTAL 120 MARKS

END OF PAPER
