Questions matter

# GCSE

# Mathematics

## 8300/3F Paper 3 (calculator) Foundation

## Report on the Examination

June 2025

Version: 1.0

# Contents

The below table is interactive. You can press the control button click on the title of the question to go directly to that page.



© 2025 AQA and its licensors. All rights reserved.

# Summary

## Overall performance compared to last year

There was no evidence of time pressure with most students able to complete the whole paper. Some of the questions that were common with the Higher tier proved challenging for students on this tier. Students were rewarded for good use of mathematics shown at different levels of ability. Students did not always show working when instructed to do so and some used non-calculator methods, particularly in percentage questions.
In general, students performed similarly on this paper to that in June 2024.

## Topics where students excelled

- Linear sequence pattern
- Coordinates
- Systematic listing and fraction of total list
- Number machine
- Fraction Decimal Percentage Equivalence
- Metric units
- Best Buy and Multiplication
- Money Problem
- Percentage and number problem

## Topics where students struggled

- Coins and modal value
- Forming linear equation with Perimeter
- Relative frequency problem and evaluation
- Use a pie chart
- Use a scale 1:$n$, $n$ large
- Bearing
- Linear Sequence
- Money and ratio
- Venn diagram problem solving
- Pythagoras AO2
- Equation of a line parallel to a given line
- Equation of a line given gradient and point

© 2025 AQA and its licensors. All rights reserved.

# Individual questions

## Question 1a

This linear sequence pattern was answered very well by the very large majority of the students with some condoned omission of shading.

## Question 1b

Most students correctly answered with 10 squares however some incorrectly doubled the number of squares from pattern 3.

## Question 2a

This coordinates question was answered very well with some students reversing the $x$ and $y$ coordinates.

## Question 2b

This midpoint question was answered very well with some students reversing the $x$ and $y$ coordinates which was awarded SC1 in part (b) for reversing the correct coordinates in both parts (a) and (b).

## Question 3a

The very large majority of students answered this systematic listing question very well with some combining two fillings incorrectly either with or without bread eg CH or WHT.

## Question 3b

A very well answered question with the most common incorrect answer of $\frac{2}{5}$ from not including the combination already given in the table.

## Question 4a

The very large majority of students answered this question very well with some making an arithmetic error in the subtraction without using a calculator.

## Question 4b

A well answered question. The most common incorrect answers included students using 19 as the input, using 19 as the output and working in reverse with one or more incorrect operations.

## Question 4c

The very large majority of students answered correctly with $\div 6$ or $-15$ with some incorrectly answering 6 or 15 only without the necessary operator.

© 2025 AQA and its licensors. All rights reserved.

## Question 5a

A very well answered question.

## Question 5b

A well answered question. The most common misconception was to answer with the fraction $\frac{3}{4}$ rather than using the percentage 75%.

## Question 6

The very large majority of students correctly answered this question very well.

## Question 7a

A very well answered question. Some students did not show $11 \times 24 = 264$ as a separate full calculation and some incorrectly wrote explanations of the calculation in words. The following two frequently seen examples were condoned $11 \times 24 = 264 + 500 = 764$ and $11 \times 24$ and $264 + 500 = 764$.

## Question 7b

This question was well answered. After correctly calculating $35 \times 24 = 840$ some students had difficulty calculating the 10% reduction whilst others showed a misconception in answering 84.

## Question 8

A very well answered AO3 money problem solving question. The most common misconceptions were for calculating the cost of one hotdog from £7.60 as the total cost of either two or four hotdogs.

## Question 9a

This square root calculator problem was answered reasonably well. Some students gave answers $4^2$ or $16$ in the smallest position and $9^2$ or $81$ in the smallest position. Misconceptions included using $10^2$ and $99^2$, or simply 10 and 99, from incorrectly thinking they needed to use an initial 2-digit number.

## Question 9b

This reasoning question was answered reasonably well. Misconceptions included incorrectly stating that 0.512 was larger than 0.64 or that multiplying decimals makes them smaller.

© 2025 AQA and its licensors. All rights reserved.

## Question 10a

The coins and modal value AO3 question was poorly answered. Misconceptions were common with the most common being not including the units with the coins listed, others included writing the total number of coins used as the answer, writing the number of coins that were the mode as the answer eg 4 for 4 × £1, giving the total of the modal coins as the answer eg 2 × £2 or 4 × £1 and answering £4, or just listing the coins used and not stating the modal value.

## Question 10b

This question was answered reasonably well. Common errors included stopping after ordering the given numbers, giving the answer 4 for the middle value of the unordered list and incorrectly calculating the mean of the given numbers.

## Question 11

A well answered percentage and number question. A common approach was $6 \times 20 = 120$, then adding on an attempt at calculating 70% of 120. Some students correctly calculated 84 but did not always add this to 120 also 1.7 was rarely used as a multiplier of 120 to achieve 204. 134 was a common incorrect answer from adding 70% of 20 to 120.

## Question 12

A reasonably well answered question where most students correctly identified issues with the given scatter graph. Most of the correct answers identified mistakes for the line of best fit and the incorrect point plotted at (4, 20 000). Common errors were that the LOBF only goes through one point, they have not connected the dots, age 3 has two crosses, put 500 when it's meant to be to the nearest 1000, started from 500 when the lowest number in the table is 5000.

## Question 13

This ratio of areas question was answered well by most students. Many students counted the correct number of squares for the areas. The most common incorrect answers were calculating the perimeter of the shapes, 15:16 from not correctly calculating the area of the triangle and miscounting the number of squares for the area of the shapes.

## Question 14a+b

Both parts (a) and (b) of the probability question were answered reasonably well. In part (a) the most common error was from calculating $0.1 + 0.24$ incorrectly as 0.25 with P(Green) = P(Yellow) as 0.375. Common misconceptions were assuming that the probabilities increased by 0.14 with P(Green) = 0.38 and P(Yellow) = 0.52, using $0.1 + 0.24 = 0.34$ and P(Green) = P(Yellow) as either 0.34 or 0.17.

In part (b) the majority of students had success where they correctly worked out $0.24 \times 600 = 144$, some went on to work out $600 - 144 = 456$ but then stated 144 as their answer. Some students attempted to work out the number of red, blue and yellow cards separately but were not as successful and often included incorrectly the number of blue cards.

© 2025 AQA and its licensors. All rights reserved.

## Question 15

This congruence criteria question was answered reasonably well.

## Question 16

The A03 problem solving question involving forming a linear equation to calculate the perimeter of an equilateral triangle was answered very poorly.
There were many instances of ineffective algebra skills, and many were unable to form an equation but simply tried to add expressions incorrectly eg $2x + 12 = 14x$.
Some students attempted trial and improvement, often without success, others stated 5 and then gave an answer of 15. Another common misconception was to use the two expressions of the sides incorrectly in an angle sum for the triangle with $6x - 8 + 2x + 12 = 180$.

## Question 17a

Many students did not answer this relative frequency problem well. A significant number of students calculated 132 correctly but then were unsure how to answer for relative frequency using a fraction, decimal or percentage and answered 132. Other common misconceptions were to answer 72.75 from adding values in the question or to answer 0.6 from 72 ÷ 120.

## Question 17b

The majority of students were unable to evaluate which data set to use for the best estimate of probability. A common correct answer was more throws makes it more accurate, with a common misconception involved students stating there would be more possibility of landing on heads with more throws.

## Question 18

This interpreting a pie chart question was answered poorly with many students not knowing how to start the AO3 problem. The majority of students who were successful calculated their answer using the number of degrees per match. Some students worked proportionally using the angles with $\frac{132}{180} \times 30 = 22$. Some students lost accuracy by prematurely rounding decimals and not using exact values in further calculations. The approach of calculating 45° equating to 7.5 games and the adjustment 3° = 0.5 game to achieve 45° equating to 8 games was seen regularly.

## Question 19a

A significant number of students correctly calculated $5.5 \times 200\,000 = 1\,100\,000$ but then were unable to correctly convert from cm to km. Some only divided by 1000 with an answer 1100 km, others calculated incorrectly with 1 100 000 ÷ 100 ÷ 100 with an answer 110 km.

## Question 19b

This bearing question was answered very poorly and there were a large number of non-attempts. Common incorrect answers were 45°, 225° and 315°.

© 2025 AQA and its licensors. All rights reserved.

## Question 20

Many students did not answer this well and there were a large number of non-attempts. The most common misconceptions were using the incorrect sequence of 6, 9, 12, 15, 18, 22, using the correct sequence but thinking that 6 was the first term not the second so achieving the answer $4n + 2$, working out the next term for the answer, working out a difference of 4 but not knowing how to process further. Common incorrect answers were $n + 4$ or $2n + 4$.

## Question 21

A minority of students correctly answered this problem solving question with a significant number of non-attempts. Of those students who answered correctly both alternative methods were equally successful. Common misconceptions involved calculating Bea's value as two thirds of Cat's amount with $\frac{2}{3} \times 280 = 186.67$ leading to the SC2 answers of 77.77 or 77.78, working with $\frac{2}{3}$ as 60%, dividing 280 or 420 into 17 parts and then multiplying by 5.

## Question 22

A very small minority of students correctly answered this Venn diagram problem solving question with a large number of non-attempts. The most common misconception was to misinterpret P(A) $= \frac{1}{2}$ with the Venn diagram to incorrectly calculate the total as $30 \times 2 = 60$ with $60 - (30 + 20 + 6)$ and an answer of $x = 4$.

## Question 23

A number of students correctly answered this AO2 Pythagoras' theorem question, however overall the question was answered poorly by the large majority with a very large number of non-attempts. Of those who correctly used Pythagoras' theorem in both triangles the most common error was to not show $9^2 + 5^2 = 106$ and $\sqrt{106} = 10.3$ separately but to show only $9^2 + 5^2 = \sqrt{106} = 10.3$ and lose the final accuracy mark for not showing all the steps correctly in the calculation.

## Question 24a

The very large majority of students did not answer this well and there were a very large number of non-attempts. The most common incorrect answers were simply rearrangements of the equation of the given line eg $y = 2x + 9$, multiplying both sides to give an equivalent equation eg $2y - 4x = 18$, changing the gradient eg $y - 3x = 9$ or attempting to find the equation of a perpendicular line.

## Question 24b

This question was poorly answered with the most common answer selected by the majority of students being $y = 3x + 7$ using the values from the coordinate of the given point rather than recognising the gradient of $m = 5$ and using it correctly with $y = mx + c$ to select $y = 5x - 8$ as the correct answer.

© 2025 AQA and its licensors. All rights reserved.

# Further support

**Mark ranges and award of grades**
Grade boundaries and cumulative percentage grades are available on the results statistics page of our website.

**Enhanced Results Analysis (ERA)**
Use our exam results analysis tool to create and customise as many different reports for comparison as you like.

**Professional development**
Attend one of our feedback courses where you can review example responses from students and commentaries from our examiners.

© 2025 AQA and its licensors. All rights reserved.

# Contact us

Our friendly team will be happy to support you between 8am and 5pm, Monday to Friday.

Tel: 0161 957 3852
Email: maths@aqa.org.uk

© 2025 AQA and its licensors. All rights reserved.