Questions matter

GCSE

Mathematics

8300/2F Paper 2 (Calculator) Foundation

Report on the Examination

June 2025

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Contents

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Summary

Overall performance compared to last year

The paper was accessible to most students and the vast majority had sufficient time to complete the paper. The mean mark was slightly higher than last year.
There were a number of questions in which students used non-calculator methods instead of using a calculator, as a consequence some marks were lost due to arithmetical errors being made.

Topics where students excelled

- Solving simple equations
- Solving a bar chart problem
- Unitary method
- Converting kilometres to miles

Topics where students struggled

- Angles in similar shapes
- Finding the probability of combined events
- Working with bounds
- Solving a circle problem

Individual questions

Question 1

The vast majority of students had a good start to the paper. Some gave embedded answers, such as 11 + 8 = 19 for part (a) and then gave the incorrect answer of 19.

Question 2

Generally, very well done with part (b) being done slightly better than part (a). In part (a) some gave the number of sheep rather than cows or gave the total number of animals in the field. In part (b) some students added all three number together to find the total as 178, whilst others thought that fewer than 100 animals was the clue and gave an answer of 99.

Question 3

Less than one third of the cohort gave the correct answer of East to part (a). It was quite common for students to state West or give directions of right or left. Part (b) was much better attempted with almost two thirds gaining credit and almost half gaining full marks. Common errors were to find the correct distance for only one of the two sides, count the squares along the two sides as being 8 rather than 7, or to give the direct distance as 50 metres

Question 4

Approximately 80% gave the correct answers to the first 3 parts, however less than one fifth gave the correct answer to part (d), with common incorrect responses being d and 0

Question 5

Almost all students knew that the distances needed to be added and just over 70% either converted this correctly to km or knew the total had to be compared with 1000 m. Common errors were to think that 1030 could be compared directly to 1 km or think that there are 100 m in 1 km. Although a calculator is allowed there were many who thought they had to add the distances without, unfortunately some of these made errors in their addition,

Question 6

The bar chart was very well drawn with almost 90% gaining full marks. A common error was to read the first bar as having a frequency of 13 rather than 11. Some made errors in arithmetic, usually in subtraction from 50.

Question 7

Almost two thirds gave the correct answer of $\frac{4}{5}$ often starting with $\frac{80}{100}$ and then cancelling.

It was quite common for errors to be made when cancelling and some students didn't manage to correctly deal with 80 being in pence and the 1 in pounds.

Question 8

This question was generally well answered by the majority. Part (b) was the least well done part of this question with just under two thirds using the correct conversion factor correctly. A common error here was to use 100 instead of 1000.

Part (c) was very well done with most students doing the conversion in two separate steps, working out 32 ÷ 8 = 4 then 4 × 5 = 20. Those using a ratio or build up method did not always arrive at the correct value. Common errors were 1.6 × 32 = 51.2 and 32 ÷ 5 = 6.4

Question 9

Less than half the cohort stated the correct time in part (a), many either didn't state pm with 2.30 or did something other than add 4 hours to 10:30 am.

Just over one third gave a fully correct solution in part (b). The most common successful approaches were to find $\frac{1}{4}$ of 8 hours as 120 minutes and to convert 200 minutes to hours and then compare with $\frac{1}{4}$ of 8. Common errors were to convert 200 minutes to hours then add it on to 8, evaluate $\frac{1}{4}$ of 200 instead of 8, and to work out 200 minutes in hours and not show $\frac{1}{4}$ of 8 as 2. Some managed fully correct working and then made the wrong decision.

Question 10

This similarity question was generally not done well. It was quite common for students to apply a scale factor/ratio to both the angle and the length so that the answers 12 in part (a) and 7.5 in part (b) was quite a common combination, another common combination was 12 in (a) and 21 in (b). Only 25% of the cohort appreciated that the angle remained constant and approximately 40% were able to find the correct value for x. It was quite common in part (b) for students to add and subtract lengths rather than use a ratio or scale factor.

Question 11

Less than one third were able to successfully show the two expressions were equivalent. It was quite common for students to multiply out the brackets incorrectly, sometimes multiplying only the first term inside the brackets and sometimes multiplying all 4 terms by the number in front of the brackets. Those who did manage to expand the brackets correctly often made errors in simplifying the terms with $11x + 8$ being seen fairly frequently. It was also quite common for students to show insufficient working.

Question 12

This unitary method question was generally very well done with just over 80% completing the question successfully. Some students thought they were being asked to work out the cost of 7 lots of these 4 apples whilst others did the division the wrong way around and evaluated 4 ÷ 2.20

Question 13

Just over two thirds were able to find the range correctly. It was quite common for students to subtract the first in the list from the last, perhaps not realising the times were not in order of size. In part (b) over one third of the cohort were able to correctly find the number of minutes for the fifth week. Those attempting trial and improvement often trialled 178 and no other value. It was quite common to find the mean value of the 4 given values, and although the question could be answered by starting with this approach it was rare to see further progress being made. It was quite common to see 178 ÷ 5 evaluated.

Question 14

The correct links were drawn by almost 50% of the cohort and a further 30% made just one error. The most common error made was to link '2 less than n' to $2 - n$ rather than $n - 2$

Question 15

Just under 30% ticked Yes and gave a valid explanation. It was quite common to see a correct explanation with No ticked, or just a rectangle with dimensions shown and no indication that perimeter was the sum of the sides. Some thought that they were being asked to confirm that 60 ÷ 10 was indeed 6.

Question 16

Answered correctly by just under half the cohort. Common incorrect answers were $b + 3$ and $3 - b$

Question 17

This 'best buy' problem was solved correctly by approximately 60% of the cohort. The most successful solutions came from those who correctly compared the price for 100g of each or scaled up to find the cost of 500g of Rice A. Students who decided to compare the amount of rice per £1 often came to the wrong conclusion that A was better value for money than B. Those who attempted to compare the difference between the two packs and prices often made little progress. Some attempted to compare multiple packs of rice A and often got as far as £2.20 for 400g or £3.30 for 600g of rice A and incorrectly thought they had sufficient information to make a valid comparison.

Question 18

The vast majority gave the correct ratio for part (a), the most common errors were to state the ratio as 8:1 or 1:7

Part (b) was less well done with approximately 40% being able to give the correct ratio. Some had a good idea as to how to go about simplifying the ratio and gained credit for either 1.2a or 6 ÷ 5, but common incorrect answers included 11, 5.5, 0.5 and 0.83

Part (c) was the least well done part of this question with approximately 30% finding the correct value of x and over 20% not attempting it.

Question 19

Approximately half correctly completed the probability tree. $\frac{3}{8}$ and $\frac{2}{5}$ were quite common. It was fairly rare to see students using the tree to find the probability correctly. Many were able to select the correct fractions, some knew to multiply them but failed to do so correctly whilst others thought they needed to add the probabilities.

Question 20

Approximately 70% of the cohort were able to plot at least 4 of the points accurately and only 25% went on to join them with straight lines. Those who realised the points were to be joined for a time series often curved the line between days 1 and 2. It was quite common to see bar charts drawn and lines of best fit attempted.

It was rare to see a fully correct solution to part (b), mainly due to the units. Students didn't realise their answer was in pence which didn't match the £ sign on the answer line. Over half were unable to predict a value in the expected range or multiply it by 0.018. It was common for students to use 7 or the total of the Number of views for days 1 to 6 as an estimate for the number of views for day 7.

Question 21

Just under 20% of the cohort were able to correctly solve this percentage problem and over half made no successful progress at all. Most were able to start by finding 30%, those who then correctly found 50% of this often then incorrectly added the 15 to 40 and gave the answer as 45. It was quite common for students to just add the 40 to the 50 and give the answer 90. There was a small proportion of students who found the number left in the box rather than removed from the box.

Question 22

Approximately 40% solved this correctly. The majority were able to find the correct cost for the students, then it was quite common then to subtract this total from 927 but then divide by the costs of each student rather than each adult. Most knew they needed to find 48 ÷ 5 for the number of free adults, but it was quite common to round the answer up to 10 rather than down to 9.

Question 23

Rounding to the nearest 10cm was not well understood. Some of the better responses gave the correct lower bound and 164 as the upper bound. It was quite common to give 160 as one of the bounds of the interval. In part (b) 204 was often chosen as the upper bound and multiplied by 3. Those who did write the upper bound as 205 often did not then convert back to metres when they did multiply by 3. Many students did not appear to realise the importance of the measurement to the nearest 10cm and just multiplied 2 by 3.

Question 24

Just over half chose the correct expression as the factor. $3x$ and $x + 15$ were each chosen by approximately 16%

Question 25

It was very rare to see good attempts being made at solving this circle problem. It was very common for students to think that the circumference divided by 4 would give them the radius of the circle. Those that did find the diameter correctly often failed to divide by 2 to find the radius. Sometimes the only work done involved 90 and 20.
Approximately two thirds of the cohort chose the correct option for part (b).

Question 26

Just over 20% correctly found the value of x. It was fairly common for students to correctly write down 4 × tan 36, but then work out tan (36 × 4). Sin36 and cos36 were quite common, those finding the hypotenuse often made no further progress.

Further support

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