
GCSE

Mathematics

8300/3F Paper 3 Foundation

Report on the Examination

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General

The majority of students found the paper accessible and attempted most of the questions. The work was generally well presented with working shown on most scripts. Arithmetic errors caused problems for some students who had otherwise engaged with a question and decided not to use a calculator. Some students either did not use or show the working from their calculator.

Topics that were well done included:

- Solving a linear equation
- Scale drawing
- Unit costs and profit
- Percentage of an amount
- Probability
- Term-to-term sequences
- Proportion and money
- Scale on a map
- Time series graph.

Topics which students found difficult included:

- Range and median from a line chart
- Expectation probability
- Describing rotation
- Mean cost from combinations
- Ratio as a fraction and in the form $1 : n$
- Error intervals
- Algebraic prime number counter example
- Simultaneous equations in context
- Compound decay
- Circumference of a semi-circle in a problem
- Inequalities
- Trigonometry.

Question 1

This question was well answered by the most students. 708 mm was the most common incorrect answer.

Question 2

Approximately half of the students gave the correct answer. 25° was the most popular incorrect choice.

Question 3

This question was not very well answered. 3 and 0 were common incorrect answers.

Question 4

This question was well answered by the majority of students. $\frac{1}{12}$ was the popular incorrect choice.

Question 5

Part (a) of this question was very well answered and part (b) was well answered.

Question 6

This question was very well answered. The majority of scale drawings were neatly done with ruled lines and correct labelling.

Question 7

This question was not very well answered. Most students correctly achieved 101 and 89 for the group totals but many students then identified 32 as an incorrect answer.

Question 8

This question was well answered by the majority of students and proved a good discriminator of the more able students. Common errors were to miss out either or both of the 'fee paid to the market' or 'other costs' in the final calculation; and incorrectly calculating £25 as the cost of the sausages.

Question 9

Parts (a) and (b) were not well answered. In part (a) common errors were calculating the range in the number of weeks using $9 - 2 = 7$ or calculating the mean or the median.

In part (b) the most common error was giving an answer of 2.5 as the median (from using 0, 1, 2, 3, 4, 5). Others included incorrectly listing values omitting the two weeks with no houses.

Part (c) was a good discriminator of the more able students and was reasonably well answered. Common errors included students using non-calculator methods with errors or incorrectly using 0.2 as the multiplier. Some students incorrectly worked out 6% of the total of the three houses.

Question 10

Part (a) was very well answered. However, some students used incorrect ratio notation 1 : 5 and others gave incorrect descriptions 1 out of 5 or 1 in 5

Part (b) was reasonably well answered. The most common incorrect answers were $\frac{3}{5}$ or $\frac{4}{5}$

Part (c) was not well answered with a very common incorrect answer of 17 from dividing 85 by 5.

Others incorrectly gave a final answer of $\frac{34}{85}$

Question 11

This question was reasonably well answered by the majority of students. 9 was the most common incorrect answer.

Question 12

This question was well answered. $3\frac{1}{4}$ was the most popular incorrect choice.

Question 13

This question was a good discriminator but was not very well answered. The most common incorrect answer was $15 \times \frac{1}{9} = 1.6$, whilst other common errors were to correctly calculate 225 and 25 as the area of the squares but then to incorrectly work with 25 by dividing by 2 or 4 or to leave 25 as the answer.

Question 14

Parts (a) and (b) were both reasonably well answered. Common errors in part (a) were to incorrectly add 8 onto -24 to achieve -16 and -8 or to incorrectly divide 8 by 2 first giving answers of -20 and -16 . In part (b), 5.04 was the most common incorrect answer from incorrectly adding 1 first and then dividing by 5.

Question 15

This question was a good discriminator but was not very well answered. The majority of candidates identified rotation as the single transformation but the most common errors were to omit either or both of the angle and direction or centre of rotation. Many students incorrectly described a combined transformation.

Question 16

This question was an excellent discriminator and was well answered. The most common errors were to incorrectly calculate one of either the total claim, the number of gallons or cost of the petrol with some students using incorrect money notation with an answer of £77.2

Question 17

This question was reasonably well answered. However, there were errors in scaling with common errors of 4.7 cm measured, 4.5 cm is 600, $0.2 \times 200 = 40$, answer 640; or 4.7 cm measured, 4.5 cm is 600, then adding on 0.2 or 2 or 20 to give an answer of 600.2, 602 or 620.

Question 18

This question was not well answered. The large majority of students did not use a systematic way to work out the total number of presents but incorrectly used four as the total number of presents and simply divided 84.30 by 4

Question 19

Part (a) was not very well answered with a significant number of non-attempts. Those students who worked with 6500 divided in the ratio to reach 4000 and 2500 tended to be the successful.

Part (b) was not well answered by many students and there were a large number of non-attempts. The majority of students who attempted the question did not appear to understand the ratio form $1 : n$ with common errors of reversing the ratio to answer $1 : 1.6$, whilst some truncated a correct solution of $1 : 0.625$ to give an incorrect answer of $1 : 0.6$

Question 20

Approximately half of the students gave the correct answer. The most popular incorrect choices were 'down' and 'right'.

Question 21

This question was not well answered by the large majority with a significant number of non-attempts. Common errors were to give integer answers in pairs of 109 and 110, 100 and 110, with 105 and 115 being the most frequent incorrect answer.

Question 22

This question was not well answered and there were a large number of non-attempts. Some students correctly substituted in values of n to list values of k but of those who did the very large majority did not correctly identify 91 as the non-prime value.

Question 23

This question was not well answered by the large majority with a significant number of non-attempts. There were very few students using simultaneous equations. Common errors were to divide £3.40 by 3 with £1.13 as the price of tea or £7.30 by 5 with £1.46 as the price of coffee. Other misconceptions were to divide £3.40 by 2 to get £1.70 and then divided by 2 again to get 85p and give £1.70 and 85p as their answers. A trial and improvement approach was not usually successful as prices satisfying one statement were not then fully evaluated in the other statement.

Question 24

Part (a) was reasonably well answered. However, many students had difficulty applying the scale on the graph and consequently many plotted at least one point inaccurately. Some students did not accurately join their points.

Part (b) was well answered by the large majority. Very few students plotted further points or extended their graph, the most common approach was to add on their expected increase. The most common error was to write the expected increase e.g. 529 or to give an increased value out of range.

Question 25

This question was not well answered. The most common error was to work out 20% of £600 as £120 and state that the method is correct. The large majority of students did not appreciate that the question was a compound decay problem.

Question 26

Approximately half of the students gave the correct answer. The most common incorrect answer was -4

Question 27

This question was not well answered by the very large majority and there were a large number of non-attempts. The most common error was not to take account of the semi-circular sections of the race track into calculating the length of a circuit with many showing $0.75 + 0.75 + 0.9 = 2.4$ km or $0.75 + 0.9 + 0.75 + 0.9 = 3.3$ km. Of those who did take the semi-circular sections into account, many did not correctly halve the circumference of the circles with diameter 0.9 km or 0.3 km.

Question 28

This question was not well answered and there were a very large number of non-attempts. The most common errors were mistakes in the stages of solving the inequality e.g. $8 > 2.5x$ or disregarding inequality notation with incorrect attempts at solving equations.

Question 29

This question was not very well answered by the large majority and there were a large number of non-attempts. Many students correctly identified cosine ratio but did not progress further. The most common errors were $\cos = \frac{9}{10}$ without recovery, followed by an answer of 0.9, $\cos^{-1} = \frac{9}{10}$ and incorrectly using Pythagoras' theorem with an answer of 19 or 4.4

Use of statistics

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.