AQA
Realising potential

GCSE
Mathematics

8300: Paper 1 (non-calculator) Foundation

Report on the exam

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Summary

This was the first series with changes made to the assessment. Multiple-choice questions were removed from the start of the papers and efforts were made to ensure that more of the beginnings of the papers were accessible to all. We have worked hard to ensure that ramping of demand, wording of questions and the contexts used are appropriate. This has led to an increase to some of the grade boundaries. As a result we feel students were better able to demonstrate their mathematical knowledge and appeared to have a more positive examination experience.

Topics where students excelled

- Multiples
- Addition and division
- Multiplication involving negatives
- Cubing a given number
- Money problem given in a context
- Substitution
- Converting using a given conversion factor
- Bar chart involving a ratio

Topics where students struggled

- Sharing a ratio in the context of angles on a straight line
- Substitution and rearranging using negative numbers
- Powers of 2
- Criticising the graph of $y = \frac{1}{x}$
- Division of fractions involving a mixed number

Individual questions

Question 1

All parts of Q1 were answered well but the square number question was the least well answered of the 4 parts.

Question 2

All parts were very well attempted. In part (a), the common wrong answer was 560 or to divide by 10 or 100. In part (b) we saw a good variety of answers within the acceptable range. For part (c), the common errors were miscounting or ignoring the half squares. Part (d) saw a variety of shapes being drawn; the most common incorrect rectangle had vertical sides of 2 cm or 4 cm.

Question 3

Parts (b) and (d) were the best answered here with part (c) falling quite a way behind. The difference between parts (c) and (d) seemed to be the negative in (c) which was often still present in the final answer.

Question 4

This was well answered with the most common reason for a loss of a mark being not offering a full simplification or divisions that went awry after $\frac{18}{30}$ had been seen.

Question 5

This proved to be a very accessible question. Nearly all students were able to pick up at least 1 mark by halving the cost of a pen or by finding the special offer price for a calculator. Common wrong answers came from mixing up the units, for example adding 60p to £5.50 to give a final answer of 65.50. A few students mixed the quantities up and worked out the cost of 5 calculators and 1 pen. Both these examples were awarded special cases and only dropped one mark. It was common to see arithmetic errors but in the main, working had been shown so marks could be awarded for the correct method.

Question 6

More than half of the cohort scored full marks on part (a) but there were two main misconceptions. Often students would multiply both top and bottom by 3, resulting in a common answer of $\frac{6}{15}$. The other common mistake was to correctly calculate the 17 for the numerator but then again to multiply the 5 by 3 giving $\frac{17}{15}$. Part (b) was well answered, and the most common wrong answer was $\frac{19}{10}$.

Question 7

A well attempted question with the usual reason for loss of marks being arithmetic error. Students who correctly calculated that 44 days were already in the pictogram usually managed to successfully complete the diagram. The approach of counting days rather than symbols was often more successful. Often after the 11 days had been calculated the “Sun was recorded on 1 more day than fog” was lost and we saw symbols totalling 11 days but not 6 and 5.

Question 8

Part (a) was extremely successful for students with roughly 75% of the cohort scoring full marks. The most common error was to write a 4 in place of P, leading to the calculation $54 - 2$ instead of $20 - 2$. Although part (b) proved problematic for a large proportion of students, there were still more than half able to score something. The use of a negative number was the most difficult part for them to deal with. Students who tried to rearrange the equation first, using the $T \rightarrow + W \rightarrow \div 5$ method, were mainly unsuccessful.

Question 9

Students engaged well with this question although $\frac{1}{5}$ was often linked to 0.05 and $\frac{1}{2}$ to 20%.

Question 10

Calculation A was the easier of the two to perform, with the operations already appearing in the required order. The answer to B was often quoted as -10 instead of 10, but students were able to pick up the third mark on follow-through when this was the case.

Question 11

Attempts to solve this by multiplication were more successful than by build-up, as the arithmetic often went awry during a build-up method. The position of the decimal point proved a struggle for some, but digits of 315 did score 1 mark, regardless of the position (or lack of) of the decimal point.

Question 12

This seemingly straightforward percentage increase question was not found easy by the candidates. Common wrong answers included 120% and 50%.

Question 13

The most common method was to divide 20 by 5 or 8 by 2 to get to the multiplier of 4. It was rare for anyone to notice that $5 - 2 = 3$ could give them the answer from $20 - 8$. Students answered very well with the vast majority of those making a correct start going on to score full marks.

Question 14

Students do not find it easy to make statistical comparisons but there were valiant efforts and a decent proportion of the cohort scored 2 or 3 marks.

Common errors when making a comparison on the percentage of members and guests:

- Many candidates forgot to insert the percent sign after 64 and 36
- Miscalculation of 64 – 36
- Stating ⅔ were members when they needed to qualify it with almost/nearly/approximately

Common errors when making a comparison on the mean:

- Stating there was a difference of 1.5 hours but not saying whose mean was longer
- Stating members stayed for 4 hours, guests 2.5 hours but no mention of average or mean

Common errors when making a comparison on the range:

- Some candidates misunderstood the word range and thought that a range of 8 was better than a range of 6 because it was larger
- There was mention of 6 and 8 hours but these figures were not linked to range
- Stating there was a difference in range of 2 hours but not saying whose range was larger

Question 15

Of those working with area, rather than perimeter, the majority wanted to turn 6, 20 or 14 into a percentage without reference to the size of the larger rectangle. For those who calculated with perimeters, it was rare to see them get far enough to score either of the Special Case marks possible. Scaling was a popular method to get from 6 to 30 and from there to 70%.

Question 16

For the students who realised that the multiplier was 3, the question was straightforward but often students who tried a build-up method were trying to multiply by 4 or 5. Many started off writing 20 ÷ 18 or 18 ÷ 20 but could get no further.

Question 17

It was pleasing to see that most students were able to access the question by using “angle sum on a straight line = 180° ” or by trialing angles in the ratio 1 : 5 : 3. A Trial and Improvement approach was the most common, with students trying various angles to see if they could get the correct multiples of the original angle to sum to 180°. Using 8 parts instead of 9, leading to an answer of 112.5 was a common misconception in this question. An algebraic approach was rarely seen.

Question 18

The evaluations seen on this question were mostly correct. Most answers included at least one prime number and the majority of answers seen were even. Students were engaging well with the questions but sometimes just missed that a 2 was necessary in order to finish with an even answer.

Question 19

Students handled the fractions of amounts very well. Many students were able to correctly calculate the 80, 64 or the 20. There was sometimes confusion over which fraction needed to be applied to which amount and a common wrong answer of £52 came from adding just $\frac{1}{3}$ of £96 to the £20. Less able students started to divide by 11, coming from the 5 : 6 ratio.

Question 20

Part (a) was very well answered with most students choosing to answer “strong positive”. In part (b) we saw many correct lines of best fit but a little confusion over the reading off at 15 hours. Regardless of their reading, the final mark could still be awarded for correctly calculating the number of lives that would be given, according to the incorrect reading. There was a good mix of students who could draw a correct line of best fit, students who could correctly read off and students who could correctly work out how many lives would be given.

Question 21

Students were able to score a mark by demonstrating that $5^2 = 25$ or by taking it a step further to get to the 75. From there, students were attempting subtractions but not relating the subtractions to a division. We saw attempts to solve $2x = 525$ or $2^x = 525$, routinely. Working with the 600 to get a product of prime factors was rarely seen but may have resulted in slightly better scores.

Question 22

This was a standard algebraic expansion question. Most candidates were able to access at least the first mark, by correctly multiplying out the first bracket to give $15x + 20$. The second mark for a fully correct answer was more difficult to obtain as candidates had to deal with a double negative; $13x + 18$ being a common wrong answer.

Question 23

We saw very few fully correct answers to this question. As is usual, the students find it difficult to criticise. Most answers referred to the lack of numbers on the axes, the graph not being symmetrical or the lines not meeting on the y-axis.

Question 24

The most successful method was Trial and improvement, with even the more able students writing the ages in terms of x and then not being able to form an equation when attempting an algebraic approach. Those who attempted trials sometimes missed the criteria that Beth’s age must be 1 less than Sunita’s. One common misunderstanding was that Beth was one year older than Sunita.

Question 25

For the final question on the paper, this was well attempted and a pleasing number were scoring at least one mark. Roughly equal numbers of students knew to either find the improper fraction of $\frac{7}{3}$ or to multiply by $\frac{5}{4}$. It was not uncommon for the student to forget to convert their improper fraction to a mixed number at the end of their working.

Further support

Mark ranges and award of grades

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

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Contact us

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