AQA
Realising potential

GCSE
Mathematics

8300/1F: Paper 1 (non-calculator) Foundation

Report on the exam

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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.

Summary

Overall performance compared to last year

Topics where students excelled

- Simple power of 2
- Addition and subtraction of decimals
- Using a simple inequality
- Creating a bar chart
- Working out a wage using the same rate
- 2D shape names

Topics where students struggled

- Knowing the value of cos 90°
- Writing the equation of a line parallel to the given line
- Estimating solutions to a quadratic, given the graph
- Factorising a quadratic
- Area of a sector

Individual questions

Question 1

Both parts were well accessed and well answered. The most common wrong answer for part (a) was 6. In part (b) the column addition main error was not aligning the decimal point, with other common errors being arithmetic slips and either adding all numbers or subtracting the second two from the first.

Question 2

Measuring in both parts was done fairly well. For the measurement in millimetres, the most common error was to use the cm value they'd measured and incorrectly multiply/divide by 10 or 100. For the measurement in degrees, the usual error was to read the wrong side of the protractor.

Question 3

This question was very well answered with the only mistake being reading the inequality the wrong way around.

Question 4

Students felt comfortable answering this question and the most common mistakes were to answer 1.2 or 1.3 in part (a). For part (b) the common wrong answers were -3040, 3400 and -3500.

Question 5

The more able students were able to answer this correctly with common wrong answers coming from miscounting their lines of symmetry and getting 9 or 11, only using the points or "dips" to get 5 or merely writing "rotation" in the answer space.

Question 6

Part (a) was very well answered with the usual error being an answer of a^4. In part (b), the most common answer was $15a$, with students not understanding what a question asking to "factorise" required. Part (c) was done quite well initially, but many students went on to "simplify" their $40 - 4x$ to 36 or $36x$. We also saw many answers of $10 - x$ and $40 - x$.

Question 7

A well attempted question across both parts with 15 or 25 minutes often being used for three-quarters of an hour in part (a). When 100 minutes were used for an hour (often in column addition), students were usually unable to recover the error that creeps in. Part (b) scored slightly better than part (a) with students confident in converting hours and minutes to minutes. Those who attempted

to divide 186 by 60 often ended up with 3.1 which lead to them using 3h 10min or 3h 1min for their subtraction.

Question 8

Although it wasn't a requirement, most students began part (a) by completing the frequency column on the tally chart. Those who used this method were more successful than students who tried to compare 5-bar gates, as they usually didn't consider the effect of totalling the single bars for vehicles other than cars. The bar chart was very well answered with the vast majority of students scoring 2 or 3 marks. The usual reasons for a lost mark were an inaccurate height or unequal width bars.

Question 9

This question was well attempted with most students scoring 2 or 3 marks. Those who didn't quite hit on the right combination in each row were able to pick up 2 marks even if they repeated a digit across the rows.

Question 10

A well attempted but not well answered question. The number of sides on the final shape was a barrier to the final mark for many that had correctly calculated that one side was 20 mm. There was a significant proportion of students who assumed that the pentagon and square each had a perimeter of 100 mm and went on to work out that the side length of the square would be 25mm and proceeded from there.

Question 11

The most common approach in part (a) was to find the pay for one hour and then multiply by 15 but students who halved £90 and added were equally successful. Mistakes were usually arithmetic slips. In part (b) quite a number of students just worked with the £8.90 and the £9.50 without calculating the new wage. The students who calculated £7.50 right away often didn't realise that they could then compare directly to the £8.90 with no need for further calculation. Another common error in part (b) was to only add on 5 hours' worth of the increased pay.

Question 12

The more successful students were those who worked with a numerically ordered list of integers. Those who slotted in extra numbers to try to get the required mode or range often then broke the median because they didn't notice that the median had "moved" in accordance with their extra number.

Question 13

This question was well answered with the most common answer being Hexagon. The most common wrong answers were pentagon and cube.

Question 14

Drawing the graph of a straight-line ought to be a straightforward question to answer but it was not received well this series. The main problem seemed to be that students were not creating a set of values to plot. The common wrong answer was a line drawn from (-2, 7) to (2, -6). Students who had created a set of coordinates were able to score a mark for plotting their values, even if they were incorrect but we did not see very many of those.

Question 15

Another question that should have been reasonably routine for students to answer but was made difficult by often choosing an inappropriate denominator. There was still a significant proportion who added the fractions to get $\frac{18}{24}$, not realising that this had to be a mistake since it cannot be converted to a mixed number. Students who chose an inappropriate denominator could still pick up the mark for correct conversion of improper fraction to a mixed number if it was originally an improper fraction.

Question 16

Common wrong answers for part (a) were (10, 7), (9, 3) and (2, 3). Students who drew the given vertices were usually more successful than those who did not. In part (b) students did not score well. Very few drew on the line of reflection which may have helped them to name it.

Question 17

This question was very well attempted and had a good spread of marks. Many students "forgot" to add the 8 back on at the end but this only resulted in loss of the final mark. More than half of the cohort scored at least 2 marks, so even with fractions in there, students felt very able to access the question. Those that did not score were not writing down their method. They often just wrote down that Ali kept £10 (presumably for the $\frac{1}{10}$) and were then unable to process one third or two thirds of the remaining money.

Question 18

The majority of students were able to identify that they needed to process the $2^2 + 5$ first. Most students then went on to subtract the 4 from 100 instead of multiplying the 4 by their 9, which made it impossible to score further marks. Students who attempted to multiply out the bracket often forgot the negative attached to the second term. A small number stopped at 64, forgetting to square root at the end, but usually, if they got as far as 64, they continued to 8.

Question 19

The most common option chosen on this question was "A and B".

Question 20

There were some fully correct answers but often it was only the first graph that gained a mark. Some students only plotted points or drew columns. Although quite well attempted, this wasn't a well answered question. Students who had a "play" with different numbers and applied the rule given by Salma's mum, were usually the ones scoring a mark or both.

Question 21

We saw very few correct answers where students were able to recall that cos 90° = 0

Question 22

This was a standard style of working with indices but the majority of students started by trying to find the actual value of 8^3 and 8^4. They were then unable to process the necessary division and hadn't written down that they planned to attempt a division, so were unable to score beyond the first mark.

Question 23

Again, this seemed like a topic the students were not familiar with. Those who attempted it often gave us back the same equation rearranged, changed the $3x$ to be $-3x$ or $6x$ or changed y to $3y$.

Question 24

Lots of students struggled with part (a) of this question; a very common incorrect answer was 'the number of downloads is more than the number of CDs sold'. Some simply wrote 'as one goes up the other goes up', and whilst this did score the mark, the answer would have been better with some context, eg 'as the number of downloads increase, the number of CDs sold also increases'.

Like part (a), part (b) showed great engagement with the question but there was some confusion about the word "estimate", leading students to estimate the cost of the number of CDs sold. This was all catered for within the mark scheme, and, with full working shown, those students were able to score full marks. In order to score anything beyond the first mark, a correct (or rounded) reading from the graph was needed and the usual mistake was that students used 9000 for both the number of downloads and the number of CDs sold. There were some graph misreads, commonly 6600, 5200 or an incorrect rounding/estimate of 6000; these were not able to score.

Question 25

Students misunderstood this question and instead answered the slightly different question of "Find 70% of 350" which we were not able to award any marks for. Of the students who understood the question being asked, there were a number who stopped at 500, thinking they only needed to find the "original number" rather than 120% of that number. The most common answer seen was the answer of 525, coming from 10% of 350 being 35 and adding 5 lots of that to the 350 given in the question.

Question 26

This question was another that was not well answered and not understood by the cohort. Of those finding the correct two values, most were often unable to present them correctly and instead gave them as coordinate points.

Question 27

The few marks scored on this question were usually for the area of the full circle that Shape B was taken from and an attempt to find the area of Shape A. Very few students used the 60° on Shape B to get both of the available marks for that part of the question.

Question 28

This question should have been straightforward for students to answer but once more we saw students not understanding how to tackle the question. Of those attempting to try and find the values necessary to go into the two brackets, the negative attached to the 24 was often missed, so we saw answers such as $(x + 2)(x + 12)$ quite commonly, which was unable to score anything as we needed the two constants to multiply to give –24 or add to give 2

Question 29

Part (a) was well answered, and it was really pleasing to see so many students still working hard at the end of the paper. In part (b) it was common to see 5×10^{-1} given as -5 or -50, which meant no marks could be scored. Most of those who knew it was 0.5 then went on to halve their 2000 instead of doubling it.

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