AQA

GCSE

Mathematics

8300/2F   Paper 2 Foundation

Report on the Examination

Specification 8300
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General

Students appeared to find most questions accessible and were able to demonstrate their mathematical ability at all levels. There was no evidence of time pressure. Students often did not set out their solutions clearly.   It was apparent at times that students did not use a calculator.

Topics that were well done included:
- interpreting a pictogram
- using a fraction greater than 1
- solving an equation
- angles at a point
- combining conversions
- volume and conversion problem
- standard form.

Topics which students found difficult included:
- writing a fraction as a ratio
- converting a percentage to a fraction
- reasoning with and comparing ratios
- evaluating a solution to identify the effect of an assumption
- average speed
- probability problem
- rearranging a formula.

Question 1
This question was well answered.

Question 2
Most students chose the correct answer. The common incorrect answer was 4.

Question 3
This question was well answered.

Question 4
Most students chose the correct answer. The common incorrect answer was –6 > 5.

Question 5
Part (a) was very well answered. In part (b) some students did not know how to round to 1 decimal place.

Question 6
Parts (a) and (b) were very well answered. Most students in part (c) gave an answer referring to the sample only being for an hour. Some students stated that the results were unfair due to the differing numbers of males, females and families.

Question 7

Most students successfully stated the median but some gave the mode or worked out the mean. It was fairly common to see ordered lists with one number omitted or for students to simply select the middle number from the given, unordered list.

Question 8

In part (a) the common incorrect answer was Monument. Part (b) was better answered but the second most popular answer was 090°.

In part (c) many students did not measure the shortest distance between the two places but worked out a route along the gridlines. Most students used the correct method to convert to metres but lost accuracy when multiplying by 200. It was common to see the multiplication done in stages instead of using a calculator.

In part (d) there were some good responses referring to the fact that you are unlikely to be able to walk, as the crow flies, in a town. However, some students talked about alternative routes via the Town Hall or stated that the monument was in the way. Many common errors related the answer to time and compared going by car to walking.

Question 9

This question proved to be a good discriminator. Students often made the correct calculations but used incorrect money notation omitting the zero from the final answer. Some students added on the council tax.

Question 10

This question was fairly well answered. Students who worked out $11 \div 9$ first, often truncated the result leading to in an inaccurate final answer. Many students divided 36 by $\frac{11}{9}$ and occasionally the fraction was added or subtracted from 36. Some students used the method of working out a ninth of 36 and then adding two ninths on.

Question 11

A mix of responses using formal algebra, inverse calculations and attempts at trial and improvement were seen. The common incorrect approach was to start by subtracting 3 from 14. Trial and improvement was usually unsuccessful because of the non-integer solution. The few who used a reverse flowchart, often were unsuccessful because they calculated $14 + 3 \div 4$ to give 14.75 as their answer.

Question 12

In part (a) most students referred to the plotting of the points and the line of best fit but many were vague in at least one of their responses. It was common to see students stating that the points were wrong without specifying which point had been plotted incorrectly. Although many did state that the line of best fit was incorrect, they often went on to say that it should start at the origin. Occasionally students said that the fact that the points were not labelled was one of the mistakes.

In part (b) some thought the calculation was correct and others confused range with mean.

In part (c) there were some well-presented, clear answers. The question differentiated well with the vast majority of students able to show the total fuel cost at the very least. Students who worked day by day often muddled their working at some point. Those who worked out the total sales and then the percentage were far more successful, saving themselves a lot of work and usually giving a fully correct solution.

Question 13
This question was very well answered. Occasionally students omitted the right angle or made arithmetic errors.

Question 14
Most students attempted the conversions correctly but 70 ÷ 2.2 and 70 × 14 were both seen fairly frequently. Not all students used the conversions in the order given to convert to pounds and then to stones.

Question 15
The vast majority of students were able to select three numbers that formed an arithmetic progression and most of these went on to describe the rule correctly. Some students formed a sequence that was not an arithmetic progression with any three of the numbers. Occasionally students repeated the given sequence or gave an arithmetic progression using numbers that were not in the list. The rules were not always accurate or specific. For example, in place of Add 7, students sometimes wrote $n + 7$ or simply stated that the numbers went up by the same amount.

Question 16
This was poorly answered with more students choosing 1 : 5 than the correct answer.

Question 17
This was very poorly answered with almost double the number of students choosing the incorrect answer of $\dfrac{1}{10}$ as choosing the correct answer.

Question 18
This multi-step question proved to be a good discriminator. Students who understood that profit was the difference between income and cost often went on to give a fully correct solution. However, many students only worked out 28% of the income. Many of the percentage calculations were performed using a build-up method despite the availability of a calculator and this usually led to errors. Less able students were often only able to work out the bonus payment or the annual salary. Occasionally students worked out her total pay but did not make a conclusion. Sometimes working was so disorganised that students misread their own calculations.

Question 19
This question was very poorly answered. There were a significant numbers of non-attempts. Many students stated that Ben had 6 throws and Katy had 4 throws so Ben had more but did not give a counter example where Katy had more throws. Those who worked out equivalent ratios usually scaled up both ratios the same way. Some students changed to different ratios or read the ratios in the opposite order, for example, stating that Ben had 1 hit out of 6.

Question 20
Both parts of this question were not well answered. In part (a) the answer $\dfrac{1}{9}$ was very common but answers in ratios and words were also seen. In part (b) many students listed the four available numbers or gave the answer $\dfrac{4}{9}$ or $\dfrac{4}{10}$.

Question 21
Many students made a good attempt at part (a). Those who set out their working clearly, labelling each stage often made good progress. Less able students added the three dimensions for the volume or used a method that confused surface area and volume. Some calculated the correct volume but then halved it. It was fairly common to see students subtracting the correct number of litres for the shower from a volume that was still in cubic centimetres. Many students did not use a calculator for the simpler calculations so errors were seen when dividing by 1000 for example.
Part (b) was poorly answered with few students realising that because there was more water in the bath than had been assumed it meant that even more water was saved. Many students referred to the water level rising when the cuboid or Eva was in the bath. Others simply stated that a bath uses more water than a shower.

Question 22
Although some students gave a fully correct solution, many students added 8^2 and 3^2 and gave the answer 8.5. A small minority of students simply added or subtracted the two given sides.

Question 23
The vast majority of students successfully attempted some of the graph in part (a), usually the 15 minutes as a horizontal line. The first part of the graph was often seen as a line from the origin to (30, 40). Frequently the third part of the graph was a line with a negative gradient. Students who realised the final line should have a positive gradient often did not use gradient 1 and many went beyond 60 minutes.
In part (b) students with correct graphs often calculated $35 \div 60$. Some students worked out the average of 40 and 60 (the speeds given in the question) and gave an answer of 50. Students with a graph that had a negative gradient for the third section almost always failed to work out the total distance travelled.

Question 24
Most students were able to work out the angle for women but only a very small proportion progressed any further in this question. Some students used 3360 as the number of women rather than the difference between the number of women and men.

Question 25
This question had the highest proportion of non-attempts. The few students who worked out that there were 40 CDs in total usually went on to give a fully correct solution. Some students thought there were 20 CDs in total and used this value to form an equation. Many students only formed an equation with $2x + 5$ and made no progress.

Question 26
Most students worked out at least one of the values in part (a) but very few calculated all three correctly. In part (b) the plotting was mostly accurate but few students had a quadratic graph to follow through. The small minority who did have the correct points usually had an inaccurate minimum value. Despite most students having values from part (a), many did not even attempt to plot them.

Question 27
This question was well answered with most students able to state the value 9560 and many able to order the numbers correctly. However, some students gave the values in ascending order. Some students did not show any working, so had no opportunity to give a partially correct answer if their order was wrong.

Question 28

This question was very poorly answered. The vast majority of students rearranged to $3y = x + 9$ and could make no further progress. Some students simply swapped the x and y and gave the answer $x = \dfrac{y}{3} + 9$.

Question 29

A small minority of students gave a fully correct solution. It was common to see cosine used but other students just gave the answer 7 with no working. Some students did not use trigonometry but attempted to combine 8 and 72 for their answer.

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.