



GCSE

MATHEMATICS

8300/2F: Paper 2 (Calculator) Foundation
Report on the Examination

8300
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General

There was no evidence of time pressure with most students able to complete the whole paper. Some of the questions that were common with the Higher tier proved very challenging for students on this tier. However, most students were able to access most of the questions and were rewarded for good use of mathematics shown at different levels of ability. Students did not always show working when instructed to do so. It was apparent at times that some students did not use a calculator.

Topics that were well done included:

- converting a decimal to a fraction
- reading a number line
- time and fraction of an amount
- using a calculator
- criticising a bar chart
- direct proportion graph.

Topics which students found difficult included:

- sum of reflex angles
- lines of symmetry of a regular pentagon
- area from a scale drawing
- intercepts of a line
- constructions
- median from grouped data
- inequalities.

Question 1

This question was not very well answered. 24 was the most common incorrect choice.

Question 2

This question was well answered. $\frac{2}{5}$ was the most common incorrect choice.

Question 3

This question was very well answered. 3.8 was the most common incorrect choice.

Question 4

This question was less well answered. 327 was the most common incorrect choice.

Question 5

Most students knew what was required and usually used one of three common methods. Those who used a method to work out that there are 1080 minutes in $\frac{3}{4}$ of a day were usually successful and able to give a correct response. Students who converted 1000 minutes to hours sometimes

stopped at that stage and had nothing to compare it with. Occasionally, students worked out $\frac{3}{4}$ of 1000 or used the misconception that there are 12 hours in a day.

Question 6

Part (a) was very well answered. Students who did not give fully correct responses usually were able to show a correct answer to part of the calculation or gave their answer as an improper fraction rather than a decimal. Students were more successful in part (b) than on previous questions testing this topic. This was probably because they were directed to round the numbers to the nearest integer. However, some students made no further progress. Some students made errors when substituting the new values into the original calculation, often adding 6 instead of 6^2 to give an answer of 506. Not all students were confident as to what their check showed and ticked the wrong box.

Question 7

Although this was a familiar context and a straightforward question, the majority of students did not give a fully correct answer. Some students confused credit and debit or found it difficult to work backwards through the statement. Occasionally, the greyed out cells were also completed. There was some evidence that not all students used a calculator.

Question 8

In part (a), it was common to see students work out one reflex angle but then go no further. Many students worked out the sum of the interior angles. Occasionally, the exterior angle was seen. In part (b), the correct intention was given credit, so five lines of symmetry through the vertices were required. It was common to see only one vertical line of symmetry. Some students only drew four lines or had a horizontal line. Part (c) was not very well answered. The other three responses were equally popular among students who answered incorrectly.

Question 9

This question that involved 'interpreting data given in a frequency tree' proved to be a good discriminator. A good proportion of students gave fully correct responses, although it was common to see the final answer given with incorrect money notation. Some students omitted one of the combinations, usually the 8 people who had movies but not sports. It was extremely rare to see a check to make sure that all 56 people were included. Less successful responses wrote down lots of overlapping products or simply added the given prices.

Question 10

This question was very well answered with many students giving a fully correct response. It was common to see 27 divided by 2 to give an answer of 13.5.

Question 11

Most students were able to gain credit on this question with many students commenting on the fact that there were only 28 vehicles represented on the chart or criticising the inconsistent spacing. However, some students gave an ambiguous response about the heights and said that the vertical axis needed to go to 30. Occasionally, students repeated the same criticism.

Question 12

This question was poorly answered. Students who scaled both sides and then worked out the area were the most successful and often gave a fully correct response. Those who worked out the area first usually went on to use a linear rather than area scale factor or simply squared the area. The unexpected approach of multiplying 180 by 40 and dividing 300 000 by 40 was accepted when two comparable values were reached.

Question 13

Students either knew how to work with similar shapes or failed to gain any credit. Common incorrect answers were various multiples of 210, for example 420, 630 and 1050. A minority of students added 2 and 5 and used 7 to work out their answer. Some students attempted to work out the length of each line in the smaller shape and then scale up.

Question 14

Part (a) was a very good discriminator with the marks spread very evenly. Common errors were to put 15 in place of 12 or to have 135 inside the rectangle. Incorrect answers had more than one value in a section. Part (b) was well answered but some students gave the answer as a ratio or in words. The common incorrect answer was $\frac{1}{15}$.

Question 15

This question was poorly answered. Part (a) was the better answered of the two with many students giving (3, 0) as the answer to part (b). Occasionally, students drew a sketch of the line and this seemed to help them. A high number of students did not attempt either part.

Question 16

Part (a) was reasonably well answered but a significant minority gave the answer 40 from reading off the wrong axis. Part (b) was less well answered with many students managing to complete the table but not able to draw a correct graph. Part (c) was very poorly answered, not least because most students did not have a graph to follow through from.

Question 17

Part (a) was well answered. Common wrong answers were $5n$ and $n - 5$. Part (b) was very rarely answered by forming and solving an equation following on from (a). It was common for students to divide 60 by 3 and then subtract 2 to give 18 coins. Students who used a trial method sometimes managed to give a fully correct response.

Question 18

Students who knew how to work out the area of the triangle often went on to give a fully correct response, and those who left out the division by 2 for the area were usually able to gain credit for the special case in the mark scheme.

Question 19

This question was very well answered. Some students plotted points but did not show the intention to start at $(0, 0)$. The common incorrect answer was a curve with increasing gradient or a line of the form $x + y = k$.

Question 20

This question was very poorly answered. A small proportion of students drew a correct part circle around A but the vast majority did not make any other progress. Some interpreted the instruction that the region was less than 4 cm from A to mean that a circle of radius 3 cm or 3.5 cm was required. Frequently, the three points were joined to form a triangle, a 4 cm horizontal line was drawn from A and then joined to B and C , or three circles centred on the three points were drawn.

Question 21

The majority of students found this question challenging at this tier. Many simply divided 200 by 4 or started by dividing 36 by 18. Those who were able to work out that the first stage of the journey took 0.5 hours often went on to state the second stage was 3.3 hours.

Question 22

Most students did not realise that they needed to use Pythagoras' theorem to work out the height of the triangle. Many used 17 cm or $17 - 8 = 9$ cm as the height. Those who did work out the height correctly were usually able to give a fully correct solution. Additionally, students, who used Pythagoras' theorem incorrectly by adding the squares of the sides, often went on to gain credit for the special case in the scheme.

Question 23

Part (a) was poorly answered with the most common incorrect answer being discrete and grouped.

Part (b) was extremely poorly answered with several misconceptions seen. Many put the frequencies in order and found the median of them. Working out the average frequency or the modal class were also used to justify the 'correct' class. Often students did not show their working which meant no credit was available.

In part (c), many included the frequency of the middle class. Some students noted that two out of the five classes had the appropriate injury time and gave an answer of 40%. Many divided 380 by 57 and there was evidence of build-up methods which are unnecessary and inefficient on a calculator paper.

Question 24

A very high proportion of students did not attempt this question at all. The few students who showed any understanding usually listed the integers that satisfied the first inequality. However, many of the lists included -4 or omitted 0. Those who attempted to solve the second inequality often subtracted 3 from only one side.

Question 25

Students were uncertain how to approach this question. Many reached 65% but could make no further progress. Some students worked out 35% of 7. The successful attempts used the approach of scaling 35 : 65 to 7 : 13.

Question 26

This question was extremely poorly answered with very few students recalling the meaning of the word reciprocal. The correct response was the least popular of the four possible options. The most common answer chosen was -4 .

Question 27

Students often find linking ratios and equations difficult but a reasonable proportion of students did give the correct response. However, the incorrect answer $y = \frac{x}{3}$ was slightly more popular than the correct answer.

Question 28

Most students were familiar with this type of question and noted that the sequence went up by 10 but many only gave the next term in the sequence as their answer. Common incorrect responses included $1n + 10$ or $n + 10$.

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.