GCSE
MATHEMATICS

8300/2H: Paper 2 (Calculator) Higher
Report on the Examination

8300
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General

Most students completed the paper in the time allowed with only a few questions towards the end of the paper having a significant number of non-attempts. Some students presented their work poorly, either making it difficult to read their writing or missing out steps that could have gained method marks. Questions asking students to 'show that' or to 'prove' are often not answered well. The questions that required students to construct or sketch were not answered well. The questions involving ratio were answered better than on previous papers.

Topics that were well done included:

- identifying an error interval
- speed, distance, time problem
- Pythagoras and area problem
- calculating one amount as a percentage of another
- ratio problem
- ratio and probability problem.

Topics which students found difficult included:

- accurate construction
- describing data
- identifying the best estimate
- product rule for counting problem
- algebraic proof
- quadratic inequality
- algebraic identity
- inverse function.

Question 1

This question was not very well answered. (–1, 4) was the most common choice.

Question 2

This question was well answered. The most common incorrect choice was
$11.5 \text{ m} < \text{height} \leqslant 12.5 \text{ m}$.

Question 3

This question was quite well answered. The most common incorrect choice was 10 : 1.

Question 4

This question was quite well answered. The most common incorrect choice was $A \cup B$.

Question 5

This question was not well answered. Many could draw a correct circle, centre *A*, but this was often accompanied by other circles using centres *B* and *C*. Correct perpendicular bisectors were not seen often.

Question 6

Many fully correct responses were seen. Quite a common error was to use 3.3 hours instead of 3.5 for 3 and a half hours.

Question 7

This was well answered with most students able to apply Pythagoras' theorem correctly. Some did add 8^2 and 17^2 with others trying more complicated methods like the cosine rule.

Question 8

Although some curves were very well sketched, this question was not well answered. Many did not show the correct curvature, particularly at each end of the sketch. Most labelled the y-intercept correctly, although this was quite often accompanied by a quadratic curve.

Question 9

Part (a) was not well answered. Most students did circle two words. The most common incorrect pair was discrete and grouped.

In part (b), most selected the correct class interval but some did not follow the instruction to show working.

Part (c) was well answered with the most common error being to work out 57 as a percentage of 360, possibly because 6 minutes is 360 seconds.

Question 10

This question was quite well answered with a significant number of fully correct responses. Some ignored zero throughout. Most who gained part marks were able to list the integers that satisfied the first inequality.

Question 11

Many students could solve this ratio problem. Some worked out 65% but could not make any further progress. Answers of 20 were quite common with these students not realising they needed to subtract 7 to obtain the value of n.

Question 12

Many students worked out the mean of the four given choices and circled 0.342, which was the most common response. This meant that the question was not well answered.

Question 13

This question was quite well answered. Many could work out the mean for the boys but a common error was to divide 1000 by 4 instead of 40. Some worked out the correct products and then added but subsequently ignored this and chose to use an incorrect method for the mean, often 40 ÷ 4. Some students gained the final two marks by correctly expressing £35 as a percentage of their mean.

Question 14

Part (a) was not well answered. The product rule for counting was often not applied at all with many students attempting to list all the possible codes, with little success. Some of those who did approach the problem appropriately ignored some of the information in the question, for example, they did allow digits to be repeated.

Part (b) was well answered.

Question 15

This novel question was not well answered overall, although many scored a mark by identifying the correct scale on the y-axis. It was common for students to assume that the same scale was used on the x-axis and this could score two marks if they obtained the equation $y = –0.75x + 3$.

Question 16

Many students scored two marks by working out the length AC correctly or by showing the correct method for AC. A common error was to then work out $0.5 \times AC \times 19$, although a significant number did manage to apply the correct formula for triangle ABC. Very few did not round their answer to 3 significant figures.

Question 17

Some students did not attempt to use bounds at all but many scored one mark for showing at least one correct bound. It was common to see the lower bound for both p and b used. Some omitted the 2 from the numerator in the given formula.

Question 18

This problem was answered quite well with many students successfully processing the given information. Some worked using ratios while others used numbers of discs. Full algebraic solutions were rarely seen but were not necessary. Many gave answers correctly as percentages, even if they had already obtained the exact answer as a fraction.

Question 19

Those students who applied a correct trigonometric method to work out the height of the trapezium nearly always went on to obtain the correct area. A similar proportion of students did not make any progress at all, leading this question to become a good discriminator.

Question 20

Although some excellent proofs were seen, this question was not well answered. Many only substituted in values for n. Errors were made in expansions and it was quite common for students to incorrectly process the sum of the two algebraic fractions.

Question 21

Although the curved surface area formula was given, many did not replace the slant height with an appropriate expression in r. Errors were made when dealing with π, either omitting it or cancelling incorrectly. Fully correct responses were not common with many not scoring at all.

Question 22

The question was a good discriminator. Most success was obtained from expanding the brackets without simplifying the contents first. Overall, the question was quite well attempted. Some students obtained 27 but did not show their method and therefore did not score any marks.

Question 23

This question was well answered. The common incorrect choice was 256 : 625.

Question 24

This question was not well answered. A significant number obtained the values –6 and 2 but often could not put them into a correct inequality. There were quite a lot of non-attempts.

Question 25

This question was quite well answered with a significant number of fully correct responses. Most students were able to work out the number of medium eggs for Farm A. The number who could work out 16 was similar to the number who could work out 2 using the relevant bars for Farm B.

Question 26

This was a challenging question for many students. Most who scored one mark did so by expanding the brackets correctly. Some of those who worked out a incorrectly (often as 3) were able to score two marks from the follow through mark scheme. The question was a good discriminator at the end of the paper.

Question 27

Inverse functions remain a difficult topic for many students. It was common to see f(3) evaluated rather than an attempt at an inverse function. Partial marks for an attempt at an inverse function were rare. Some tried to use the reverse processes in a non-algebraic way but often this was not carried through correctly. Many did score one mark for their evaluation attempt at f(–0.5).

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.