GCSE
Mathematics
8300/2H: Paper 2 (Calculator)

Report on the examination

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Summary

Overall performance compared to last year

Many students found questions in the second half of the paper to be challenging. The paper was more difficult than June 2024 and there were a significant number of questions with a high proportion of non-attempts.
Questions requiring reasoning and explanations were not well answered overall.
Problem solving questions requiring changes of units prove challenging for many students.

Topics where students excelled

- relationship between diameter and radius
- Pythagoras' theorem
- relative frequency calculation
- ratio problem.

Topics where students struggled

- lines of symmetry
- perpendicular lines problem
- giving statistical reasons in context
- estimating acceleration from a graph
- explaining why an estimation for distance is an underestimate
- geometry proof.

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Individual questions

Question 1(a)
This question was very well answered.

Question 1(b)
A majority of students wrote the correct answer. Sector was the most common incorrect answer.

Question 1(c)
This question was quite well answered.

Question 2
A small majority of students were awarded full marks. Many obtained 1050 but then divided by 4.

Question 3
This question was not well answered although was a good discriminator for the common questions. A similar proportion were awarded 2 marks, 1 mark and 0 marks. Common wrong answers involved shading the top row of squares or the four squares at the top left.

Question 4
Answered quite well with many fully correct responses. A common error after working out 28 000 was to either tick Yes or to tick No without showing the conversion of 300 metres to centimetres. The most common incorrect first step was to divide 4000 by 7.

Question 5
This multiple choice question was well answered.

Question 6
Although some students did not show sufficient working or made presentation errors the question was well answered.

Question 7(a)
This question was very well answered.

Question 7(b)
Some very good explanations were seen although there were more incorrect responses than acceptable ones. Quite a few thought she was correct while some who ticked No gave a reason involving the coin being biased.

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Question 8

A small majority of students divided a mass by a density although some made errors when converting units. The most common reason for not being awarded marks was to multiply a mass by a density.

Question 9

This question was well answered. Those who were awarded one mark usually obtained the correct lower bound.

Question 10

Most students were awarded either 3 marks or no marks. A small majority gave a fully correct response. Common incorrect methods involved decreasing or increasing 384 000 by 20%.

Question 11

Answered quite well and a reasonably good discriminator. Common errors involved giving answers that had multiplication signs or brackets. Others had 5 in the wrong position in two of the answers.

Question 12

This multistep AO3 problem was very well answered.

Question 13

Those students who realised that trigonometry was needed were often able to give a fully correct response. Some worked out the perpendicular height correctly but used an incorrect trigonometric ratio in the smaller right-angled triangle. A significant number made no progress.

Question 14

A majority of students were awarded the mark. Most correct reasons involved choosing an amount of money and showing suitable calculations. Many who adopted a different approach struggled to write their answers coherently.

Question 15

There were a significant number of correct responses. Some gave correct expressions for angles but made at least one error meaning their equation was incorrect. Others did not have angles AQP and APQ as equal angles.

Question 16

Most students expanded the brackets and had at least three terms correct. Rearranging the equation proved to be more challenging but many of those who obtained a correct simplified quadratic went on to solve correctly.

Question 17

This question was not well answered. Many students did not know how to tackle the problem and only a small minority were awarded marks.

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Question 18(a)

This question was a good discriminator. A majority of students worked out the correct cumulative frequencies and many of these plotted points using them. Some used the midpoints of the class intervals and others drew a histogram.

Question 18(b)

This question was not well answered. Not many knew how to work out the median or the interquartile range. Those who had statistical measures for P to compare with Q were rarely able to give a correct answer in context. There were many non-attempts.

Question 19

This AO3 problem was answered quite well. The main error was in converting units with many attempts not taking into account that square units were involved. There were a significant number who were awarded three marks for correctly processing the information apart from the units conversion.

Question 20

Many students struggle with the suffix notation and responses were often difficult to follow. There were some fully correct responses but others were only able to work out u_3 correctly. There were many who were awarded zero including a lot of non-attempts.

Question 21(a)

Very few students drew a tangent and this resulted in the question not being well answered.

Question 21(b)

Most correct responses were from splitting the area into three sections and using a right-angled triangle with base 4 and height 8 to estimate the area under the curve. Various other approaches for estimating the area under the curve were seen. Some thought they needed to use the acceleration from part (a). There were many non-attempts.

Question 21(c)

Those who had no valid attempt to part (b) were unable to access this question in a meaningful way. A small minority were awarded the mark. There were many non-attempts.

Question 22

Those students that obtained $(n-15)^2+11$ were rarely able to give an acceptable conclusion. A majority were not awarded any marks including a lot of non-attempts.

Question 23(a)

This was quite well answered with most correct responses starting by working out angle OAB and then using isosceles triangle OAB.

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Question 23(b)

This part was more challenging and many did not know the property of a cyclic quadrilateral. Some thought that the sum of angle *f* and 63° was 180°. Only a few were awarded part marks although some did not give their answer in its simplest form and were awarded three marks.

Question 24

This question was not well answered with a large majority not being awarded any marks. There were many non-attempts.

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