GCSE

Mathematics

8300/3H   Paper 3 Higher
Report on the Examination

Specification 8300
November 2018

Version: 1.0

General
This paper proved challenging to all but a small number of students. There were several questions that had a high proportion of non-attempts and many very low scoring questions towards the later stages of the paper.

Topics that were well done included:

- nth term of a sequence
- lowest common multiple
- times series graph
- expectation

Topics which students found difficult included:

- substitution and prime numbers
- perimeter in a problem
- curved surface area of a cylinder
- change of area units
- upper and lower bounds
- transformation of equation following reflection in the y-axis
- iteration
- similar shapes
- volume problem
- inverse function
- Intersection of straight line and circle

Question 1
A majority of students gave the correct choice. The most popular incorrect choice was "right".

Question 2
Approximately half of the students gave the correct choice.   The most popular incorrect choice was " $\frac{1}{4}$ ".

Question 3
A majority of students gave the correct choice. The most popular incorrect choice was "$n + 8$".

Question 4
A majority of students gave the correct choice. The most popular incorrect choice was "10".

Question 5
This question was not well answered. 109 cm and 111 cm or 109.9 cm and 110.1 were quite common errors.

Question 6
This was the most successful question for students on the paper, even though accurate plotting was not possible.

Question 7
Approximately half of the students were able to work out at least one correct value for the expression, but only a small minority could then identify 91 as the value that was not prime and

then go on to show that it was not prime. There was a significant number of non-attempts for this question.

Question 8
Most of the students were able to make a start on this question by dealing with the first month but only a minority of those went on to give a complete solution. The common error was to correctly work out the payment for the first month as £120 but then multiply this by 5 and state that the method was correct.

Question 9
This question was not well answered with a significant number of non-attempts and over half of students having no success. Common errors were to use circumference without halving for the semi-circular arcs or to use area formulae.

Question 10
This question was not well answered with a significant number of non-attempts. Some students were able to make a correct first step but most of those did not go on to give a complete solution.

Question 11
Approximately half of students gave the correct solution to this question. Common errors were to use an incorrect trigonometric ratio or to use their calculator incorrectly.

Question 12
This question was well answered by almost half of the students, who correctly identified that joining the points with straight lines was the key incorrect feature of the graph. Many students commented on the lack of a label or title. Some stated that the horizontal scale was too small. Some others stated that more points or intermediate points should be plotted.

Question 13
A majority of students gave the correct choice. The most popular incorrect choice was "300", with very few students giving either of the other two options.

Question 14
Approximately half of students gave a fully correct solution to this question, whilst a few were able to calculate the total mass for the 19 players and then make no further progress. A common error was to average 82 kg and 93 kg giving 87.5 kg as their answer.

Question 15
This question was not well answered with only a small number of students progressing beyond the first step. The most common error was to divide by 100 when attempting to change the units of area. Many students only found the area of one face of the pyramid, often then dividing by 100 and multiplying by 400 to give a cost for the fabric of £720.

Question 16
This question was generally not well answered with a majority of students making no attempt or having no success.   Many students interpreted 0.38 as 38 people and 0.6 as 60 people.

Question 17

A majority of students gave the correct choice. The most popular incorrect choice was "$\dfrac{9}{25x^2}$".

Question 18
This question was not well answered, with a significant number of non-attempts.   Many of the students who correctly obtained the frequency densities then incorrectly used one small square for 0.1 on the vertical scale, in particular, when drawing the second and fourth bars.

Question 19
A minority of students had any success with this question. The common incorrect calculation was 30.5 – 5.75 = 24.75

Question 20
This question was not well answered, with a high number of non-attempts and very few students having any success. Almost all students did not know the correct method to proceed with this question. A few students expanded the brackets correctly. The common error was to change the sign of the right hand side of the equation.

Question 21
This question was not well answered.   Many students started by attempting to use the 16.8 km possibly as it was the first piece of information given. These students were unable to progress. Students who did work out the times taken to the overtake were often unable to work in hours correctly.

Question 22
This question was not well answered, with a high number of non-attempts and a wide variety of incorrect answers in part (a). In part (b), a significant majority of students made no attempt, the highest proportion on non-attempts on the paper, with very few correct answers seen.

Question 23
This question was not well answered, with a quite high number of non-attempts. Many students were able to make a first step of either working out the distance between the feet or working out one-third of the length of the steps, but few progressed any further. A common error was to use the distance between the feet in Pythagoras' theorem, instead of half that length.

Question 24
This question was not well answered, with a high number of non-attempts and few students being able to deal with the expressions correctly with $(2x)^3$ often appearing as $2x^3$ and $(3x)^2$ as $3x^2$.

Question 25
A minority of students gave the correct choice. The most popular incorrect choice was "*A* and *D*".

Question 26
This question was not well answered, with a quite high number of non-attempts and very few students having any success.

Question 27
Both parts of this question were not well answered, with high proportions of non-attempts.   In part (a), the students who did eliminate y correctly from the two equations usually went on to complete the part successfully. In part (b) most students did not recognise the link to part (a).

Question 28
A minority of students gave the correct choice. The most popular incorrect choice was "gradient is positive".

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.