AQA

GCSE

Mathematics

8300/1H Paper 1 Higher

Report on the Examination

Specification 8300

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General

The paper was accessible to most students, and they seemed able to complete it within the time allowed. Answers and working were generally presented in a way that was easy to follow, but on some of the longer questions there were examples of haphazard and disorganised working.

Topics that were done well included:

- laws of indices
- congruence
- density
- simultaneous equations
- area of a circle in terms of pi.

Topics which candidates found difficult included:

- geometric progression
- writing a conversion formula
- inequalities
- converting fractions to recurring decimals
- writing a cube root as a power in a different base number
- solving a problem involving fractions and proportions
- equation of a tangent.

Question 1
This question was well answered.

Question 2
This question was well answered.

Question 3
This question proved challenging, with the second option proving very popular and the first option also chosen by a significant proportion of the students.

Question 4
The majority of answers were for choices 2 or 4, in approximately equal amounts.

Question 5
This question was well answered, although some students did not give the answer in index form.

Question 6
This question discriminated well. The first and last statements were usually correct, but there was some uncertainty about the others.

Question 7
Whilst many students gave a fully correct answer to this question, a common error was to work out three-fifths of 162.

Question 8
This question proved to be challenging. Those students who did write an equation or formula generally reversed the coefficients, giving $8x = 5y$.

Question 9
Part (a) was very well answered, and there were also many correct answers to part (b), although the third and fourth options were both fairly popular.

Question 10
This question was well answered, with many students simply adding the two equations. Those students who multiplied the second equation by two and tried to subtract one equation from the other often made arithmetic errors.

Question 11
Many fully correct answers were seen to this question. The most common error was to add 13% to the initial total of £80. Although arithmetic errors were made, particularly when calculating 3% of £88, in general, the calculations were processed correctly.

Question 12
This question was well answered. Students who went wrong often took 64 cm as the perimeter of the square, thereby using 8 cm as the radius instead of the diameter.

Question 13
Although there were many fully correct answers to this question, a sizeable proportion of the students made errors when writing the number using digits. However, some of those students gave a correct conversion of their number to standard form.

Question 14
This question proved challenging, with many students failing to reverse the inequality sign when dividing by –3. Those students who avoided this problem by adding $3x$ to each side and subtracting 6 from each side, arriving at $-6 > 3x$, usually achieved the correct answer.

Question 15
This question proved challenging, with the third option a very common choice.

Question 16
In part (a), most students appended the correct probabilities to the given branches. Many then added further branches to 'Odd' as well as 'Even', or put one pair of branches in between the two. Many students gave the correct calculation of multiplying the two probabilities, but some of these used an incorrect method. This often involved finding a common denominator.

Question 17
Students gave correct answers to part (a) using a variety of techniques. Some, however, assumed that –2 was the gradient and used one point to show that the value of 'c' was –1, when this had to be shown for both points.

There were fewer correct responses to part (b), with a significant number of non-attempts.

Question 18
This question discriminated well. The most successful students listed the various ways to combine the offers, for example 3 from A and 5 from B, and then worked out the cost of each. Some students chose a price for a bottle, and those who chose £1 or £10 usually made far fewer arithmetic errors than those who chose, for example, £1.60 or £3.

Question 19
Most students gave the correct cumulative frequencies, but common errors in drawing the graph were to plot at the mid-class values and/or to start the graph at the origin.

Question 20
This question was well answered, with the majority of incorrect choices being for the first option, which was the radius of the circle.

Question 21
Part (a) proved challenging, with many incorrect descriptions of a possible single transformation.

In part (b), most students correctly drew the triangle after the first transformation, but many were then unsuccessful in their attempt to describe the second transformation. Some students gave more than one transformation for their answer.

Question 22
The correct answer was the most popular selection, with the fourth option also fairly popular.

Question 23
The horizontal scale used two small squares for one unit, and in part (a), many students gave an incorrect answer of 7.

In part (b), it was common for students to calculate the distance travelled after 15 seconds rather than for the last 15 seconds. Those students who calculated average velocity × time were usually successful.

Question 24
Both parts proved challenging, particularly part (b). In part (a), many students failed to convert the given mixed number into an improper fraction before taking the sqaure root. In part (b), converting a cube root into an index was rarely done correctly.

Question 25
Few students were fully successful with this question, with many starting their work by adding one quarter to three eighths. Those who did follow a correct method to find the number of females or number of males sometimes gave that as their answer.

Question 26
This question was a good discriminator. Most students correctly expanded two brackets, but many then failed to correctly multiply the result by the third bracket. Some students correctly multiplied $(x - 4)$ by $(2x + 3y)$, but then squared the result. Another common error was to say that $(2x + 3y)^2$ was $(4x^2 + 9y^2)$.

Question 27
This question was not well answered, with many students not using the gradient of *OP* as the starting point of their working. It was common to see $\sqrt{17}$, either from the equation of the circle or from the application of Pythagoras' Theorem.

Question 28
Most students correctly worked out the volume of the large cone. From there, common errors were to take the height of the small cone to be 9 cm or to give its radius as 3 cm or 2.5 cm.

Question 29

Most students used at least one correct trigonometric value, but many did not process them correctly into the required form.

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.