
GCSE

Mathematics

8300/2H Paper 2 Higher
Report on the Examination

Specification 8300
November 2018

Version: 1.0

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General

Most students were able to attempt the questions in the first half of the paper. Many of the questions in the second half of the paper were not well answered and in many cases no attempt was made. Most students appeared to have used a calculator where appropriate. Students should be aware that prematurely approximating intermediate values can lead to inaccuracies in final answers.

Topics that were well done included:

- identifying the constant in a formula
- comparing estimates
- working out an area involving quarter circles
- standard form calculation.

Topics which students found difficult included:

- bearings
- working out values in an identity
- evaluating a method and a claim
- probability without replacement
- algebraic proof
- simplifying an algebraic fraction
- sketching a graph using translation
- composite function
- area under a speed-time graph.

Question 1

This question was quite well answered. 'A or B or both' was the common incorrect choice.

Question 2

This question was quite well answered. The incorrect options were chosen in roughly the same proportion as each other.

Question 3

This question was not well answered. The two most common incorrect choices were the arithmetic progression and the triangular numbers.

Question 4

This question was not well answered. The modal answer was 050°

Question 5

This question was quite well answered. The most common correct answer was the symbol π while others gave the answer as a word. Some wrote a formula for circumference but did not make clear what the value of k was.

Question 6

There were a significant number of correct answers to part (a) and this question was a good discriminator. Some students made errors when working out midpoints whilst others included a

total from the $t \geq 15$ row. A common error was to divide 20 by 4, sometimes after initially using a correct method involving frequencies and midpoints. Others obtained 95 but then divided by 3.

Part (b) was answered well. Most students arrived at their decision without needing to carry out any further calculations.

Question 7

This question was not well answered. Many successfully expanded the brackets on the left hand side but then did not know how to subsequently proceed. Answers for a and b were often given as complicated algebraic expressions.

Question 8

This question was answered quite well and was a good discriminator. Some students did use the circumference formula but most did know and use the formula for area of a circle. Some students did not realise that the smaller side of the rectangle was also the radius of the quarter circles.

Question 9

There were a significant number of correct answers, usually from working out the time it would take to fill the tank and comparing with the 7.5 minutes given in the question. Most students who obtained 7.6 minutes also communicated their decision. Some students tried to set up a proportion equation and this approach was sometimes successful. Others did a calculation with some of the numbers given in the question but could not make any further progress.

Question 10

This question was not well answered. Some students set up a correct equation with a few managing to solve it correctly. Nearly all of those who obtained $x = 7.5$ went on to score full marks. The most common error was to add the three expressions. Sometimes this was equated to 100 or 180.

Question 11

Many students used their calculator to work out an approximation for π . Showing a suitable calculation to gain the second mark proved too challenging for all but a very small number of students.

Question 12

This question was well answered with many students using their calculator to obtain a correct value. Most of these students were also able to convert to standard form. The common error was to have an incorrect number of zeros in 2 850 000.

Question 13

This question was not well answered. Most students thought that Ashraf's method was correct. Those who did realise that his method did not work were able to communicate successfully and usually also gave the actual number of boxes that would fit in the crate.

Question 14

This question was not well answered. The most common incorrect choice was $2n + 3$

Question 15

There were a significant number of correct solutions to this problem solving question which was a good discriminator. Those students who knew the relationship between mass, density and volume were able to use it correctly. The most common method was to work out the volume of copper and tin in the medal and then to work out the mass of each.

Question 16

Part (a) was quite well answered. In part (b) a significant number of students worked out that 8 apples had a mass greater than 115 grams but many of these did not then work out a proportion.

Question 17

This question was quite well answered. The common incorrect choice was 'always odd'.

Question 18

In part (a) many students had a probability of $\frac{10}{20}$ or $\frac{1}{2}$. This was often given as the final answer or other probabilities like $\frac{7}{20}$ or $\frac{9}{19}$ were stated as well.

Part (b) was very rarely answered correctly. A few students gained a mark for identifying the probability $\frac{10}{19}$. Some tried to include the probability that the first disc was blue in their calculations.

Question 19

This question was quite well answered with $\frac{2}{4}$ (or 50%) and $\frac{3}{10}$ (or 30%) being seen. Sometimes these were added instead of being multiplied together.

Question 20

This question was not well answered. Some students did manage to expand the second bracket correctly. There were a significant number of non-attempts.

Question 21

In part (a) many students tried to set up an incorrect equation involving y , x and k at the outset. Some did correctly obtain $k = 12$ and this often led to a correct equation being seen.

Part (b) was usually either fully correct, (sometimes following through their k), or completely incorrect.

Question 22

This question was not well answered. Some were able to factorise either the numerator or the denominator but fully correct answers were rarely seen.

Question 23

This question was not well answered. The common incorrect choice was $-\frac{1}{4}a$.

Question 24

Many attempts at sketching $y = f(x - 2)$ were seen. There were also many who made no attempt. Only a few students gained any marks on this question.

Question 25

Most students made an attempt at this question. Quite a few worked out AC correctly, usually using $\tan 49^\circ$, and some of these went on to use the sine rule in triangle ABC . Others did not realise that they had to use trigonometry.

Question 26

This question was not well answered and there were a lot of non-attempts. Many of those who obtained $\frac{x^2 - 2}{x^2}$ did not know how to give the answer in the required form.

Question 27

There were a few correct answers but overall this question was not well answered. Many students did not make an attempt.

Question 28

In part (a) more students obtained the mark for giving the units than for working out the correct value. Many could do neither of these things correctly and there were a lot of non-attempts.

Part (b) was not well answered with most of those who made an attempt working out $80 \div 14$.

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.