AQA

GCSE

Mathematics

8300/3F Paper 3 Foundation

Report on the Examination

Specification 8300

June 2018

Version: 1.0

Further copies of this Report are available from aqa.org.uk

General

The majority of students found the paper accessible and attempted most of the questions. The work was generally well presented with working shown on most scripts. Arithmetic errors caused problems for some students who had otherwise engaged with a question and decided not to use a calculator. Some students either did not use or show the working from their calculator.

Topics that were well done included:

- fraction and percentage of an amount
- algebraic vocabulary
- probability and systematic listing
- proportion calculation from scale drawing
- number problem solving with multiples
- constructing a triangle
- Fibonacci style sequence problem solving
- interpreting a Venn diagram
- similar shapes.

Topics which students found difficult included:

- description of capacity involving a non-uniform geometric shape
- proportion problem solving from information on a frequency tree
- profit and loss money calculation
- area of a triangle
- average speed from distance travelled in minutes
- drawing a pie chart and interpreting proportions with a pie chart
- HCF and LCM problem solving
- compound interest
- parallel lines and coordinates on a line
- reverse percentages
- sequence problem solving with primes
- vectors.

Question 1

This question was well answered by the majority. The common incorrect answers were $\frac{7}{10}$ and $\frac{1}{7}$

Question 2

Approximately half of the students gave the correct answer. The most popular incorrect answers were $x = \frac{3}{2}$ and $x = -1$

Question 3

Again approximately half of the students gave the correct answer. The right-angled isosceles triangle was the most popular incorrect choice.

Question 4

This question was not very well answered. 110 m was the common incorrect answer.

Question 5
Parts (a) and (b) of this question were both well answered.

Question 6
This question was very well answered. The most common error occurred where students did not use a calculator and made an error in working out 19 × 28.

Question 7
This question was reasonably well answered. Incorrectly linking the correct identity or inequality was a common error.

Question 8
This question was an excellent discriminator of the more able students, but was not very well answered by the majority. A common error was simply to list two notes of each denomination. A systematic approach was the most successful method.

Question 9
Parts (a) and (b) were very well answered.

Question 10
The large majority of students answered this question well. Students, who accurately measured the two diagrams, usually went on to successfully calculate the scale factor of 5. The most common error occurred when students attempted to mark 2 cm sections on the tower often counting four extra sections leading to an incorrect answer of 520 m. Inaccurate measuring or marking sections led to a range of answers as students attempted to 'adjust' up or down from 650 m.

Question 11
This question was not very well answered with a very common answer of 'Yes' showing a misconception with a non-uniform cross section. A common incorrect statement was, 'the cup gets smaller' without specific reference to a geometric property of the cup.

Question 12
This question was not well answered. In part (a) many students did not calculate a proportion. Common incorrect answers were to work out 758 – 512 = 246 or state 758 > 512. Part (b) was a good discriminator but proved challenging for most students, as many had difficulty understanding the normal and offer prices. Many students were able to work out the week 2 profits but were less successful at calculating the losses. There were a significant number of non-attempts.

Question 13
This question was a good discriminator, but was not very well answered. The majority of students calculated 12 (five minute sections in an hour) or 0.7 (miles travelled in one minute) but many then had difficulty in knowing how to proceed with the next step in the calculation.

Question 14
This question was well answered by the majority. However, many students used an incomplete method multiplying the base by the height and then omitting to divide by two.

Question 15
This question was reasonably well answered by the large majority. However, there were a significant number of non-attempts. The most common approach was to start with a multiple of 7. A common error was for a trial to stop after subtracting a multiple of 7 from 36 if the answer was

not divisible by 3 and not continue with a different multiple of 7. Another common error was adding three different numbers to a multiple of 7 to total 36.

Question 16
This question was well answered.

Question 17
Approximately half of the students gave the correct answer. $7x - 1$ was the most popular incorrect answer.

Question 18
This question was very well answered by almost all students.

Question 19
Part (a) of this question was reasonably well answered. A common error after successfully working out 198^o was to divide this by 2 rather than 3 to calculate those voting for M. A significant number of students were unable to accurately measure the sectors within the allowed tolerance and some failed to correctly label their pie chart. Part (b) was not well answered with a significant number of non-attempts. Students who correctly calculated 45 voters for every 1^o were mostly successful in obtaining a fully correct solution. Common errors were attempting to calculate 72% of 16 200 and to divide 16 200 by 72.

Question 20
This question was very well answered by the large majority. 0 and 0.5 were the common incorrect choices.

Question 21

This question was not well answered. The most popular incorrect answers were $f = \frac{2}{e}$ and $f = 2e$

Question 22
Part (a) was well answered by the majority. A common error was for students to omit brackets when keying the calculation into their calculator, for example, $10 + 6 \div 2 = 13$. Some students made errors with mental arithmetic. Other common errors were to half only the previous term, for example, 3, 1.5, and 0.75. Part (b) was reasonably well answered and proved a good discriminator. Common incorrect answers were 19, 9.5, 5.5 and 11 from not completing a full method and then either doubling or halving. 15 were often seen in working with another answer written in the sequence as an answer.

Question 23
This question was reasonably well answered. The large majority of students correctly indicated at least one correct criticism. Some students were confused with a total of 22 and incorrectly made reference to 'the 12 should be 10'. Other common errors made reference to 'might' rather than a definitive criticism, for example, 'some pet owners might have a dog and a cat'. Other criticisms were not specific enough, for example, 'the outside of the box isn't filled in'. Other students incorrectly made reference to no label for the intersecting region.

Question 24
This question was not well answered but was a good discriminator of the more able students and there were a significant number of non-attempts. Common errors were missing factors of 72 and 120 leading to incorrect HCFs of 8 or 12 and incorrect LCMs of 36 and 54. Some students used prime factors but were then unable to correctly calculate the HCF and LCM.

Question 25
This question was reasonably well answered. However, there were a significant number of non-attempts. Of the three answers, the most common correct one was $h = 7.5$. A common error was to enlarge the angle by the scale factor with a frequent incorrect answer $x = 81$. Another common error was $h = 13.5$ from 9×1.5. Other common errors seen were dividing both lengths by 1.5 or by adding 1.5 to the angle and both lengths.

Question 26
This question was not very well answered by the majority but was a good discriminator of the more able students. There were a significant number of non-attempts. A common error was to calculate simple interest for investment B of £105 for both years, with an incorrect value for investment B of £3710 frequently seen. Students had difficulty calculating either 2.5% or 102.5% of investment A. The students who worked with decimal multipliers generally had success on this question.

Question 27
This question was not very well answered. There were many non-attempts on both parts. In part (a) common errors were incorrect attempts in rearranging $2y - 6x = 8$ into the form $y = mx + c$ and many students who rearranged to $y = 3x + 4$ were then unable to correctly identify the gradient with others incorrectly stating the gradient as $3x$.
In part (b) many candidates did not substitute $x = -5$ into $y = 3x + 7$ and those who did often made errors with mental arithmetic. Some students correctly worked out (–5, –8) as being on the line but then misinterpreted (–5, –6) as being below the line incorrectly stating '–6 is less than –8'.

Question 28
This question had a significant number of non-attempts and was not well answered. The most common incorrect method was to calculate 90% of £19.25. Some students correctly stated that 110% = £19.25 but were then unable to proceed and some gave an incorrect final answer of £17.5 after a correct method of $19.25 \div 1.1$.

Question 29
This question had a significant number of non-attempts and was not well answered by a large majority of students. Some students correctly indicated the two digit numbers in the sequence $12n - 5$ but were then unable to correctly identify one or both of the non-prime values. 55 was the more prevalent correct value identified with 91 seldom selected as an answer.

Question 30
Part (a) was reasonably well answered but there were a large number of non-attempts. Common incorrect answers were $\begin{pmatrix} 117 \\ -70 \end{pmatrix}$ from an incorrect method of adding fractions with a common denominator of 70 and (0) from 1 – 1 = 0 after correctly calculating 1 and –1; and some students gave an answer with three numbers in their bracket e.g. –4, 1 and 3 from adding the x and y components. Part (b) was not well answered by the very large majority and there were a large number of non-attempts. A common error after correctly obtaining $\begin{pmatrix} -2 \\ 4 \end{pmatrix}$ was to not make a link with **b** = $\begin{pmatrix} -1 \\ 2 \end{pmatrix}$

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.