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GCSE

# Mathematics

8300/1F      Paper 1 Foundation  
Report on the Examination

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Specification 8300  
June 2018

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**General**

The second summer Foundation assessment for the new specification again offered students many opportunities to display their mathematical knowledge in a variety of contexts. There were very few questions of ‘non-response’, indicating the paper was accessible and there was no evidence of time constraints. The attempts at the problem solving questions were more detailed and better laid out than the first Summer series.

Topics that were answered well included:

- working out a percentage of an amount
- working out the mean and median
- discussing the effect of an assumption being incorrect
- relative frequency
- working with negative numbers
- similar shape recognition.

Topics which students found difficult included:

- problem solving in a ratio context
- decimal calculations
- arithmetic within order of operations
- three-dimensional object problem solving
- writing an improper fraction from information in simplest form
- range of fractional and negative numbers
- standard form

**Question 1**

This question was not well answered, with  $\frac{5}{10}$  being the most popular incorrect answer.

**Question 2**

This question was very well answered. Most of those who were incorrect chose 3 as their answer.

**Question 3**

This question was well answered, although  $6a^2$  was quite a popular incorrect answer.

**Question 4**

This question was well answered, with shapes A and D popular incorrect answers.

**Question 5**

This question was well answered by many students. Common errors were to find 10% and then find 10% of that, adding them together for the final answer. Dividing by 10 and then doubling was the most common successful method.

**Question 6**

In part (a), few could obtain the correct simplified answer with many students leaving  $\frac{85}{100}$  unsimplified or incorrectly simplifying to  $\frac{17}{50}$  or  $\frac{8.5}{10}$ . Students found part (b) more difficult with 0.58 being a very common incorrect answer. Attempts to divide 5 by 8 were usually unsuccessful.

**Question 7**

Although some students confused area with perimeter, many were able to score on this question. Some worked out both areas but then did not link them in a way that showed the area of the rug was  $\frac{1}{12}$  of the area of the carpet.

**Question 8**

Attempts based on trial and error and attempts based on dividing 40 by 3 as a starting point appeared to be roughly equally successful. Some students did not know what to do with the decimal after division but others argued the remainder of 1 would go to Erik and thus he would have 14 sweets.

**Question 9**

This was fairly well answered with those who found that London was 4 am usually going on to give a fully correct solution. There were some issues with time notation. Particularly common was incorrect use of pm with 23:00.

**Question 10**

Both parts of this question were well answered. In part (a) it was fairly common to see the middle number being chosen from the unordered list. In part (b) frequent arithmetic errors were made. Some students mixed up mean and median and a very few used mode and range.

**Question 11**

Most students made a good attempt at this question. They worked out 6 coaches were needed and the subsequent cost to passengers. Some missed out the pay for the drivers but the main source of error was dealing with the units when working out the cost of the fuel. Pence were sometimes counted as pounds leading to some incredibly high profit values but students often did not question whether the answers were realistic. Some students provided almost perfect solutions but did not multiply the fuel cost by 6.

**Question 12**

Both parts of this question were not well answered. In part (a) there seems to be a very common misunderstanding of order of operations which led students to adding the second and third numbers as a first step. Those who did calculate the subtraction first had a great deal of difficulty with the hundredths being '0 minus 2' which was often seen as 2. In part (b) many ignored the 0 obtained for the tens digit of the answer and gave an incorrect answer of 46.23.

**Question 13**

Part (a) was well answered with most students fully understanding the rules for completing the table. Many students had some success in part (b) using values from their table. However, some students used 0 as an odd number. Part (c) was also quite well answered. Some did not follow the instruction to write on the spinner but had the correct numbers in the correct place in the table. Some students had different numbers in the table and on the spinner.

**Question 14**

Part (a) was not well answered. It was very common to see the time for one person as  $6 \div 2 = 3$  hours which usually led to an incorrect answer of 9 hours. Those who were successful often began by working out that it would take one person 12 hours to complete the job. Part (b) was well answered with most students appreciating the fact that the work would consequently be completed more quickly or take less time.

**Question 15**

There were some good attempts at this algebraic reasoning question. Some students found values which worked for the four variables and then were able to successfully show that  $9a + 3b$  had the greater value.

**Question 16**

This was not well answered, with all incorrect answers featuring regularly.

**Question 17**

This was not well answered with 'negative and odd' and 'negative and even' both far more popular choices than the correct answer.

**Question 18**

This was very poorly answered with 1 : 1000 the most popular incorrect answer.

**Question 19**

This was reasonably well answered. 30% was a popular incorrect answer.

**Question 20**

Most students had some success with this question but there were few fully correct responses. Many worked out the brackets to obtain 16 instead of 3. Those who obtained 3 often then gave  $3^2 = 6$ . Many students could not work out  $\sqrt{121}$

**Question 21**

Fully correct answers were rare in both parts of this question, but more so in part (a) than part (b). In part (a), the largest barrier to success was, predictably, not being able to draw or use the line  $x = 2$ . In part (b) rotations were often clockwise instead of anticlockwise or did not use (0, 0) as the centre of rotation.

**Question 22**

This question was a good discriminator. Most students obtained 18 but then stumbled with the addition of 12 to the ratio. Quite a few students did not simplify the ratio.

**Question 23**

This was poorly answered with many not knowing where to start. Some students calculated the volume of the entire shape as if it was a cuboid or by calculating the volume of the cuboid shape missing.

**Question 24**

Many students knew the method to use but made arithmetic errors. This was either due to incorrect calculations or incorrect methods such as dividing by 10 followed by dividing by 5 as a way of dividing by 15. Another common error was to divide 405 by 4 and 405 by 11.

**Question 25**

This question was not well answered, probably due to the improper fraction which arises in the working. Of those who wrote  $\frac{1.86}{1.6}$ , many made no further progress or cancelled with decimals still within the fraction.

**Question 26**

This question was quite well answered. Many recognised the patterns in the coordinates and were able to continue to at least *C* and often *D*.

**Question 27**

This question was also fairly well answered. Many obtained the relative frequency in part (a) and in part (b) were able to use the data to explain why Raj might be correct. Those who were successful were usually comparing 31 with 25 or 31 with 19.

**Question 28**

Many students successfully multiplied out the brackets and maintained the inequality. It was common for an equals sign to replace the inequality.

**Question 29**

This was the least successful question on the paper. Most students were unable to make any progress. Those who did make a successful start, usually made a correct statement connecting the two fractions.

**Question 30**

There was some success in this question, but 0 was a very common incorrect answer.

**Question 31**

Students found this question challenging and often began by multiplying 15 by 3. Although this was potentially a valid method, it was hardly ever followed up by subtracting the sides used repeatedly. Students that understood that the length had to be twice the width on a small rectangle were usually successful.

**Question 32**

The understanding of standard form at Foundation level is improving. There were far fewer completely incorrect conversions than last year.

**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.