

Principal Examiner Feedback

November 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 3

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Publications Code UG042924

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GCSE Mathematics B (2MB01)

Principal Examiner Feedback –Foundation Paper Unit 3

Introduction

There were fewer students who took this paper than previous series. Performance was polarised mainly at the upper end with those who were clearly aiming to pass at grade C. There was some evidence of a concerted effort to gain marks on certain questions, whilst there were some topics where performance was very weak.

Performance on unstructured questions was better near the front of the paper, but much weaker in the later parts of the paper. However, there were too many attempts that resembled trial and improvement approaches.

The inclusion of working out to support answers remains an issue for many; but not only does working out need to be shown, it needs to be shown legibly, demonstrating the processes of calculation that are used. There were too many instances in this paper where working out was set out in such a disorganised way that it was almost impossible to identify a chosen route of solution by the student, in order to award method marks. This was particularly the case with working out that was presented on additional sheets. There were also too many instances where written figures presented were also unclear. Students need to understand that figures that are written-over become illegible.

Report on Individual Questions

Question 1

Well answered apart from part (c), where students appeared to provide nothing more than a guess in many cases.

Question 2

Well answered.

Question 3

A few students worked out a distance and then assumed it was the shortest distance, without checking other routes. But the majority gained full marks.

Question 4

Well answered; just some errors in factors of 10 by a minority, mainly in part (c).

Question 5

This was well answered with a variety of methods shown.

Question 6

Another well answered question, but some surprising errors in measuring the distance, some errors suggesting students did not have a ruler.

Question 7

Working was confused in this question, but most students appeared to know where they were going. Some listed the costs and crossed some off because of the offer, whilst some just worked out the number of tickets first, then considered the costs. Most students were able to gain the full marks.

Question 8

This was largely a test of memory. About two thirds of the students gained the marks in these short questions

Question 9

This question discriminated well, and offered students a number of methods to work out the answer. Some considered slices of bread and worked these up to make a total number of sandwiches, whilst some worked back from the required number of sandwiches to find out how many slices of bread would be needed. Sometimes the final mark was lost because the students did not give a clear conclusion based on their working.

Question 10

A very well answered question, with nearly all students getting the marks.

Question 11

Most students understood what they needed to do, but errors were made in the basic arithmetic needed to get to the answer.

Question 12

A very well answered question, with nearly all students getting the marks.

Question 13

A question in which most students gained full marks. The only significant errors were students who chose the wrong items to work out their bill, or picked just one cookie.

Question 14

A very well answered question, with nearly all students getting the marks.

Question 15

The only part of this question which caused some difficulty was part (d), where some students had problems with the minus sign. They either ignored it during substitution, or failed to process $-7+12$ correctly.

Question 16

This question differentiated well. Marks were lost in part (a) since students drew the rectangle inaccurately, or failed to scale up both dimensions. In part (b) it was not uncommon to see incorrect rotations of 180° , about a different point, or rotated with a flip.

Question 17

There was a lot of information to process in this question, and students needed to organise not only the data, but the order in which to process it. They were largely successful at this, but some became confused with calculating the time over a different time period than that required. Some made arithmetic errors in their calculation, and some were not clear enough in their conclusion to warrant the award of the QWC mark.

Question 18

Few students had any difficulty in drawing the conversion graph from the table. But part (b) did present some problems. An unfortunate error was in comparing one egg instead of the 24. But the main error was in reading the scale on the grams axis incorrectly, resulting in an incorrect answer. A few students lost the final mark because they failed to include the units used with their numerical answer.

Question 19

This was not well done. Many students gravitated towards producing a "star" shape with the four apexes at the centre: unfortunately most then found it very hard to use additional shapes around the outside of the star in such a way as to avoid gaps. Those who alternately flipped the shape in lines found it much easier. Some just did not understand the instruction "tessellate".

Question 20

Those who knew how to find 2.5% of a quantity usually went on to gain full marks, though there were some who made arithmetic errors in their calculation. Some chose to compare the interest, while some compared the final amount, or even the difference, but all this was usually done with clarity.

Question 21

Bearings is a topic which many students have difficulty with, and it was no different in this case. Most understood where to put the 40° angle, but a significant number were confused by the 300° . There were a few who did not attempt this question, and even more whose attempts were widely out, suggesting perhaps they did not have a protractor.

Question 22

It was common to find students working out the comparable total costs of buying the bottles and cans, and to then make a comparison of these two costs, without taking into account the differing capacities associated with these costs, meaning a maximum of 3 marks. Otherwise there were many different, but creditable methods seen. The two differing discount methods appeared to be well understood.

Question 23

Most students struggled with this question, even though they were given the algebraic expressions to use. Weaker students, having been given the total of 75, attempted trial and improvement methods, substituting numbers into the expressions in order to try to get a total of 75 when added. Of those students who tried the algebraic route, many were unable to simplify their expressions to the stage where they could be equated to the 75 and then solved; some left out the single x .

Question 24

Many gained full marks on this question, even though the quadratic was a "take from". There were some errors in calculating the numbers for the table, but the main error was in drawing the graph as a series of line segments, rather than as a curve.

Question 25

Very few marks were gained on this question, and there were many who did not attempt it. Few were able to recall the formula for the volume of a cylinder. There were also early errors in the use of 50 as the radius. The minority who arrived at a figure for the volume then appeared to have some difficulty in dividing by 1000 and 10, even though these figures were given.

Summary

Based on their performance on this paper, students should:

- present working legibly and in an organised way on the page, sufficient that the order of the process of solution is clear
- include working out to support answers. This continues to need emphasis at a time when the demand for working out for some questions is increasing
- write figures clearly. Do not write over an incorrect figure, instead cross out the inaccurate answer and replace with the correct figure.
- spend more time ensuring they read the fine detail of the question to avoid giving answers that do not answer the question
- bring the full range of equipment to the examination: in this case including a ruler, a compass and a protractor

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