

Principal Examiner's Feedback

November 2016

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

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GCSE Mathematics 2MB01

Principal Examiner Feedback – Foundation Paper Unit 3

Introduction

There were much 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 candidate, in order to award method marks.

REPORT ON INDIVIDUAL QUESTIONS

Question 1

There were many correct answers to this question. Most students were able to draw to the required accuracy. It was clear, however, that some students did not have the necessary mathematical equipment for them to answer this question.

Question 2

This was a well answered question. Some weaker students failed to recognise that the Doll required a sale price and instead gave the answer as £1.50.

Question 3

Those with calculators were able to answer this question with relative ease. Working was not always shown, but totals were usually given, as was a final statement (which was needed as this was a QWC question).

Question 4

Throughout this was a well answered question. It was clear that the integer answers enabled students to find the answer without much algebraic manipulation. Positive substitution in part (e) also enabled correct processing, though there were some who incorrectly wrote this as $4+53$.

Question 5

Most were able to give the correct name of the polygon, though not always with the correct spelling. Part (b) was well answered. In contrast part (d) was not well answered, showing students had a poor understanding of the term "similar".

Question 6

Part (a) was well answered, with only a few processing this as 34×36 . There were also many correct answers to part (b), but here there was more evidence of misunderstanding the rule, with some attempting to divide by 36 first. There was little evidence of use of an algebraic method.

Question 7

There was much evidence of trial and improvement here. In many cases the correct answer was determined, but some failed to realise the benefit of inverse operations.

Question 8

Weaker students had difficulty in dividing by $\frac{3}{4}$, especially if they forgot the decimal equivalent. Some lost the final mark since they merely wrote down what was on their calculator, rather than rounding off the answer. Part (b) was well answered.

Question 9

As with the first question, there was evidence that some did not have a ruler to undertake the required measurements. Of those who did, the measurements were normally carried out accurately. Only a few then failed to undertake the correct scaling or conversion to metres.

Question 10

This was a good question to test understanding of process. It was important to show working, and those that failed to do so inevitably lost marks. A final summary statement was also needed, which was not always given. Errors included not reading the information in the box correctly, and not taking account of the different ages of the children.

Question 11

This was a well answered question. The only significant error was in including only one tin of beans in the total.

Question 12

Another well answered question. A few students used a scale factor of 3; free hand drawings were accepted.

Question 13

There were few errors in this question. There were some build-up methods using the number 46, but these were quite successful.

Question 14

In part (a) there were some inevitable sign errors, but in the other parts most students gained full marks.

Question 15

Students presented some well-drawn diagrams in part (a); penalties had to be applied when their shapes did not fit together properly, or where they went off the grid provided. Some clearly did not understand the term "congruent"; a few attempted a tessellation using the triangle.

Question 16

Those who used a compound interest approach could only gain 1 mark from this question. Weaker students did not know how to correctly work out a percentage, whilst some gave an answer of 6 rather than 600. Only a few added their interest back on to give an incorrect answer of 5600.

Question 17

This was not a well answered question. Algebraic processes were frequently performed in the wrong order. There were many who failed to attempt the question.

Question 18

Most gained the mark for the basic reduction of £18. But again there were a surprising number who were unable to work out the percentage reduction. For some this was because of a division by 20, but some spoilt their calculation by working with the actual reduction, rather than the reduced price. As with all QWC questions it was necessary to give a concluding statement at the end. This was not done by all students.

Question 19

At this stage in the paper there were many who failed to attempt this question. Of those who did, the weaker students attempted it by numerical methods, which all too frequently resulted in no marks. Of those who did attempt some algebra, the equation was sometimes not equated to N , but did attract some marks in (b) when simplified, though some students rejected their algebra in (a) for a numerical approach in (b).

Question 20

In part (a) it was disappointing to see a significant number of students giving the answer as 35 after a division of 100. In contrast part (b) was far more successful. Part (c) has always caused some difficulty for students, and it was the same here. Most multiplied by 100. Anyone giving the multiplier as 100^2 went on to give the correct answer.

Question 21

In part (a) too many students failed to understand the term "translate"; this was evidenced by examples of rotations and reflections. Part (b) was answered with greater success. Many noted it was a rotation, and this was usually followed by a description of direction and angle, with only a minority making errors in this statement. Missing out a reference to the centre of rotation was a common error.

Question 22

There were many who chose not to attempt this question. Of those who did it was common to see mixed up working that was hard to follow. Marks for early work such as 4×35 were usually awarded, but students then became confused with units, order of process and what they had to find to conclude the question. Marks for a conclusion were only given if supported by a correct numerical solution showing working.

Summary

Based on their performance on this paper, students are offered the following advice:

- working needs to be presented legibly and in an organised way on the page, sufficient that the order of the process of solution is clear.
- the inclusion of working out to support answers continues to need emphasis at a time when the demand for working out for some questions is increasing.
- figures need to be written clearly, and not written-over.
- students need to spend more time ensuring they read the fine detail of the question to avoid giving answers that do not answer the question.
- the full range of equipment needs to be brought to the examination: in this case including a ruler, a compass and a protractor.