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Principal Examiner Feedback

Summer 2015

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Higher (Calculator) Unit 1

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GCSE Mathematics 2MB01
Principal Examiner Feedback – Higher Paper Unit 1

Introduction

Far fewer able candidates took this paper than previous series, perhaps due to the new rules on resits. As a result performance overall was weaker. This was particularly the case with questions near to the end of the paper. Performance on unstructured questions was also weaker, showing less strategy in coming up with secure procedures for solution, and 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 examiners found it impossible to identify a chosen route of solution by the candidate, in order to award method marks.

Equally diagrams and graphs need to be drawn accurately. There were too many examples where candidates were not careful enough in taking readings from graphs.

In too many questions candidates failed to read exactly what was being asked for, and instead provided alternative solutions that were either wrong or not required. This occurred mainly in questions 1b, 2b, 2c, 3a, 3c, 5, 6b 9b, 10b and 12c. A significant number of marks were lost by some candidates who failed to show sufficient care.

Report on individual questions

Question 1

It was very common to see the correct answer given in part (a). But success was not quite as good in part (b), where there were examples of candidates using a probability for tails, or even a number other than 200.

Question 2

There were some accurate descriptions in part (a). Although "positive correlation" was accepted, most preferred to give the relationship in words, though not all of these gave a description of the dynamic relationship between the two variables.

Part (b) was also well answered, though a significant minority lost the marks when they used the line for sandy soil rather than clay soil.
In part (c) candidates needed to work out the gradient of the line for sandy soil. They did so in a variety of ways, the most prevalent to take two readings and divide to find the increase over one year. Some candidates though they could do this by taking one reading and dividing by the time, which would have worked but the fact that the line did not start at the origin. Again some candidates lost the marks by using the wrong line.

In part (d) nearly all candidates gained some credit for their comparative statements, but the best answers provided some additional evidence for their comparisons, usually quoting the rates of increase, or directly comparing them, for example finding one was double the other. These quality statements gained the full 2 marks.

Question 3

Throughout this question candidates needed to ensure they understood what was being asked for, rather then what they thought was being asked for. Responses did not always match the requirement of the question.

In part (a) the majority of the candidates made some mention of the fact that it was inappropriate to sample people who were already at the market, or even proposed taking further samples elsewhere; both responses of this type gained the mark. Giving implausible reasons why people might not wish to participate indicated weaknesses in understanding bias in sampling. In part (b) there were again many good answers, mainly referring to it being a leading question or possible misunderstanding of "cheap".

In part (c) there were some candidates who chose to give a question about the price of food again, even though the question clearly made reference to distance travelled. A further misunderstanding was seen when time duration was included in responses. But many gave a sensible question with sound response boxes, though some were overlapping or not exhaustive.

Question 4

Part (a) was well answered, but in (b) many lost the mark by giving 54.49, that is by not indicating the recurring nature of this decimal. The alternative solution of 54.5 gained full marks.

Question 5

Nearly all candidates demonstrated an ability to work out percentages (though there remain a minority who incorrect divide by 15) and so gained the first mark in the solution. But too many failed to gain any further marks since they failed to rad the question properly. Stating the costs without finding the difference, discounting the Saturday (or both days), or stating the sum of the costs were all common errors seen in working.

Question 6

Most candidates presented a fully correct and ordered stem & leaf diagram, though for a small number marks were lost due to omission, unordering, or the absence of a key.

In part (b) most candidates demonstrated the ability to divide by a ratio, but far too many then gave the number of games the team did not win, rather than those who won, even after having found both these numbers. The question clearly stated what was needed.

Question 7

The mode was not understood by many, with an almost random array of answers from any of those shown either as a frequency or as the number of badges. In contrast in part (b) there were many attempts to calculate fx from the table. Unfortunately many solutions were spoilt when the divisor used was either 6 or 15, rather than the correct 25. It was disappointing to find Higher level candidates who thought that 0×2 was 2.

In part (c) there were very few correct answers. Although some realised they had to find the total number of older girls by calculating 15×4.4, even these failed to realise what to do with the result of this calculation.

Question 8

Generally a well answered question with many good concluding statements seen. The majority of candidates demonstrated sound compound interest calculations, with errors mainly seen in the work of those who chose to use multipliers (eg 1.3 rather than 1.03). A few spoilt their solution by using £4000 instead of £40000

Question 9

The median for this graph needed to be read from the midpoint of the graph, rather than axes: from 70 rather than from 80. It was not always the case that candidates read off accurately. It is advisable to draw straight lines on the graph, not only to show where readings are taken from/to, but also to ensure this is done accurately. Inaccuracy also spoilt some answers in (b), but the main error was in finding the number of girls who revised for less than 30 minutes, rather than for more than 30 minutes.

Attempts at part (c) were probably better than seen on previous papers. Candidates are preparing themselves for this type of question. It is wise to gather together the figures for the median and the interquartile range first, before attempting to link them with a comparative statement, and many candidates did this be first presenting this information in a table. This was also a very good way of presenting the information for examiners to credit with marks. The final 2 marks were awarded for the quality of response. Candidates who merely stated the values for the Median and IQR were not making a comparison. Most made a valid statement, but those who ensuring their statement was in context by referring to revision times were able to gain the full marks.

Question 10

In part (a) only a minority remember the definition of a stratified sample, and made reference to proportional groups. Part (b) was answered with greater success, though some chose to use a group other than males aged 40, which gained no credit. Surprisingly a significant minority failed to use the total number of people in their calculation; most remembered to round their final decimal to give a whole number of people.

Question 11

Some good answers in this question, with many gaining at least 2 marks.

Question 12

Sometimes probability questions of this kind require the candidates to deduce that it is a case of non-replacement. In this question it was clearly stated that the counter taken first was kept before taking the second. But still many candidates ignored this detail and therefore both their tree diagrams and subsequent solutions were flawed. IN part (a) the probability tree diagram was incomplete, but nearly all candidates presented the remaining branches correctly to support their probabilities; only a small number failed to include any labels on their branches.

Part (b) was answered well; the only error in some was adding their probabilities rather than multiplying them. Those who made this error in part (b) did so also in part (c), but there the main error was in finding the probability for two counters with one letter A, rather than the probability for at least one counter with the letter A.

Question 13

This question was designed to differentiate at the highest grades, and did so: few candidates were able to make any headway with this question. Those who did not understand histograms merely treated this as a bar chart, writing a variety of numbers in the bars. Some gained partial credit by undertaking a frequency density calculation; others who realised that putting 90 in the first column gave them a scale of 30 per centimetre square had some success at putting the numbers in the rest of the diagram, though commonly made an error when the square was not whole, a problem with this approach.

Summary

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

- Centres need to be aware that in order to gain the highest grades proficiency must be shown across the whole paper, including the easier questions in the first half of the paper.
- 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
- In using graphs candidates needs to ensure that any readings they take from the graph are accurately read
- 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
- Candidates need to spend more time ensuring they read the fine detail of the question to avoid giving answers that do not answer the question.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

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