

# Principal Examiner Feedback

November 2013

Pearson Edexcel GCSE  
In Mathematics Modular (2MB01)  
Unit 1: (5MB1H\_01) Higher (Calculator)

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# GCSE Mathematics 2MB01

## Principal Examiner Feedback – Higher Paper Unit 1

### Introduction

Many candidates were able to make inroads into some of the unstructured questions, whilst still gaining marks on questions which had a more traditional style. What was particularly pleasing was the variety of different approaches exhibited by candidates.

The inclusion of working out to support answers remains an issue for many; it is extremely difficult to track the method used by candidates who present a page of disorganised working spread across the answer space. Presentation of ordered method is key to gaining the many method marks available on this paper.

This was a calculator paper and many different ways of performing calculations were seen, including some non-calculator methods (usually unproductive); in too many cases was there evidence of poor multiplication when a calculator should have delivered a correct result.

### Report on individual questions

#### Question 1

This was generally well done with the majority of candidates getting full marks. In part (a) most candidates remembered to include a time frame in their question. Response boxes were usually constructed well, without overlap, and more often also exhaustive.

In part (b) many gave sound reasons for possible bias, including a reference to gender, age and familiarity.

#### Question 2

In part (a) candidates appeared to understand that subtraction from 1 had to occur somewhere, and/or that a first step was to deal with both  $x$  and 0.25, but putting it all together caused significant problems. Many left ambiguous statements such as  $1 - 0.25 - x$ . Others showed the correct answer, but then spoilt this by over-simplification on the answer line. The answer did not need to be simplified, and all equivalent expressions to  $0.75 - x$  were credited.

#### Question 3

In part (a) a well answered question. In part (b) too many gave the answer for a range, rather than the interquartile range.

#### Question 4

Some failed to understand what was necessary in this question and tried to compare the 4 figures given, perhaps merely by converting one of the quantities of diesel. The majority realised that some proportion was needed, either based on a quantity per cost or cost per quantity, so that a comparison can be made, though there were other possible methods for comparison which were demonstrated. Most gave a concluding statement, but there were many cases where working was so unclear that the evidence supporting a comparison was not obvious, and marks were therefore lost. The essence of a QWC question is to present working in such a way that their method is clear, and in this case (for most) two clear methods for each of the two persons described in the question.

### **Question 5**

A well answered questions. In part (a) many described a relationship between umbrellas and rainfall; positive correlation was also accepted as long as "correlation" was mentioned. In part (b) the common error was mis-reading the scales, resulting in an answer in the 40s rather than the 50s.

### **Question 6**

There was a lot of work to be done in this question, and much working out needed to be shown. It is interesting to note that presentation of work was far better in this question than in Question 4. Only a few worked with the wrong costs from the table. The main error was in using the discount (5%) as the cost for the family for Highway Airlines, or deducting £25 only for the Jetstream Airways total. Concluding statements were always given. The majority of candidates gained full marks.

### **Question 7**

Part (a) was well answered. In part (b) candidates need to remember that a truncated answer such as 168.49 is not accepted; this answer is a recurring decimal and that aspect of the decimal must be shown, otherwise 168.5 is also acceptable.

### **Question 8**

There remains a lot of confusion about the process to find the mean from a grouped frequency table. In most cases midpoints were used, rather than end points. The most common error in the first stage was to use the interval (50) rather than the midpoint, though some merely added the four frequency values. It was not uncommon for the final stage to be spoilt by a division of 4 rather than 40.

### **Question 9**

The scale of the box plot was simple, yet too many candidates mis-read values when either drawing the box plot, or completing the table. Part (b) was not well understood, as evidenced by estimates, guesses, and proportional calculations involving 8 and 60. Candidates need to be reminded that box plots effectively divide the distribution of the data into four parts.

### **Question 10**

A question that was not well understood. Most common was just finding the mean of the two means given. This was the first question on the paper where some non-attempts were seen.

### **Question 11**

The essence of this question was the need to make comparisons of two distributions. The number of marks awarded was dependent on the quality of the answer. Candidates needed to realise that the graphs did not provide information about the actual heights, but rather a distribution, and therefore use of median, range, IQR, etc. were most appropriate. Candidates who worked out and listed these values without any comparison gained no marks. The better quality responses not only worked these out, stated which was more (or less) than the other, but was also phrased within the context of the question and made reference to heights of children.

**Question 12**

In part (a) some candidates picked two points on the line and used these to work out the gradient, though there were many cases where the inverse of the gradient was given. Some chose to use a triangle on the line, but in this case many incorrectly counted squares rather than using the scale on the axes.

In part (b) it was disappointing to find too many giving an incorrect value of 35 or 36, when it was quite clear from the graph that the intersection point lay between these two values.

**Question 13**

Most provided a good tree diagram, though some thought that the only values that could be used were 0.3 or 0.6. In part (b) a significant minority worked with only one combination rather than two; the most common error was in adding the probabilities rather than multiplying. Candidates who converted the decimals to fractions made life harder for themselves, though these were acceptable as equivalents (if correct).

**Question 14**

A well answered question, the only error in processing the three key numbers incorrectly.

**Question 15**

Many candidates gained the first mark by either calculating areas through use of the dimensions, or counting squares. Those using column heights scored no marks.

Most understood the need to find 25% of their total. How to use this to answer the question eluded most.

**Question 16**

It should be clear from the context of the question that it is impossible to pick two people simultaneously, and that this is therefore a case of non-replacement. Too many candidates failed to spot this and assumed that denominators and numerators of fractions never changed. Some worked with just one combination rather than the two possible. Some felt the need to convert their fractions into decimals; in these cases premature rounding was common, leading to inaccuracy in final answers.

**Question 17**

This was a well answered question. Most understood that some proportional calculation was needed, and of those most gave the correct answer. Though many gave a correct assumption relating to a fixed population or ensuring a random sample, there were also many who incorrectly gave an explanation for their working, or incongruous reasons, indicating a misunderstanding about what an "assumption" was related to.



## **Grade Boundaries**

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