Principal Examiner Feedback

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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

The paper was accessible to all students, with every question attempted by most students.

It was encouraging to note that students showed their working on the starred (QWC) questions.

Students should be encouraged to look at their answer to see if it is realistic. For example, in question 15 some students said that 400 lizards had a body temperature greater than 30°C even though the information given was only for 320 lizards.

REPORT ON INDIVIDUAL QUESTIONS

Question 1

This question proved to be a good starter question with most students scoring all the marks. However, some students did omit the key or gave an incomplete key such as 4|7 without seeing $=47$. Some students missed out one of the weights, losing one of the available marks.

Question 2

Parts (a) and (b) were well answered by most students.
In part (a) the most common method was to say 10 biscuits needed 60g so 20 biscuits needed 120g of sugar. Many different methods were used in part (b) with many incomplete methods such as giving an answer of 2.5 from $1000 \div 400$. Recognising there were 1000g in a kg did not prove to be a problem for the students.

Question 3

Many students could successfully describe the relationship between the hand length and the foot length, either by commenting on the greater the length of the foot, the greater the hand length or vice versa. Many scored the mark for stating 'positive correlation', sometimes together with a correct statement. However, there were many students who just wrote that the relationship was positive rather than writing 'positive correlation' thereby scoring no marks in (a). Part (b) was very well answered. Most students correctly estimated Toby's foot length between 24 and 25 inclusive, often without drawing a line of best fit.

Question 4

In part (a) many students thought that you could only listen to music on the radio whilst others did not write a question to find out how much time people spent listening to the radio ... writing a question to find out how often people listened to the radio instead. The most common error with student's response boxes was to have overlapping regions. It was not uncommon to see $1-3, 3-5, 5-7$ etc. Others overlapped zero by having boxes of 'do not listen to the radio' and '$0-2$' or omitted the time frame altogether.

In part (b) the most common incorrect response was stating that people who dance automatically listen to the radio.

Question 5

Most students realised they had to add the given expressions with many scoring 1 mark for $2x+9+4x-7$ and many of these going on to divide by 2. A few students reached the correct answer but then carried on trying to 'simplify' more such as $(2x+9+4x-7) \div 2 = (6x-2) \div 2$ or $3x-1$. However, there were many students who just formed the equation $2x+9=4x-7$ or tried to write a product such as $(2x+9)(4x-7)$ scoring no marks.

Question 6

This was well answered with many students scoring all 5 marks, generally for 457.8 and 456 and often with a statement that Fraya was short by £1.80. The most challenging part was in working out 15% of 168 with some just doing $168-15=153$. Others found the discount of 25.20 but failed to subtract it from 168. A handful of students found there was £1.80 difference but then wrote that Freya did have enough money, losing the final communication mark.

Question 7

Part (a) was well answered by most but a few wrote $5 < a \leq 10$ and $10 < a \leq 15$ seeing these as the two middle intervals in the table. It was surprising to find how many students did not know how to calculate the mean from a grouped frequency table. It was not uncommon to see $437.5 \div 4$ rather than by $437.5 \div 35$ or $(5+10+15+20) \div 4$ or even the sum of the mid interval values divided by 4.

Question 8

There were many correct answers with most of the correct answers coming from having drawn a two-way table. Those that did not draw a two-way table tended to make errors along the way and write a series of calculations all over the page such that it was difficult to follow what they were trying to do.

Question 9

Part (a) was well answered by some students where they wrote answers between 1.3 and 1.5. The most common error was to misread the vertical axis with 68 (reading from 50 minutes) often written as 64. There were many blank responses to part (a) and even more blank responses to part (b) where students struggled to write down a practical interpretation of their answer to part (a). Many just described how they got their answer to part (a).

Question 10

There were many incorrect responses to this question. It was not uncommon to see $8.4-8.25=0.15$ as an incorrect response. Those that did score the first method mark, generally for 8.25×30 then went on to divide the resulting 247.5 by 20 or by 50 or just wrote 247.5 as their answer.

Question 11

A few students were able to provide the correct answer but most suggested you just pick every 200th one, clearly not understanding what was required for choosing a random sample. A large number of students just wrote 'stratified sample' ... just writing done a type of sampling that they had heard of!

Question 12

Most students read the graph at 72 and wrote 340 as their answer to part (a). However, many did go on to subtract from 400 getting an answer in the given range for 2 marks. There were many attempts at box plots in part (b) with most students drawing a box and whiskers that extended to 50 and 81. However, many of these students did not know how to find the quartiles (or median) from the given cumulative frequency graph so could not access the last 1 or 2 marks for this part. Part (c) was poorly done by nearly all students. A common error was not to give any values for their stated comparisons and few managed to put the comparisons into context.

Question 13

The tree diagram was successfully completed by most students although there were many students who tried to do it without replacement which is surprising seeing that the question involved throwing dice rather than selecting objects from a bag. It was not uncommon to see the probabilities for the second throw having a denominator of 4. In part (b) many added the fractions often getting an answer greater than 1, clearly not looking to see if their answer was reasonable.

Question 14

This question was well answered by many students and it was pleasing to note that nearly all students who managed to get 1.93... realised that a whole number answer was required. Students do need to look at their answers to see if they are realistic. For example, $17 \div 20 \times 176 = 150$ in the sample (for a sample of 20!!) was clearly an unrealistic answer. The most common error was to use the 91 males rather than the total of 176 people.

Question 15

There were many blank responses to this question and very few correct answers. Students struggled to equate the area to frequency. A few students counted the number of small blocks in the last two columns getting $5 \times 36 + 10 \times 22 = 400$ but then failed to divide this answer by 2 to get the correct number of lizards. Had they read the question properly they would have seen that the total was 320 lizards so the answer could not possibly be 400.

Question 16

Hardly any students were able to answer this question successfully, particularly part (b). In part (a) most students either wrote $0.05 \times 3 = 0.15$ or just gave an answer of 0.05 both of which scored no marks. A few wrote $0.95 \times 3 = 2.85$ which clearly is an incorrect probability. In part (b) the most common incorrect response was $0.95 \times 2 = 1.9$ which is clearly incorrect.

Question 17

This last question proved to be a challenging question for most students. A few students looked at the ratio black to white $=2:48$ $=1:24$ and then went on to do $30 \times 24 = 720$, scoring no marks/ Most had little idea how to approach this question. In part (b) those that attempted to write an assumption tended to just try to explain what they had done in part (a).

Summary

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

• read the question again after answering to ensure their answer is what is required.

• students should ensure they use black or blue pens to ensure their writing is visible online to examiners. Other coloured pens should not be used, particularly when drawing diagrams. Using a pencil is fine for graphs but students must ensure they use a soft pencil so that their lines or crosses are clearly visible online.

• when using a graph to find the gradient, students should be encouraged to use a large triangle rather than just looking at a 2 mm square.

• when completing a stem and leaf diagram students should ensure they count up all the values in their final table and check that this is the correct amount of values by looking at the original question.

• when solving problems of the type in question 8 students would benefit from drawing a two-way table.

• when answering questions on probability students should recognise their answer is incorrect if they get an answer greater than 1.