

Principal Examiner Feedback

Summer 2014

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Unit 2: 5MB2F_01 (Foundation)

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GCSE Mathematics 2MB01

Principal Examiner Feedback – Foundation Paper Unit 2

Introduction

Students appeared to be able to complete the paper in the allotted time.

Students were showing their working out well. In starred questions most students realised that they needed to show numerical working and very rarely offered unsupported worded responses. Few clearly annotated their method with appropriate words to make the working out process clear.

Students need to practice writing concise sentences where questions required a sentence to confirm their result.

Students were, in most cases, showing their working out well but were often making arithmetic errors especially in the real life problems that were more than 2 marks.

Students were generally attempting all questions so it was rare to see blank responses.

Report on individual questions

Question 1

Students attempted part (a) well, with most students gaining the mark. The most common incorrect response was to draw an Isosceles triangle though occasionally these were also right-angled so they gained the mark. Another less frequent response was to draw a right-angle but not a triangle, possibly having misread the question.

Most students gained both marks in part (b). Incorrect responses were to draw a rectangle with an area not equal to 12cm^2 or a triangle with area 12cm^2 . Weaker students were drawing other shapes though not of area 12cm^2

Question 2

The students attempted part (a) well and it was rare to see blank responses. Common incorrect responses included drawing the fourth triangle on top of pattern 3, drawing pattern 5, possibly adding the extra triangle when answering part (b) and forgetting that it needed to be pattern No.4, and drawing the triangles in line but as separate triangles with no common sides.

It was rare to see blank responses in part (b) and some students even gained the mark having drawn an incorrect diagram in part (a). Common incorrect responses were often due to not spotting the pattern and using their incorrect diagram.

Students were less successful in part (c) than in parts (a) and (b) with a common incorrect answer being 33. Weaker students were finding the number of sticks in

the 15th pattern by counting on and finding all the terms of the sequence up to the 15th but poor arithmetic meant that they weren't always successful.

Part (d) of this question was well attempted and it was rare to see blank responses but, although $2n+1$ was an acceptable answer, many students failed to gain the mark when they were attempting to find an n th term as they over complicated the question. Others found the term to be 101 by writing all the terms of the sequence but without clearly having +2 in the response they could not gain the mark for writing down a method. By far the most common incorrect response seen were cases where students put down that "you could find the 10th term and multiply it by 5".

Question 3

This question was well attempted with few blank responses and most students gained all three marks. Common incorrect responses in part (a) were obtuse and right-angle, in part (b) to mark sides of equal length or draw three lines of symmetry as if the triangle were equilateral and in part (c) the only repeated errors were 100 or $360-100=260$

Question 4

This question was well attempted with most students gaining full marks. Most didn't show any working as they were counting on the diagram though, for the weaker students this led to answers of 18 or 20. It was rare to see incorrect values read from the scale.

Question 5

This question was well attempted with many students gaining full marks, though poor arithmetic did let students down and repeated addition was a common approach to division. Some students demonstrated the correct method but then incorrectly stated only three trips needed. The weakest students were often able to gain a mark for 50×30 or for writing $450 \div 30$ even though they couldn't complete this calculation.

Question 6

Part (a) was attempted well by students and most of them gained the mark for this part of the question. The only repeated common error was to read the first train times and write 09:34. Many students missed the zero from their answer though they weren't penalised in this part of the question.

Poor arithmetic and misreading the table meant that part (b) was the least successful part of this question.

In part (c) many students gained full marks but some lost out due to forgetting to include the zero for correct notation of 24 hour time. Weaker students were usually getting the Stoke-on-Trent and London times wrong as they were adding 5 minutes to 07 56 instead of the timetable times.

Question 7

All parts of this question were attempted well. In part (a) most students gained the mark with only the weakest scoring zero, often for incorrectly reading the number as two thousand and four hundred.

In part (b) and (c) poor arithmetic let students down with -28 and -14 being common errors in part (b) along with 21 and in part (c) a common error was not to complete the calculation leaving their answer as $6+21$

In part (d), as in part (c), some students left their answer as $2 \times 2 \times 2 \times 2$. Other weaker students wrote 8 or 32 for their answers.

Although there were very few blank responses seen in part (e), it was the least successful part of question 7. All other numbers in the list were seen as incorrect responses but 4 was the most common incorrect response with students' possibly confusing prime with a square number.

Many students gained the mark in part (f) but a common error was $\frac{1}{3}$. Weaker students simply wrote 2:6 again.

Question 8

Part (a) of this question was attempted well by students, with only the very weakest students failing to gain a mark. Many students successfully gained full marks and if they didn't, they either struggled to do $13.50 \div 0.50$, often tackling it by repeated addition which lead to answers of 26, 28 etc, or they did $20 \times 50 = 10.00$, $13.50 - 10.00 = 3.50$ then wrote 3.50 as their final answer, possibly not reading the question carefully enough thus calculating how much more money was made on Tuesday rather than how many more fruit bars were sold.

Part (b) was also well attempted and again only the weaker students failed to score. Many students set their working out clearly annotating their working with key words so it was clear how much money Katie had and how much she spent. These students often went on to gain full marks by stating clearly, with reference to the price of the fruit bar, that no she didn't have enough money as she only had 15p or needed 35p more. Weaker students, with poorer presentation of their working, often made computational errors. Stating Katie had £1.60 and failing to add in the cost of lemon drink were common errors, along with $2.60 - 2.45 = 0.25$ hence an inability to borrow when subtracting.

Question 9

(Parts (a) and (b) of this question were attempted very well by students, and most gained both marks, though they were slightly less successful than in part (a). Most errors were down to not reading the scale accurately enough or converting 35km to miles.

Part (c) was also well attempted and it was rare to see blank responses but students were considerably less successful than in parts (a) and (b). Many students, instead of using their answers in parts (a) or (b), chose to start again using $5\text{miles}=8\text{km}$ which did lead to fully correct responses for some, but others chose to use a new inaccurate conversion facts from the graph or were using an incorrect conversion fact, consequently they rarely went on to achieve any marks. The weakest of the students failed to realise that the units were not consistent throughout the question.

Question 10

Students attempted parts (a) and (b) very well, most gained both marks and it was rare to see blank responses. In part (a) incorrect responses were usually due to carelessness e.g. 3, $4a$, a , $7a$ and likewise in part (b) e.g. 12, $7y$

(Part (c) was also well attempted by students with very few blank responses seen but students were less successful on this part of the question though more students than not gained both marks. The most common error was to incorrectly merge $5e + 3f$ to $8ef$. Other common errors included e or $5f$ or missing the add sign and simply writing $5e\ 3f$.

Question 11

Students attempted part (a) well, with few blank responses seen. Very little working out was seen for both correct and incorrect responses. The most common of which was 25%

Part (b) was also well attempted by students, and it was rare to see a blank response but more students than not, either did not read the question or did not understand how to estimate a calculation, as they attempted to find the exact answer to 113×185 for which they were awarded no marks.

Question 12

Almost all students attempted parts (a) and (b) well and it was rare to see a blank response. In part (a) common errors included 2×6 , 2×8 and $x8$ and in part (b), where students were generally more successful, the only repeated common error was attempting to divide the powers too.

Question 13

This question was well attempted with few blank responses seen and many students gaining at least one mark and many full marks. Students were usually more successful at finding $\frac{1}{4}$ of 120 than $\frac{1}{3}$ of 120. It was very rare to see responses where a student correctly found 30 and 40 and then didn't complete the process successfully. Some students chose to work with the fractions (the second method) but only the most able were successful with this approach and some left their answer as a fraction. Weaker students converted the fractions to percentages and were often able to find 25% of 120 but it was very rare to see any student correctly convert $\frac{1}{3}$ to a sufficiently accurate percentage that would enable them to get the answer 40. The very weakest students were making basic arithmetic errors and were unable to divide by 3 though in some cases they did gain the method mark. Others were stating incorrect equivalent fractions such as 30% and 40% for $\frac{1}{3}$ and $\frac{1}{4}$ respectively.

Question 14

This question was well attempted with few blank responses seen and many students gaining at least one mark, usually for identifying how many packets would fit long a side of the box or showing a correct method to find a volume. Many of these went on to earn a second mark for converting 2m to 200cm or finding a second multiplier. The more successful students used multipliers as those who used the volume approach, without converting to cm, usually reversed the division so failed to gain the third method mark or struggled to work with numbers with so many zeros. The very weakest student were adding dimensions or incorrectly writing $2\text{m} = 2000\text{cm}$.

Question 15

This question was well attempted with few blank responses seen but many students failed to gain full marks. Those that did correctly identify angles on the diagram which led to $x = 80^\circ$ were on the whole unable to list all the appropriate reasons using correct words. Many students were still incorrectly referring to alternate angles as Z angles, some described a method and others missed key words out of their reasons, the most common of which was the word 'angles'. Weaker students were often able to identify at least one correct angle on the diagram, usually $\angle ABE = 50^\circ$, but then incorrectly labelled $\angle EFB = 50^\circ$ or incorrectly labelled $\angle EAF$ and $\angle EFB$ as 65° . Those that used the diagram were more successful as it was often difficult to identify which angles students were finding from their working out alone.

Grade Boundaries

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