Examiners' Report
Principal Examiner Feedback

Summer 2017

Pearson Edexcel International GCSE
In Mathematics B (4MB0) Paper 01

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The questions on this paper were of a similar standard to previous sessions and candidates were able to demonstrate positive achievement over a range of topics. The questions were able to discriminate well and in addition to some more straightforward items, there were a number of more challenging questions.

In particular, to enhance performance, centres should concentrate on questions involving negative numbers and the manipulation of these – far too many students dropped negative signs and struggled with operations involving negative numbers. Some students failed to read questions carefully and, for example, used inverse proportion when they were told it was direct.

It should be noted that the methods identified within this report and on the mark scheme may not be the only legitimate methods for correctly solving the questions. Alternative methods, whilst not explicitly identified, earn the equivalent marks.

Report on Individual Questions

Question 1
The majority of students were able to correctly give the next two terms in the sequence.

Question 2
The vast majority of students were able to give us a correct answer to this question, but not so many gained full marks. The question specifically asked students to not use their calculators and to show all working, so those that did not were penalised and lost both marks. Those that knew what they were doing generally used a LCM of 30 and correctly calculated the numerators for this. A few students did not even do a check with their calculators and showed a wrong method and gave an incorrect answer. Some knew the answer they were working towards and tried to hoodwink us into giving them marks by using spurious numbers and methods that had no meaning. Some students showed working of how to get to $\frac{13}{15}$ but failed to go on to show working for the second part of the calculation.

Question 3
(a) Very few students knew that the maximum value of g(x) was 12 and even less knew that their answer to (a) would lead them into the answer to (b).

Question 4
We saw several correct answers for this questions on 'set' notation, but many students just added the 3 given numbers, giving an answer which was 16 more than needed. Others took the value of the intersection away from both set A and set B and added the numbers, consequently they were 16 short.

Question 5
Although the majority of students were able to correctly do the calculation of distance divided by time and gain the first method mark, many thought that one-third of an hour is 33 mins rather than 20, so failed to gain the accuracy mark. One would think that a question involving time would have been much more accessible. Students must be reminded that there are 60 minutes in an hour, rather than the 100 many used for this question. Students need

also to be wary when converting fractions to decimals, as $\frac{40}{30}$ was often seen to be converted to 1.3.

Question 6
This question had a mixed response, with many easily gaining 2 marks and others doing various incorrect calculations, the most popular of which was 360 – 235. Some students showed a correctly labelled diagram which was worth a method mark.

Question 7
On the whole, this question was done relatively well by most students. The correct answer was often seen and without this, some gained a method mark for the substitution of −3 into the expression. A few, unfortunately, substituted +3 and gained no marks; some dropped the minus sign during their working and failed to gain the accuracy mark.. Very few students attempted a long division method and most of these were unsuccessful.

Question 8
This question was done well on the whole with many students knowing how many lines of symmetry and the order of rotational symmetry of the diagram.

Question 9
We saw several correct answers for this probability questions and also many responses worth M1 where they had considered only one combination of balls of the same colour. We allowed a special case for a full method for replacement and a few students were able to benefit from this. Students must be reminded that when the question says ‘three balls are taken at random from the bag’ it means they are taken, one after the other, without replacement. Some students showed a mix of replacement and non-replacement in their methods, e.g. $\frac{10}{40}\times\frac{9}{40}\times\frac{8}{40}$ or $\frac{10}{40}\times\frac{10}{39}\times\frac{10}{38}$ and inevitably gained no marks.

Question 10
This was another question where no working resulted in no marks – so those students who went straight to the line $12\sqrt{3}-9\sqrt{3}$ without showing us that 432 = 144 × 3 and 243 = 81 × 3 or an equivalent method or showing prime factors gained no marks at all. Several left the answer as $3\sqrt{3}$ rather than writing it as requested in the form $\sqrt{n}$, i.e. $\sqrt{27}$; with working they gained 2 marks.

Question 11
We gained a good response for this question although some students get the formula slightly mixed up. Some students stopped when they had found AP and gave the answer of 2, so losing out on 2 more marks.

Question 12
On the whole, this question was done well. With the majority gaining full marks. Most were able to expand $(x-1)(x-4)$ and gain the first method mark. Many were completely successful. Curiously, as many students used the formula as tried to factorise. Students must remember that where answers for a quadratic are not required to a given degree of accuracy, the quadratic will always factorise.

Question 13
This question was, on the whole, very well done. However, there were a few that wrongly assumed it was a right angled triangle and gained no marks.

Question 14
There was a mixed response to this question with many students misunderstanding the ratio and thinking that the ratio 2:5 was linked to the ages now, rather than the stated, 5 years ago. A common response was 9 ÷ 2 × 5 = 22.5. Some students were able to benefit from a mark for knowing car B was 10 years old, 5 years ago.

Question 15
This question was quite poorly done with many students not really understanding what was needed. Some gained a method mark for the coordinate (7, 3) , ie the point C but then frequently divided by two, giving (3.5, 1.5) as their solution.

Question 16
This question was generally quite well done but there were some students who could only pick up a method mark for rearranging to get $\frac{1}{b}$ in terms of the other letters. Students were allowed one sign slip in the first two method marks and this benefitted some, particularly where the final answer seen was $b = \frac{ac}{2a+c}$. Another common error was dropping minus signs.

Question 17
Many correct answers were seen for this question and if not full marks then several gained 2 marks for the correct LCM or HCF with correct working.

Question 18
This question was quite poorly done, with 1 being the most common mark for the factorisation of the denominator. Many tried to factorise the numerator, but failed to give the same terms in both brackets, so not helping them at all. A few responses were seen just cancelling terms out without factorising and gaining completely incorrect answers.

Question 19
(ai) Most students were able to gain the correct answer for the fraction written to 2 significant figures; mistakes were generally to write the decimal to 2 decimal places.

(aii) This was often correct, but a common mistake was to write the fraction to 2 significant figures rather than to 2 decimal places.

(b) many students failed to gain full marks here, but many benefitted from a method mark for 1.8×10^n but all too frequently the n was −149 because they had added the indices rather than subtracted. Some students wrote the answer because that is what the calculator gives.

Question 20
This question on inequalities was quite well done and the majority were able to gain at least M2 for dealing with either end of the inequality and showing at least a correct first stage of working. For students failing to gain any marks, a common mistake was to split the middle expression and use the first term with the expression on the left and vice versa. Some students failed to gain the last accuracy mark, probably because they had not read that the integer values were required.

Question 21
Many students did very well on this question and were able to give accurate reasons and so gain full marks. Some gave the correct answer, and either didn't know the reasons or didn't realised they were required. A few students thought that in (b) obtuse angle AOC was an angle opposite to ABC in a cyclic quadrilateral as they incorrectly believed that as long as a quadrilateral was inside a circle it was cyclic, this was the case with quadrilateral *ABCO*. Another mistake, quite frequently seen was the candidate who thought that angle CDO was equal to COD – and gave the reasons of isosceles triangle.

Question 22
Students, on the whole, performed well on this matrices question. The negative values in the matrices caused problems for some students and also a small slip in a calculation caused a lost mark.

Question 23
Students often had a good level of success on this question. A few showed they got mixed up with direct and inverse proportion. Many failed to give the values of x, as required, and only gave the positive value, thus losing the last mark.

Question 24
There was a very mixed response for this question and several failed to know where to start. Some gave a correct first equation, but were unable to follow it up with correct working to find the value of x. Common mistakes often involved adding the five numbers and forgetting the need to divide by 5. Some divided all the numbers individually by 5 before adding. In (b), the mark was a follow through mark and enabled students to recover. However 14 was a popular but erroneous answer as many students did not change the order of the list. A small minority of students seemed to feel that it was the mean we required here.

Question 25
On the whole, this question was very well done, with many students achieving at least 4 marks and often 6 marks. A popular, but erroneous method in part (c) was to evaluate $x(4.75)$ and then subtract 27

Question 26
Some students are very adept at construction questions and this one caused them no problems. A few failed to make a good start and were unable to draw the correct triangle. A few did not read the question carefully enough and bisected the wrong angle or bisected a line.

Question 27
We were testing the students' recall of the cosine rule in this question, as well as being able to follow the question through correctly. The majority were able to gain the mark for their

correct recall of the cosine rule with the appropriate values substituted. Many were then able to correctly expand $(x + 9)^2$ and $(2x)^2$, although a number gave $(x + 9)^2 = x^2 + 81$ and even more common was $(2x)^2 = 2x^2$. Many were able to gain a mark for correctly substituting their values of a, b and c into the quadratic formula. This was probably the most challenging question on the paper.

Question 28

(a) This part was often correct and those that were not, often forgot to cube root the volume ratio.

(b) 2 marks was very common for this part of the question where students either correctly calculated the height of C or the radius of C. Many were then puzzled as to the way to proceed.

Question 25

It was fairly common to see a fully correct response for this question, but some students showed little understanding of the fact that area relates to frequency in a histogram.

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