Pearson Edexcel

Examiners' Report

Principal Examiner Feedback

Summer 2018

Pearson Edexcel International GCSE
In Mathematics B (4MB1) Paper 01R

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Paper 1 (R)
Introduction

In general, this paper was well answered by the overwhelming majority of candidates. Some parts of questions did prove to be quite challenging to a few candidates and centres would be well advised to focus some time on these areas when preparing for a future examination.

In particular, to enhance performance, centres should focus their student's attention on the following topics:

- Reasons in geometric problems
- Probability
- Simplifying Surds
- Problems involving Upper and Lower Bounds
- Scale factors involving area
- Vectors
- Solving a quadratic equation by Completing the square
- Unstructured trigonometry questions

In general, candidates should be encouraged to identify the number of marks available for each part of a question and allocate a proportionate amount of time to each part of the question. In addition, candidates should also be advised to read the demands of the question very carefully before attempting to answer. It should be pointed out 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. Some candidates use methods which are beyond the scope of the syllabus and, where used correctly, the corresponding marks are given.

Report on Individual Questions

Question 1
The vast majority of candidates correctly worked out the calculation with the necessary working. The main error made was for the answer to be a top heavy fraction rather than a mixed number.

Question 2
The vast majority of candidates knew how to find the exterior angle and hence the number of sides. The most errors were made by those candidates who selected to use the formula for the sum of the interior angles of a polygon; equating it to 168 rather than 168n.

Question 3
The vast majority of candidates correctly calculated the number of people per square kilometre. The most common error being a failure to read the question and give their answer in standard form to 2 significant figures

Question 4

Nearly all candidates demonstrated that they knew how to differentiate. However, a minority did not rewrite $\frac{7}{x^3}$ as $7x^{-3}$ before differentiating or were unable to rewrite it accurately.

Question 5

There was a mixed response to this question. Candidates who knew they needed to multiply both the numerator and denominator by $3+\sqrt{5}$ were then able to proceed and gain full marks.

Question 6

While the vast majority of candidates correctly calculated the area of the square as 16 a number failed to correctly find the area of the quarter circle (and it was common to see $2\pi r$ being used as the formula for the area of a circle). A number of candidates failed to give their answer to the required 3 significant figures.

Question 7

This standard question requiring the solution of two simultaneous linear equations proved to be no obstacle to the greater majority of candidates who collected full marks. Algebraic slips cost the remainder 1 or 2 marks, depending on their severity.
The most efficient method used was to multiply the second equation by 2 and then eliminate to find the value of y. Others multiplied the first equation by 3.5 to find the value of x first and a minority of candidate used the method of substitution.

Question 8

This question was poorly answered. The main errors were to simply work out the probability of three heads, ignoring the fact that there were 4 coins so the 4th had to be a tail. The second error was to not take into account the order in which the outcomes appear.

Question 9

This was another question for which most candidates collected nearly full marks. Others lost the accuracy mark because of algebraic slips.

Question 10

It was slightly disappointing to note that many candidates gained no marks on this question. Candidates failed to recognise that the word bound meant they needed to find the upper/lower bounds of the numbers given to 1 decimal place. In addition to this very few candidates realised that they needed to use the highest bound of X and the lowest bound of a. Of those who gained the first 2 marks a minority divided X by $2a$ rather than subtracting.

Question 11

The vast majority of students were able to gain the first method mark for multiplying both sides of the equation by $3(c-x^3)$ and the second method mark for collecting the x terms on one side and the other terms on the opposite side. Whilst many students then went on to gain the A1 a minority got the correct answer for x^3 but cubed both sides rather than take the cube root. Others included a $\pm$ in front of the cube root sign.

Question 12

This question was answered well with many candidates scoring full marks. The majority of the others gained the first M1 for dividing by 6 but the most common error after this was to divide by 5 to get $3k + 4 = 25$ rather than writing 125 as 5^3 to get $3k + 4 = 3$

Question 13

The majority of candidates opted to use similar triangles to solve this problem; this being the most efficient (and successful) method. The main errors were to use $\frac{27}{21}$ when finding the scale factor and using this for the scale factor of length rather than finding the square root.

Question 14

Candidates who were able to draw the three lines correctly were generally able to shade and label the correct region. However, it was disappointing that many candidates were unable to draw the lines accurately, most commonly the errors being made with $y = 2$ and $y = 2x + 1$

Question 15

This question was answered well with many candidates gaining full marks. The main error was to give the answer for the total amount Barry and Carlos gave to Mary rather than expressing it as a fraction of the \$120.

Question 16

Whilst the majority of candidates were able to answer this question well a few tried to use factorisation to simplify part (a). In part (b) most knew what the power of a $\frac{1}{3}$ meant and applied it accurately to the a^6c^3 but some forgot to find the cube root of 27.

Question 17

This question was reasonably well answered with most candidates recognising that $\angle OBC = 90°$ and then going on to gain a correct value for $\angle ACB$. A minority gave no reasons for their calculations and of those who did a few were unable to write their reasons adequately.

Question 18

Although this question was well answered by many candidates, the most common error was in finding $\overrightarrow{AB}$. The most common incorrect answers were $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$ or $\begin{pmatrix} 6 \\ -8 \end{pmatrix}$. Of those candidates who gained a column vector in (a) the majority knew how to calculate the modulus.

Question 19

The majority of candidates knew how to divide by a fraction and how to combine fractions to make a single fraction. However a minority of candidates seemed to be unfamiliar with BIDMAS and proceeded to do the subtraction first. Others did not factorise at all and of those who did many did not try to do this until they had a single fraction, which often led to errors being made. Those who factorised first were the most successful.

Question 20

This question was very poorly answered. Many candidates gained the first method mark somewhere in amongst their working but had little idea what to do with it. Others tried to use similar triangles but did not prove they were similar. Candidates should show all working when an answer is provided and prove all statements they make.

Question 21

The majority of candidates knew what was required of them in this question although a significant number did not gain full marks as they swapped the 9cm and 10 cm around in the middle of their solution.

Question 22

Although this question was well answered by the majority of candidates, a minority were not sure what the square of y meant in terms of maths notation and opted to use $\sqrt{y}$ rather than y^2

Question 23

Part(a) of this question was well answered however, many candidates ignored the instruction in part(b) which said "Hence solve" and chose to not use part(a) and use the quadratic formula instead. The other common error was to give the answers in the form required, with many simplifying the root to $4\sqrt{2}$ instead of leaving it as $\sqrt{32}$

Question 24

Candidates chose a variety of methods to answer this question. The majority of candidates chose to use the factor theorem in part(a) but others opted for a more lengthy method to find the reminder and then equating it to zero.
In part(b) the two main methods used to get the line $(x+2)(x^2-5x+6)$ was to use long division or synthetic division, with the latter producing fewer errors.
The majority of candidates were able to factorise their quadratic and with only a minority forgetting to include the $(x+2)$ in their final answer.

Question 25

This question was well answered with most candidates giving a fully correct solution. Those who did not gain full marks generally made an error in part (b) such as just calculating 0.32×39

Question 26

Part (a) was well answered by the majority of candidates with only a few numerical errors being made. Solutions to parts (b) and (c), for those who knew how multiply two matrices, were usually accurate with only a very few believing part(c) was impossible.

Question 27

This question was attempted with varying degrees of success. The majority of candidates were able to find the angle *EOD* and the length *ED* but a number of candidates failed to apply the intersecting secants theorem properly. Instead of equating the products of the corresponding segments a number incorrectly assumed that $DC \times ED = BC \times AB$. Of those candidates who did correctly state that $(DC + \text{"9.52"}) \times DC = 9 \times 16$ a small minority failed to solve this equation correctly.