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Examiners' Report
Principal Examiner Feedback

January 2018

Pearson Edexcel International GCSE

In Mathematics B (4MB0) Paper 02R

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Paper 02R

Introduction to Paper 02R

It was pleasing to observe that, overall, the clarity of work was high. However, there were some students whose work was poorly presented and in some cases illegible and was thus difficult to follow.

The question paper did highlight the following problem areas, followed by their corresponding question numbers, which should receive special attention by Centres:

- Reverse percentages ((1))
- Venn diagrams and conditional probability ((5))
- Giving the inverse function in the required form (6c)
- Cosine Rule evaluation (10c)
- Plotting continuous curves (11d)

Report on individual questions

Question 1

Part (a) was generally well answered but part (b) proved troublesome to the less gifted students who were confused about the method. The more able, though, prevailed and answered better.

Question 2

This standard question requiring the solution of two simultaneous linear equations proved to be no obstacle to the greater majority of students who collected full marks. Algebraic slips cost the remainder 1 or 2 marks, depending on their severity.

Question 3

The greater majority of students collected full marks. A number, though, failed to provide in part (a), the formula for *f* as required, losing the final mark of (a). A small minority failed to work with a formula for *f* of the form $f = \frac{k}{x^3}$, as required by the question.

Question 4

Another question for which most students collected nearly full marks. Others lost accuracy marks because of algebraic slips. It was pleasing to note that the majority of students had read the first sentence carefully and noted that $x > 0$.

Question 5

This question was usually well answered by the majority of students. Others missed populating subsets in their Venn diagram with the result that marks were lost in (b) and (c). It was pleasing to note that most students who had a fully correct Venn diagram, answered (d) correctly.

Question 6

Parts (a) and (b) were usually correct. As in previous questions of this type, a number of students failed to give their answer to (c) in the required form, losing the accuracy mark.

The algebraic errors made at the beginning of (d) caused a small minority of to lose students all of the marks for this part. Other students unfortunately tried to find fh^{-1}, thus it would be prudent to advise students to read questions carefully.

Question 7

It is pleasing to report that most students answered this question well. Weaker students tended to lose a mark(s) for an incorrect histogram bar(s) or for slips in (c), usually losing the final two marks.

Question 8

Part (a) was well done with the result that part (b) was usually successful. A number of students in (c) failed to give their answer in simplified form as requested. If (c) was correctly answered then

usually so was (d). A few students tried to find the value of *n* by equating the components of **b** and incorrectly assumed that $\overrightarrow{PR} = 8\mathbf{b}$, losing both marks. The usual error in (e) was to incorrectly think that the area of triangle *OAB* was 4 times the area of triangle *OPQ* rather than 16 times the area of triangle *OPQ* resulting in the loss of the 3 part marks.

Question 9

Most students drew triangle *S* correctly and many also then drew triangle *T* correctly in (b), although a number reflected either about the *x* axis or about the *y* axis. It was pleasing to note that in (c), most students are now correctly answering questions requiring rotations about a centre other than the origin but some still failed to use the given centre and so lost the 3 marks. In (d), many students then collected the 2 follow through marks by using their triangle *U* to obtain triangle *V*. Many, in (e), stated a correct matrix multiplication statement for their triangle but the matrix multiplication skills of the less able students were not up to the task and these students usually lost the 2 following accuracy marks. Part (g) was poorly attempted.

Question 10

It is very pleasing to report that nearly all of the students demonstrated their understanding of basic trigonometry and mensuration and so were able to collect most of the marks for this question. In (c), some are able to apply the cosine rule correctly but then failed to perform the correct evaluation of the square root and so failed to complete the method for calculating *AC*, losing the last two marks (M1 M0 A0). Of those that answered the previous parts correctly, most of these collected full marks for (d).

Question 11

Part (a) was correctly answered by most students. In (b), some students correctly calculated the *x* coordinates of the stationary points but then failed to carry on and complete (b) by failing to provide the *y* coordinates (A0) as required. Others failed to realise that the quadratic, $3x^2 - 6x = 0$, has *two* solutions. The legibility of the table entries of some students was very poor in part (c). It would be prudent of Centres to underline the fact that the curves that are required to be plotted in questions like (d) are always *continuous*. Many students had discontinuities about their maximum and minimum points and so were penalised. Of those that attempted part (e), many forgot to mention in (e) that $x = \frac{2}{3}$ was a required solution.