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Examiners' Report
Principal Examiner Feedback

Summer 2018

Pearson Edexcel International GCSE
In Mathematics A (4MA1) Paper 1FR

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Summer 2018
Publications Code 4MA1_1FR_1806_ER

IGCSE Mathematics 4MA1 1FR Principal Examiners Report

Students who were well prepared for this paper were able to make a good attempt at all questions. It was encouraging to see some good attempts at topics new to this specification. Of these new questions, students were particularly successful in the question assessing the n^{th} term. Students were less successful in using vectors in transformations and standard form.

Overall, working was shown and easy to follow through. There were some instances where students failed to read the question properly. For example, in question 19 some students gave the answer as the difference between Lionel's share and the amount of money given to his mother.

Using angle theorems seemed to be a weakness as does the method of solving simultaneous equations. Overall, problem solving questions and questions assessing mathematical reasoning were not tackled well in particular question 24.

Question 1

Part (a) was answered well. Some students wrote down 725 instead of African buffalo.

Part (b) was answered well. Students tended to write down 100(s) or hundred(s). Some students thought the 1 represented thousands.

Part (c) was answered well. Some students wrote down −1192

Part (d) was answered well. A common error was to leave the answer as 16 000 and not dividing by 1000 thus gaining no marks.

Question 2

Students generally answered this question well. It was surprising to see students working out the area and then multiplying by 3. Some students worked out 70 + 100 and then multiplying by 3. Students are reminded that they need to recall the idea of a perimeter.

Question 3

Part (a) was answered well. Some students wrote down 4:15 which gained no marks.

Part (b) was answered well. Students shaded the 4 squares correctly.

Question 4

Part (a) was answered well. Only a few students labelled the diagram incorrectly.

Part (b) was answered well. A common incorrect answer was rhombus.

Question 5

Part (a) was not done well. Many students did not know how to draw the line $x = -3$. Many students made no attempt at drawing the line or drew the $y = -3$ line.

Part (b) caused problems for some students. Generally, students gained 1 mark as they tended to get the x coordinate incorrect.

Part (c) was answered well. Some students plotted the point correctly and then wrote down the correct coordinates of the required point.

Question 6

Part (a) was answered well. Majority of the students giving an answer of 64 by using the function machine correctly.

Part (b) was not answered well. Many students could not use the function machine. Students need to recall that when working out the input, inverse operations need to be used.

Part (c) caused some problems for students. Many could find the value of 40 but did not know what to do with this value. A common error was leave the final answer as 40.

Question 7

Part (a) was well answered. Most students gained full marks for correct tallies, though some miscounted and gave 5, 6, 5, 4 as their frequencies; this error was not penalised later in the question. Students should be encouraged to use tallies rather than counting each type of nut.

Part (b) was answered well. Many students drew the bar chart but the most common error was missing label off the y axes. Overall presentation was a bit poor, with many students failing to use a ruler.

Question 8

Part (a) was well answered. Many students wrote down y^3, however, only a few wrote 3y.

Part (b) was answered well. Many students multiplied the two expressions to obtain $6cd$ and only a few wrote down $5cd$.

Part (c) was answered well. Many students could simplify the expression and then wrote down k or $1k$.

Question 9

Part (a) was answered well. Many students gave the answer as Alto Campoo. Some students wrote down −8 which as not accepted.

Part (b) was answered well. Many students obtained the correct answer of 8.

Part (c) was found to be challenging by many students. Many students found the temperature drop for 1800 m as ±6° but did not know how this was to be applied. A common error was −7+6 and obtaining −1 which lost the final mark.

Question 10

Parts (a) and (b) were well answered. Majority of the students could write down the correct fractions.

Part (b) was a challenging question for most of the students. Many students scored the first mark for one of the two correct fractions. But most of these stopped there, just stating that bag Y had the greater probability without showing a method to compare their two fractions. A large number of students showed no fractions and gave bag **Y** stating that there were more green counters in **Y**, clearly not understanding what was required. Some attempted to use ratios but tended not to be successful.

Question 11

Part (a) was answered well. Many students wrote down the answer of 101 by continuing with the sequence.

Part (b) was answered poorly. Many students did not know that 1 needs to be subtracted from 1025 and the answer square rooted. Many students subtracted 1 and then divided the answer by 2.

Question 12

This question was generally answered well. Many students could recall that angles on a straight line add up to 180°. Many students subtracted 124° from 180° and then divided by 2 thus obtaining the correct answer. A minority of students did not divide by 2 and losing the final two marks.

Question 13

This question caused some problems for some students. Many students were able to subtract the two fractions correctly. The majority of those who attempted to use a suitable common denominator were successful although some made errors when writing the fractions to a common denominator. Many students, however, did not appreciate the need for a common denominator and the most common incorrect answer was $\frac{6}{14}$, from subtracting the numerators and adding the denominators.

Question 14

Part (a) was caused some problems for students. Many students worked out 8×-4 to obtain -32 to gain the first mark. However, some students did not realise that it had to be subtracted from 15. A common error was to write down $15 - 32$ and then give an answer of -17.

Part (b) was poorly attempted. Many students cold substitute the numbers into the formula but did not know the next step in the method. Many students did not know how to multiply the brackets out or divide by 4. Some students obtained the correct answer by substituting vales into the formula and obtaining the correct answer. Students should be encouraged to approach this type of question by using algebraic methods.

Question 15

This question was poorly attempted. Many students could not work out the values that showed a difference of 40. Many students divided by 2 and then subtracted 40 from 220. Students should be encouraged to check their answers. A common error was to find 65% of 440 and 85% of 440 and then adding them together.

Question 16

Many students found this question difficult. Some students did not substitute the correct numbers in to the formula for the area of the trapezium. A common error was $\frac{1}{2}(16 + 24)10$ when finding the area of the trapezium which leads to an incorrect answer of 480. Some students need to recall the formula for the area of the trapezium in order to answer the question correctly. It was quite surprising some students did not know how to apply the area of a trapezium. Although they used the formula, on some occasions, they substituted in the wrong numbers. It was quite interesting to see some students trying to divide the hexagon into different shapes such as rectangles, triangles, etc.

Question 17

Part (a) was not answered well. Many students have difficulty in reflecting in the line $y = x$. Students are encouraged to draw the line $y = x$ and then reflect the shape. Some students gained a mark by drawing the triangle in the correct orientation but in the wrong place. A common error was to reflect the shape in the line $y = 0$.

Part (b) was answered well by the majority of the students.

Part (c) was not answered well. Many students could gain the first M mark as they wrote down enlargement. Most students did not provide a centre of enlargement. There are still students who write a combination of an enlargement and a translation, and therefore score no marks for writing more than one transformation.

Question 18

Many students answered this question quite poorly. A common error by some students was to use the lower limits or the upper limits to work out $\sum fx$. This method is incorrect and the students need to understand that they must use the mid points. Other common errors were $\frac{495}{5}$ or $\frac{580}{5}$. Some students worked out the cumulative frequencies and multiplied them by their midpoints.

Question 19

This question was answered well. It was encouraging that many students showed their complete method to obtain 225. Some students lost marks as they worked out 375 – 225 to obtain 150. This is a very good example of how subsequent working cannot be ignored as the final answer does affect the accuracy.

Question 20

Part (a) was answered well. Many students obtained the correct answer of 17.

Part (b) was not answered well. Only a minority of students understood the question. Many students wrote down that they agreed with Ali by just looking at part (a). Students are encouraged to make further substations into the formula, for example, by substituting values of n in a logical and methodical way.

Question 21

It was quite pleasing to see students writing angles on the diagram. However, students are encouraged to use correct notation, for example, angle $GBE = 50°$. Many students did write down 103° but never attributed it to the correct angle. It was disappointing to see some students did not recognise alternate angles or that allied angles add up to 180°. A common error was to correctly state that angle BEF is 77° but then stating that angle CBE is 77°. Students need to recall properties of angles.

Question 22

Part (a) was answered well by students. Most students were able to gain the M mark by recognising that the sequence increased by adding 4 each time and hence writing 4n, but there was a significant number writing 4n−2 or even n+2. Students need to be encouraged to check their rule to see if it works for the next term in the sequence

Part (b) was a very challenging question to many students as the majority did not know how to work out the $(n + 1)^{th}$ term of the sequence.

Question 23

Parts (a) and (b) were challenging to the students. Students did not write out their answers in standard form correctly. Errors included by writing answers as 139×10^4 or 0.5×10^{-4}.

Question 24

Generally this question was not answered well and they struggled with the problem solving aspect. A number of students did not subtract 0.6 from 2.5 others found the volume of the whole cuboid and then subtracted 0.6, thus not being able to score anymore marks as they were no longer working with a volume. Some students converted their measurements into centimetres, found the volume of 68400000 and then tried to multiply by 1000 and divide by 400. These students did not realise the volume, in cm^3, needed to be converted into m^3 by using the correct conversion factor of 10^6. Some students lost marks simply because they did not know how to convert minutes to hours and minutes.

Question 25

Many students did not answer this question well and did not show a clear method. Some students made simple arithmetical errors, however, several students did not know whether to

add or subtract the two linear equations. Correct answers by trial and error or using a calculator were rare but gained no credit. Generally students still find this topic very difficult.

Question 26

This question was not answered well by the majority of students. Many students cannot recall that there are 1000m in 1 kilometre. Students need to recall how to convert hours to seconds.

Question 27

Part (a) of this question was not answered well. Many students worked out the total number of cars then they worked out the number of extra cars sold in 2017. Many students did not know how to work out the percentage increase of a quantity. A common error was to find the value of 70 and then divide it by 420. Some students who did find 0.2 did not multiply the answer by 100% to obtain the correct answer.

Part (b) of this question was not answered well. Many students left the question blank. If they did attempt the question they used an incorrect method such as dividing 500 000 by 1.08 thus obtaining an incorrect answer.

Summary

Based on their performance in this paper, students should:

- be able to convert cm^3 to m^3
- learn and be able to recall metric conversions such as 1 km = 1000 m
- Learn how to convert hours to seconds
- learn, recall and apply the formula for a trapezium
- be able to attribute angles correctly when writing them down and show clear working.
- read the question carefully and review their answer to ensure that the question set is the one that has been answered
- make sure that their working is to a sufficient degree of accuracy that does not affect the required accuracy of the answer.

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