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Examiners' Report
Principal Examiner Feedback

Summer 2022

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

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Summer 2022 Principal's Examiner Report
International GCSE Mathematics
4MA1 Paper 1FR

The majority of the questions on this paper were well-attempted by this cohort. As is often the case with this paper, there were plenty of blank responses in the latter stages. Students are now well-accustomed to being asked to show their working and it was pleasing to see the majority of answers supported with full workings out.

Question 1

Part (a) of the opening question on this paper saw mixed results. Some students were able to interpret the question correctly and give an answer of 7534. Many, however, ignored the word 'even' in the demand and gave an answer of 7543, gaining B0. Part (b) also saw the full range of marks being awarded. A decent number were able to find the smallest difference and give an answer of 26. Some students gained 1 mark for evaluating a different between 3600 and a number made up of the digits 3, 4, 5 and 7.

Question 2

Some students were able to give a correct answer of 'pentagon' for part (a); there were a good number who did not get the correct name for a 5-sided polygon with 'hexagon' and 'polygon' was also commonly seen. For (b) a good number were able to label an acute angle correctly, but in (c) a range of correct and incorrect answers were seen. The most obvious answer was to label the interior reflex angle as *R*, but some tried to label an exterior angle but without an arc, no mark could be gained.

Question 3

Part (a) was answered very well with almost all students able to interpret the pictogram correctly and give an answer of 18. Part (b)(i) was also answered well with many able to gain a correct answer of 21, and if this was seen most went on to gain 1 mark in (ii) for displaying this information on the pictogram. For those who did not gain the correct answer for (i), some picked up a follow through mark in (ii) for correctly displaying this information on the diagram.

Question 4

Most students were able to gain B1 in part (a) for a correct equivalent fraction with $\frac{7}{10}$ being the most popular answer but $\frac{70}{100}$ was also seen. For part (b), many were also able to interpret the meaning of equivalent fractions and write 15 for the numerator of the second fraction. A good number were able to gain 2 marks in (c) for an answer of 21; the most common incorrect answer seen was 0.6.

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Question 5

Part (a) saw mixed results with some students able to give a correct answer; answers of 2 and 4 were also seen regularly. Part (b) saw a variety of answers given, with most of them incorrect; it is clear that order of rotational symmetry is an area of the specification this cohort need to improve on. More success was seen in part (c) with around half the students able to give an answer of 126 or a value in the range 124 – 128. The incorrect answers given were from students who clearly did not know how to measure an angle and therefore gave answers such as 90 or 180.

Question 6

Part (a)(i) was answered quite well with many able to give a correct answer of 27; the most common incorrect answer was 16, presumably from students mixing up cube and square numbers. In (a)(ii) most identified 5 or 16 as the factor of 80 although there were a good number of 160's seen. In (b) students were often able to identify at least one correct prime number, gaining 1 mark. Some managed to find the sum for 5 and 23 for 2 marks but many thought that 27 is a prime number.

Question 7

The majority of this cohort are able to read coordinates as almost all answered part (a) correctly. Part (b) was also answered well with (5, 1) regularly seen; of those that didn't gain 2 marks for a correct answer, many gained one mark for one correct coordinate. Part (c) saw little success; this cohort would be advised to brush up on how to find the area of a right-angled triangle. Part (d) was answered well with many able to place D in the correct position of (−1, −1).

Question 8

This was an unfamiliar question, but it was tackled well by this cohort. A good number followed the instructions in the question and gave a statement or calculation equivalent to 'add 489 to 13203' or 489 + 13203 = 13692. Of those that did not gain 2 marks, some gained one for rearranging the given calculation to 489 × 27 = 13203. A significant number gained no marks as they simply ignored the initial calculation and worked out 489 × 28.

Question 9

Part (a) was answered well with many able to gain 2 marks for a correct expression. Of those that didn't, a good number gained 1 mark for one correct term. Some students multiplied the terms and ended up with powers of 2 in their answer. In (b) some students correctly substituted and found the sum to gain 2 marks. Some students simply replaced the x and y with 5 and 4 respectively to obtain 85 – 34, gaining 0 marks.

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Question 10

Part (a) saw some success with a good number able to give a correct angle for (i). Part (ii) was not answered well with many unable to give the minimum words such as vertically opposite or opposite angles. In (b)(i) plenty managed to gain M1 for a method to use angles in a triangle to find angle *BEC* and this was often seen labelled on the diagram. Some were then able to follow this through to calculate angle *y* with angles on a straight line and a combination of angles at a point and vertically opposite angles were also seen. For (b)(ii) less success was seen; students need to remember that reasons are being asked for, not a worded explanation of the previous calculations.

Question 11

It was pleasing to see a good number of students able to work through this 4-marker and gain a correct answer of 8.5 or 8.50. Some were able to find the cost of 500g of Cheddar and then subtract this from 9.20 to work out the cost of 200g of Stilton to gain 2 marks. The next step provided problems as many were unable to progress from the cost of 200g of Stilton to the cost of 1kg of Stilton.

Question 12

This question was not answered well. Most were unable to set up a correct equation with equating the two algebraic angles rather than summing all 4 angles to 360, a commonly seen incorrect answer. A small number of students were able to set up an equation and go on to solve it correctly for an answer of 51 and 3 marks. Some used trial and error; this method was either full marks or no marks.

Question 13

Part (a) of this pie chart question saw many students able to find the number of degrees per person (90 ÷ 18 = 5) and then use this to find the number of people who answered running. In part (b) students either worked with 360 and the other angles to find the angle for swimming or the total number of people followed by subtracting the other frequencies from the total. Both methods were seen in equal measure. There were plenty of incorrect methods such as labelling swimming and cycling as equal (60°).

Question 14

Part (a) of this cooking question was answered well with a good number able to use the worded formula correctly to achieve an answer of 134 for 2 marks. Some did not complete their method, only doing 2.6 × 40. Part (b) again saw some success for those who were able to correctly convert to minutes and use the formula in reverse. Some got the order of operations wrong

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and divided by 40 before subtracting 30. It was pleasing to see most students understand that there are 60 minutes in an hour and not 100.

Question 15

The majority of students scored 0 marks on this question. Many were unable to interpret the information correctly and treated 10.50 as the total amount being shared which could lead to an answer of 7.50 for Millie or 3 for Bella; both of these gained 1 mark as a special case. Another incorrect error was to treat 10.50 as one share and multiply by both 5 and 2. Of those few students who were able to make a correct start by dividing 10.50 by 3, most were able to go on to gain the correct answer.

Question 16

This question was answered well with most students able to gain 2 marks. Of those that didn't, much depending on whether the student had decided to write down any of their method. An incorrect answer with no method generally gains 0 marks but if steps were shown M1 could be gained if one of the values from the mark scheme was shown.

Question 17

Part (a) of this question was answered well with many able to give a correct answer of 0.45 or equivalent. In (b) it was common to see students find a correct probability for purple, but this was not always used correctly or used at all with 0.35 given as an answer. Of those that did manage to complete their method, most scored 3 marks for an answer of 105. Occasionally $\frac{105}{300}$ was given as the answer which was awarded M2A0 even if the correct answer was seen at an earlier stage.

Question 18

A correct answer was rarely seen in part (a), with 14.4 (coming from 6 × 2.4) being the most commonly seen incorrect answer. Part (b) provided lots of difficulties for this cohort. Many students failed to take into account the type S shelves and gave an answer of $2.4n$. A small number of students were able to give a correct expression such as $2.4n + 3.5(n - 1)$ and some went onto expand and simplify for 2 marks.

Question 19

This combined mean question saw little success with most unable to work backwards to find the total of the 5 numbers as a first step. Many added the 4 numbers together and divided by 5. Of those that did multiply 5 by 12 to get 60, many were able to go on to reach a correct answer of 17. Some students gained the correct answer but went on to do a check to see if x = 17 gave a mean of 12 for the 5 numbers and then wrote 12 on the answer line; these students

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were not penalised as long it was clear they had worked out that x = 17 but care should be taken that the correct value is written on the answer line.

Question 20

It was pleasing to see the first 2 marks on this problem solving percentages question achieved on a regular basis. The most common method seen was to find 45% of 180 (students studying German) and then either 180 – 15 – 81 (students studying Italian or Spanish) or 81 + 15 (students studying French or German). For the students who did make it this far, most made no more progress as they were unable to convert these values into the required percentage.

Question 21

Part (a) was generally answered well with 1 or 2 marks regularly awarded. Some students gained the correct answer and then incorrectly simplified further; $15c^7$ was a commonly seen incorrect answer. For part (b)(i), some students were able to recognise that this quadratic expression should be factorised into two brackets. Of those that did, a good number were able to get two correct brackets. One common incorrect two bracket factorisation was $(x - 1)(x - 8)$. In (ii) very few were able to interpret their factorisation and give the correct values.

Question 22

This familiar style fractional arithmetic question saw the full range of marks awarded. A good number were able to pick up 1 mark for two correct improper fractions. Some students then gained no further marks as they went straight to $\frac{77}{12}$, presumably putting the addition into their calculator. There were a decent number of students who did manage to write the improper fractions with a common denominator, usually 12, and add them together. Most then went onto to complete the solution for 3 marks. Some students converted $6\frac{5}{12}$ to $\frac{77}{12}$ and then went on to show that the addition was also equal to $\frac{77}{12}$. Some students also chose to work with the fractional part of the initial mixed numbers e.g. convert them to $\frac{8}{12}$ and $\frac{9}{12}$ and go on from there.

Question 23

It was rare to see a fully correct answer for this question. There were plenty of students who gained 1 mark, either for a correct method for the volume of the cylinder or for using their volume correctly in the density, mass, volume formula. Students should note the formulae given on page 2 and ensure they know when to use them.

Question 24

There were many ways in which students could gain 1 mark in this depreciation question. A good number were able to make a correct start by finding 15% of 18,000. Of those that were successful in going on to gain 3 marks, the majority used the 'long' method, working out 15%

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and subtracting for each year. There were several special cases worth B1 and a good number of students picked up 1 mark for each of the methods.

Question 25

Some students managed to gain 1 mark on this question for a correct first step e.g. $-4x \leq 8$ (although any symbol was condoned at this stage). Some also continued to reach x and −2 but were unable to provide the correct symbol or simply gave the answer as −2. A small number were able to get a fully correct inequality but this was rarely seen. Unfortunately, there were plenty of blank pages and completely incorrect methods seen.

Question 26

This question saw the full range of marks awarded. It was pleasing to see some students correctly find the gradient of the line and be able to input this plus the *y*-intercept into $y = mx + c$ to gain 3 marks. If the correct answer was not reached there were many methods seen that gained 1 or 2 marks. These include for 1 mark, finding the gradient or identifying the *y*-intercept as −1, or for 2 marks reaching an answer in the form $y = mx - 1$, symbol was condoned at this stage. Some also continued to reach x and −2 but were unable to provide the correct symbol or simply gave the answer as −2. A small number were able to get a fully correct inequality, but this was rarely seen. Being the stage in the paper this question is, there were plenty of blank pages and completely incorrect methods seen.

Question 27

There were plenty of ways students gained marks on this 6 mark problem solving question. Some were able to recognise that Pythagoras' Theorem could be used to work out the length of *AB* and pick up 2 marks. Some then went on to use this correctly to work out the area of triangles *ABC* and *DAC*. It was rare to see any go on from here to gain 6 marks with the process to find the length of *AD* proving a step too far. Some students did not recognise the need for Pythagoras or they used Pythagoras incorrectly, but as long as *AB* was clearly labelled still gained the 3^{rd} and 4^{th} M marks for using their *AB* correctly.

Summary

Based on their performance in this paper, students should:

- learn how to identify the order of rotational symmetry for a shape
- practise finding the area of a right-angled triangle
- learn geometric reasons including the underlined words
- practise ratio problems
- learn how to solve a combined mean question
- familiarise themselves more with the formula sheet on page 2

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