Examiners' Report
Principal Examiner Feedback

Summer 2025

Pearson Edexcel International GCSE
In Mathematics A (4MA1) Paper 2FR

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Summer 2025
Publications Code 4MA1_2FR_2506_ER

International GCSE Mathematics
4MA1/2FR
Principal Examiner's Report

This paper offered candidates plenty of opportunity to demonstrate their knowledge, skills and understanding. The earlier questions were accessible to candidates of all abilities, with many able to use and apply more straightforward methods accurately. In general, candidates seemed well-prepared for many questions and showed strength on questions involving listing outcomes, the use of a formula requiring rearranging and applying a recipe.

Challenges arose in questions involving more than one stage, such as question 15 and 16, and several candidates struggled to recall definitions of standard mathematical terms, notably in question 2 and question 3(a)(ii). Candidates also found it difficult to solve the linear equation in question 17(b) and to reflect the given shape in the line $y = x$ in question 20(a). However, it was encouraging to see many candidates attempt the later questions, with some gaining partial credit for their working even where full solutions were not provided.

Candidates should be reminded of the importance of showing all stages of their working. Even though this is a calculator paper, candidates should write down any calculations typed into their calculators rather than simply writing down the result. Where candidates do not show how intermediate values have been obtained, it is then often not possible to award subsequent method marks if there is no evidence that the values used were derived through a correct method. In addition, centres and candidates should take heed of questions that specifically ask for working to be shown. For example, in question 18 and 19, many candidates simply used their calculators to find the prime factorisation or to solve the simultaneous equations and did not show any working. Correct answers alone, or answers from incomplete working, will generally not score any marks in these instances.

Question 1

Part (a), (c) and (d) of this question were generally well answered.

Part (b) was less successful, with a number of candidates struggling to list the decimals in order of size.

Question 2

Several candidates offered fully correct solutions here, although it was clear that other candidates confused the terms 'mode', 'median' and 'range' with each other. Some candidates also tried to work out the mean for one of the question parts.

In part (b), some candidates did not order the list of integers before finding the median and gave an answer of 6.

Question 3

In part (a)(i), candidates generally were demonstrated the ability to identify the correct mathematical name of this shape. As expected, the most common incorrect answer was ‘square’. Examiners noted various spellings of ‘cube’ or ‘cuboid’, but where the intention was clear, the mark was still awarded.

Part (a)(ii) was not answered well by candidates overall. The most common incorrect answer was 8, which resulted from not counting the edges connecting the ‘front’ and ‘back’ faces of the cuboid. In some cases, it was clear that candidates did not understand the meaning of the term ‘edge’.

Part (b) was generally well answered.

Question 4

Many candidates were able to correctly convert 5000 millilitres into litres in part (a). In part (b), candidates generally understood the need to subtract the measurements after converting both quantities to the same unit. Where the correct answer was not reached, this was commonly because 3 metres was incorrectly converted into centimetres using the incorrect power of 10. A minority of candidates scored only 1 mark because they gave an answer of 2.15, which is the correct difference in metres.

Question 5

This question, testing basic algebra, was generally well answered, although the common misconceptions relating to algebraic manipulation were seen.

In part (a), the common incorrect answer was a^5. Some candidates provided a choice of answers giving both $5a$ and a^5 on the answer line, which did not score.

Most candidates achieved an acceptable answer in part (b) and demonstrated greater confidence in simplifying the given expression in this part compared to part (a).

Part (c) was also very well answered, although a few candidates wrote an embedded calculation such as $5 \times 8 = 40$ and did not identify d as 8. This did not score the mark.

Question 6

Many candidates showed confidence with this familiar question on using a number machine.

As expected, part (a) was the most successful part, but some candidates used mental arithmetic to answer this and made arithmetic slips. Given that a calculator is available for this paper, candidates should be encouraged to check their calculations to ensure marks are not lost for this reason.

Part (b) was also well answered, but some candidates simply calculated $-2 \times 4 - 15$ and did not work backwards. Another common error involved inconsistent use of inverse operations; for example, some candidates did the correct first step of adding 15 to −2 but then multiplied the result by 4 rather than dividing by 4.

Question 7

This was the first question in a context on the paper, and candidates generally performed well.

Many candidates were able to calculate $\frac{1}{5}$ of 80 to find the number of large burgers and score the first method mark. A variety of methods were seen for this calculation, with some candidates choosing to work out 20% of 80 here.

It is important to stress to candidates the importance of making their calculations clear. For example, merely writing $\frac{1}{5}$ of 80 followed by an incorrect value is insufficient to show a correct method, whereas writing the calculation $\frac{1}{5} \times 80$ would be sufficient to score the method mark, even if followed by a wrong value.

Candidates who scored the first method mark generally went on to score full marks, with subsequent errors usually being arithmetic slips. However, some candidates who had found the number of large burgers did not calculate their total cost and instead subtracted the number of large burgers from the total cost.

Where candidates scored no marks, they often started by calculating $\frac{1}{5}$ of 176 (the total cost) rather than 80 (the total number of burgers).

Question 8

Candidates generally scored at least one mark in this question, usually for working out the total cost of the tax for the 7 nights. Many then went on to find the total cost of the room for 7 nights before adding on the tax to achieve the correct answer.

Examiners noted that errors typically occurred when working with the tax. Some candidates subtracted the tax from the cost of the room rather than adding it, suggesting a misunderstanding of the context. Another common error was to add the cost of the tax for one night to the total cost, rather than multiplying the cost of the tax to account for all 7 nights.

Question 9

Part (a) of this question required candidates to list all the possible combinations that could be chosen. Candidates generally did well in this part and listed the outcomes systematically. Some candidates only scored 1 mark for not listing all the combinations or for listing extra combinations. It was common for these extra combinations to include pairs such as (cereal, cereal), showing that these candidates had not read the question carefully.

Part (b) was typically well-answered with many candidates able to identify the required fraction from the given ratio. Common errors were the usual ones, with answers such as $\frac{3}{7}$ and $\frac{4}{3}$ being common among the responses that did not score the mark.

Question 10

This question required candidates to use a conversion graph.

Part (a) involved a straightforward use of the graph to convert 25 miles to kilometres. Many candidates were able to do this successfully.

In part (b), candidates had to use the information given to first work out the number of kilometres driven before using the graph to convert this into miles. This was also generally well answered, but some candidates did not have a correct method to find the number of kilometres driven, typically multiplying 19.20 by 0.80 rather than dividing. A significant number of candidates who found the number of kilometres driven did not then convert this into miles and gave a final answer of 24.

It continues to be the case that lower-attaining candidates struggle with the division operation, and examiners saw several responses involving trial and error to find the number that 0.80 should be multiplied by to get 19.20. This is rarely an efficient approach, and work on familiarity with the division operation would certainly help some candidates access questions like this with more ease.

Question 11

This question required candidates to use and interpret a bar chart to find the number of points scored by a team.

Many candidates correctly used the information that 14 games were drawn to find how many teams won or lost, typically starting by dividing 14 by 7. Candidates who worked correctly with the scale were also generally able to work with the bar chart to find the number of points gained. A minority of candidates did not score full marks on this question because they only worked out the number of points won by the team and did not consider the points scored from the games drawn.

A common alternative method was to work with a vertical scale of 1 game per centimetre. Candidates who did this sometimes were able to score a method mark for a method to find the number of points gained using these incorrect bar heights. While it is possible to use this method to get the correct answer, almost all candidates who used this method did not show any intention of trying to correctly work with the scale.

Question 12

Part (a) of this question required candidates to measure the length of a line on a scale drawing and use the scale to work out the real distance between two towns in kilometres. Candidates were usually able to accurately measure the distance between the two towns on the scale drawing and multiply this by the scale to find the real distance in metres. While many candidates knew that they then needed to convert this into kilometres, this conversion was sometimes done incorrectly. The most common error was to divide by 100 instead of 1000.

Part (b) required candidates to find the difference between two times in hours and minutes. The correct answer was 4 hours and 25 minutes, and many candidates were able to get at least one of these values correct. Errors were typically arithmetic, with common incorrect answers including 5 hours and 25 minutes or 4 hours and 35 minutes.

Question 13

Many candidates were able to factorise the given expression in part (a). The most common error was an answer of $10x$. Other errors included $5(3 + x)$ or dividing the given expression by the factor of 5 and giving an answer of $3 - x$.

In part (b), candidates had to substitute into a formula and work out the value of p. This was well-answered and many candidates showed fluency on this question. Among the candidates who scored partial credit, it was common to see 1 mark scored for a correct substitution into the formula, but this was often then followed by incorrect rearrangement. Some candidates did not substitute correctly and scored no marks and $7r$ sometimes became 72 rather than 14 when substituting $r = 2$.

Candidates were asked to find algebraic expressions in part (c). Where candidates did not score full marks, it was common to see the answer for part (ii) written in part (i) and vice versa. This did not score marks and showed some misunderstanding of the question. In addition, some candidates gave the same answer for part (i) and part (ii), usually $12m + 25n$.

Question 14

In part (a) and part (b) of this question, candidates needed to use proportion and the given recipe. Many candidates were well prepared for this familiar question and those that scored full marks in (a) usually scored full marks in (b). A common error in both parts failing to complete the method. For example, in part (a), candidates sometimes only worked out the number of batches of 6 biscuits Asma had made and did not multiply this by 6 to find the total number of biscuits made.

Part (c) asked candidates to divide a quantity into a ratio. Candidates were generally able to divide 624 by 8 and then multiply this value by 5 to find how much money Julie pays. A common error was to divide 624 by 5 (Julie's share) rather than 8.

Some candidates divided 624 by 7 and then multiplied this value by 5 without showing how the 7 had been obtained. Without indication that 7 had come from an arithmetic error when calculating 5 + 3, this unfortunately did not score any marks. It is worthwhile to remind candidates to show how their figures have been obtained.

Question 15

This question proved challenging for candidates, although several fully correct solutions were seen. Many candidates found it difficult to deduce that 3/5 of the counters were red counters and blue counters, often simply using 2/5 as the proportion of red counters and blue counters in the bag. Of those who did identify 3/5 as a relevant proportion, many were able to progress to a fully correct solution.

Question 16

This multi-step problem required candidates to use the information given to find the vertical height of the parallelogram and then use this to find the area of the trapezium. It was clear that candidates were less successful in working with the area of a parallelogram than with the area of a trapezium. Some candidates assumed that the vertical height of the parallelogram was equal to the side length given, while others treated the area of the parallelogram as a perimeter and thought that $\frac{96-2\times 12}{2} = 36$ was the vertical height. Nonetheless, a follow-through method mark was available to candidates in this question, and so many were able to score at least 1 mark for using the formula for the area of a trapezium with their vertical height.

It is also noted that some candidates, including those who scored full marks, showed confusion between the diagonal height and vertical height of a parallelogram. It was often the case that 8 was indicated as the diagonal height of the parallelogram but then still used as the vertical height of the trapezium. This often did not affect the mark achieved by candidates in this case, but centres may wish to alert candidates to the difference between these.

Question 17

Part (a) required candidates to factorise the given expression. It was common for candidates to try to collect the terms rather than factorise, often offering incorrect answers such as $-27c^2d$, $-27cd$ or $-27d$. Of those who did attempt to factorise, it was common to see partial factorisations such as $3c(6 - 15d)$ or $9(2c - 5cd)$, which only scored 1 mark.

In part (b), only the higher-attaining candidates were able to solve this equation correctly and show the working needed. The most common first step was to multiply the equation by 6, which was generally not done accurately. Common errors were to end up with $3x - 24$ or $18x - 4$ on the right-hand side of the equation rather than $18x - 24$, or to end up with $30 - 12x = 18x - 24$. Candidates who made an error in this first step were sometimes able to score the second method mark for correctly rearranging their 4 term equation for terms in x on one side and number terms on the other. However, errors with like/unlike terms and sign errors in doing this rearranging were common.

It is noted that some candidates had clearly used their calculator to solve the given equation and did not show the required algebraic working. Centres are reminded that where a question asks for algebraic working to be shown, use of a calculator to obtain the solution and omission of the required algebraic working will not score any marks.

Question 18

Candidates seemed well-prepared for this question asking for a number to be written as a product of powers of its prime factors. A variety of methods were seen, including factor trees and use of a table, which were equally successful. The most common error was failing to take heed of the instruction to give the answer as a “product of powers”, and giving an answer of $2 \times 2 \times 2 \times 5 \times 5 \times 7$, which only scored 2 out of the 3 marks. As with the previous question, some candidates did not show any working for this question and simply used their calculator to find the prime factors. This scored no marks unless the required working was seen.

Question 19

This question required candidates to solve a pair of simultaneous linear equations and show clear algebraic working. The most successful candidates realised that the coefficients of the x terms were already the same and subtracted the equations to find the value of y. Those who did this often went on to substitute correctly to find the value of x and score full marks. Some candidates chose the wrong operator and tried to add the two equations, which did not score any marks. It was also common to see candidates overcomplicate the method by unnecessarily multiplying one or both equations to equate the coefficients, which sometimes resulted in errors.

As mentioned previously, candidates who simply wrote down the solutions using their calculator without showing the required algebraic working did not score any marks. It was clear that some candidates tried to work backwards from a solution obtained from a calculator but this was almost always either insufficient or incorrect.

Question 20

This question required candidates to reflect a shape in the line $y = x$ in part (a) and enlarge a shape by a scale factor of 2 using a centre of enlargement in part (b).

Part (a) proved challenging for the majority of candidates, and only a small proportion of candidates scored both marks. Some candidates were able to score 1 mark in this question, usually for drawing the line $y = x$ on the grid. It was clear that many candidates did not know the position of the mirror line and often thought that $y = x$ referred to the x-axis.

Candidates generally found part (b) easier than part (a), with more candidates able to score 1 mark in this part. The 1 mark was usually awarded for the correct shape in the correct orientation and of the correct size, but in the wrong position. Only a small number of candidates were fully successful in carrying out the required enlargement.

Question 21

This multi-step problem requiring candidates to work out a percentage profit was well-attempted. The majority were able to score at least 1 mark in this question, typically for a method to find the cost of the adhesive. It was common for candidates to go on to work out the total cost of tiling the floor and score the first three method marks. The most common error was in the calculation of the percentage profit, with many choosing to divide by 3000 rather than 1980. Occasionally, candidates gave an answer of 151.5% or worked out the value of 151.5, rounded this to 152 and then gave 52 as their answer. The final accuracy mark was not awarded in these cases.

Question 22

Candidates were generally able to write down the value of 5^0 in part (a). Common incorrect answers included 0 and 5.

In part (b), the majority of candidates struggled to apply the index rules to work out the value of k. Many candidates resorted to evaluating the powers and attempting to work with whole numbers, which rarely led to the correct answer. Where index rules were attempted, common errors included simplifying $5^9 \times 5^{-3}$ to 25^6 or to 5^{-27} for example. A common incorrect answer was $k = 4$ which is obtained from calculating $9 - 3 - 2$ rather than $9 - 3 - (-2)$.

Candidates generally found part (c) challenging and did not seem to be fluent with applying index rules to simplify the given expression. Common errors included $6d^7e^8$ and $8d^7e^8$.

Question 23

This question required candidates to recall and use the formula connecting mass, density and volume and was generally one of the better-answered questions towards the end of this paper. Where the formula was known, candidates were generally able to be fully successful in this question. The common error was to multiply the mass and the density.

Of those that knew the correct formula, some candidates rearranged the formula incorrectly before substituting in the numbers, which resulted in no marks being awarded. On the other hand, those that substituted correctly into a correct version of the formula and then rearranged incorrectly were able to score the method mark. It is therefore recommended that candidates substitute numbers into a correct formula first, before rearranging, to help them gain marks.

Question 24

This routine question, requiring candidates to work backwards from two given means, was found to be challenging. It was clear that many candidates did not know how to start and often simply subtracted the given means rather than working out the totals. A small handful of candidates reached the total of the 7 numbers or the total of the 3 numbers, but only a smaller handful of candidates were then able to use these values correctly to answer the question.

Question 25

Candidates generally found this routine question on reverse percentages challenging. Some candidates were able to identify that the sale price of the dishwasher represented 85% of the normal price and scored 1 mark. Of those who made this connection, they often went on to score full marks. However, the majority of candidates made the common error of increasing 612 by 15% and did not score any marks.

Question 26

This question on equations of straight lines was generally not well-answered by candidates overall, and the majority of candidates did not know that parallel lines have the same gradient. Where candidates scored 1 mark, it was for recognising that $c = 6$. Common incorrect answers included $y = 6$ (which scored 1 mark) or simply rewriting the equation of the line given in the question (which scored no marks).

Question 27

The last question of this paper was a multi-step problem which required candidates to apply Pythagoras' Theorem and/or Trigonometry to find the area of a triangle. The typical approach used by candidates on this paper was to attempt to apply Pythagoras twice; the use of Trigonometry was rare.

This proved to be a challenging question for candidates, but some were able to score at least the first two marks for applying Pythagoras' Theorem to find the hypotenuse of triangle *ADE*. The majority of these candidates typically attempted to apply Pythagoras' Theorem to find the length of *BC*, but a few did not apply this correctly to find the length of the shorter side, often adding the squares of the other two sides rather than subtracting. Where candidates found the length of *BC*, they typically went on to score full marks.

Where candidates scored no marks in this question, they typically thought that *BD* could be found by subtracting 21 from 25 or that *BD* was the same length as *CD*.

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