Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

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International GCSE Mathematics
4MA1 1F Principal Examiner's Report

Candidates who were well prepared for this paper were able to make a good attempt at all questions. It was encouraging to see some worthy efforts at topics new to this specification. Candidates were less successful in using set theory, polygons and working with prime factors.

On the whole, working was shown and was easy to follow through. There were some instances where candidates failed to read the question properly. For example, in Q12 candidates did not know whether to multiply or divide by 1.34 while in Q22 some candidates worked out two fifths of 140 not 280. In Q22 the candidates worked out 20 % of 1080 and did not realise this was a question on reverse percentages.

A striking weakness in candidates was the method of solving simultaneous equations. On the whole, problem solving questions and questions assessing mathematical reasoning were not tackled well, this was particularly apparent in question 21.

Question 1

Part (a) was answered well. It was encouraging to see candidates write the correct answer of Gabon on the answer line rather than the number associated with that country, as we have seen frequently in previous series.

Part (b) was answered well. Due to a lack of attention to detail, some candidates 'lost' numbers from the original list or mis-copied them to find the difference.

Part (c) was answered well.

Question 2

Part (a) was well answered.

Part (b) was well answered as the majority of candidates drew one and three quarters of the pictures.

Part (c) was not well answered. The most common method was to work out the number of books sold each day and then subtract this from 500. Some candidates missed out the number of books sold on Friday, 500 – (50 + 65 + 100 + 85), obtaining an answer of 200. Candidates should read the question carefully. A minority of candidates worked out the total number of pictures and then multiplied by 20

Question 3

Part (a) was well answered.

Part (b) was well answered for (i) and (ii). Some candidates confused edges with vertices giving the answer as 12

Part (c) was not answered well. Candidates who knew the formula for the volume of a cuboid usually scored 2 marks. Some, however, found the surface area instead, whilst others simply added the length, width and height.

Question 4

Part (a) was well answered.

Part (b) was answered well by the majority of candidates, however, a common incorrect answer was 95. The answer of 95 was due to the fact that the candidates read the protractor the wrong way round.

Part (c) caused a few problems for a number of candidates. Some candidates could not identify the two parallel sides.

Part (d) was poorly answered. A common answer was to write, yes with the reason that both triangles have right angles. Candidates should provide clear evidence, by showing some calculations, for example, $4 \times 3 = 12$ and 3×3 is not 5, to be able to gain this mark.

Question 5

The problem posed in this question was well understood and most candidates could subtract 2.35 from 20 and then divide their answer by 0.74 correctly to find the number of pencils required. Some candidates found 23 using a trial and improvement method with successive subtractions or additions. The majority appreciated that their answer needed to be 'rounded down' in this practical context. Some candidates left their answer as 23.85 or 24 thus losing the final mark.

Question 6

Part (a) ~~this~~ was well answered as many candidates gave an answer of $\frac{3}{5}$. Some candidates wrote down an answer that was not in its simplest form, for example, $\frac{12}{20}$ etc

Part (b) ~~this~~ was well answered by the majority of the candidates. Many candidates could easily convert $\frac{1}{5}$ into a decimal.

Part (c) was well answered as many candidates gave an answer of $\frac{3}{10}$. A common incorrect answer was $\frac{3}{7}$ where the candidates did not add 3 and 7 for the denominator.

Part (d), the candidates were asked to show that the subtraction of one given fraction from another led to a particular fraction. The success rate in this style of question seems to have improved, with a pleasing number of candidates showing fractions with a common denominator, the result of the subtraction and concluding with the given answer. One mark was regularly lost by missing out either the interim fraction or by not showing the concluding step. However, conversion to decimals, ambiguous statements and random working (usually multiplication), with the numbers in the question, were often seen.

Part (e) caused problems for few candidates and was generally answered well. Many candidates worked out $\frac{1}{2}$ of 280 to obtain 140. A common error was to find $\frac{2}{5}$ of 140 not $\frac{2}{5}$ of 280, as the question required. Candidates should be advised to read the question carefully to ensure that their answer fulfils the requirements of the problem.

Question 7

In part (a), only a small number of candidates were unable to multiply two algebraic terms.

Part (b) was well answered where the majority of the candidates gave an answer of 7

Part (c) was well answered where the majority of the candidates gave an answer of 4

In part (d), collecting like terms was not well done as the directed number aspect is still an issue for some. The most commonly seen error was simplifying $8k - 2k$ as $10k$. Many candidates simplified $5m + 6m$ to $11m$ correctly where they gained 1 mark, however, some candidates then wrote their answer as $6k - 11k$.

Part (e) was generally well answered. Common incorrect answers included $12g + 1$ and $13g$.

Question 8

Candidates were mostly able to access the first mark by writing at least 4 of the 7 entries that were given, in the correct place, and a majority then went on to score all 4 marks. Common errors included the misinterpretation of '16 of the 29 males came from Asia' where the value of 29 was written in the incorrect place. This was misinterpreted as 'the total number of people from Asia', however, candidates then continued to complete the table and gain two marks. Little working out was shown, either for correct or not fully correct answers. Occasionally the table was used as a data collection sheet.

Question 9

Part (a) was well answered. Many candidates multiplied 3 by 4 and 2 by 7 –obtaining 12 and 14 respectively with the addition sign between, thus gaining the first mark. Some candidates just wrote 12 and 14 which was insufficient for the first mark. A common error was to incorrectly add 12 and 14 and write for example 36. Candidates can use a calculator to sum their numbers.

In part (b), it was disappointing to see so many candidates fail to deal correctly with $(-6)^2$, instead working out -6^2, which culminated in the often seen incorrect answer of -78.

In part (c), it was encouraging to see so many fully correct answers of $T = 6g + 12h$. However, almost equally often, $T = g + h$ was given as an answer; this gained candidates one mark. Another common incorrect answer seen was $18T = 6g + 12h$ thus gaining two marks.

Question 10

In part (a) all but a small number of candidates could use their calculator to find the correct answer, although a few scored only one mark for part of the calculation worked out correctly. Some gave completely wrong answers, probably from not understanding the order of operations.

In part (b), giving their answer correct to two significant figures was far less successful; instead of 12, the values seen most often were those to 2 decimal places (11.89). Many candidates misinterpreted 2 significant figures as 2 decimal places.

Question 11

In this question, where a student knew the formula for the circumference of a circle and used it, they tended to gain full marks. However, other formulae were used at least equally often, the most popular being πr^2, πr, $\frac{\pi d}{2}$ and $\frac{\pi r}{2}$; candidates who took one of these routes achieved no marks. Candidates would be well advised to show their working and their initial unrounded answer.

Question 12

This question was not answered well. Some candidates were able to calculate the cost of a pair of jeans by dividing 24 by 1.34 or the cost of three pairs of jeans by dividing 72 by 1.34. Some candidates, rather than dividing by 1.34 decided to multiply by 1.34, thus losing the currency conversion marks. Others took the approach of converting pounds into dollars by multiplying by 1.34. An error made by many candidates was to divide 34.5 or 103.5 by 1.34. If the candidates had converted correctly then they went on to find the profit in pounds or dollars thus gaining the second mark. Many candidates did not know how to work out the percentage profit, especially what to use as the denominator in the calculation, thus losing the final two marks.

Question 13

In part (a), many candidates were able to reflect a triangle in the line $y = 2$ and gain the two marks. Candidates were able to gain one mark, if they reflected the triangle in the line $x = 2$ or in the x-axis and such responses were common.

In part (b), many candidates were able to identify the **single** transformation as a rotation and correctly described the direction and centre. Those who did not score full marks often omitted either the size of the angle (90° or 270°) or the direction of the turn (clockwise or anticlockwise). There were some who indicated the centre of the rotation as a vector rather than in the standard Cartesian form. A number of candidates indicated more than one transformation, typically a rotation followed by a translation, which resulted in no marks being scored.

Question 14

In part (a), given a Venn diagram, most candidates could write down the numbers in set $A \cap B$.

Part (b). many candidates could not interpret the set B' and gave incorrect answers. A common incorrect answer was to write 1 and 3 ie giving the answer to set *B* only.

Part (c) was mostly answered well. Many candidates did write $\frac{3}{14}$, however, some candidates were able to score 1 mark for writing $\frac{3}{a}$ or $\frac{b}{14}$ provided the probability was less than 1.

Question 15

Many candidates could gain at least one mark from this question. Different approaches were taken to calculate 22 500, the total number of toys made in one day. A variety of other irrelevant and somewhat confused attempts made regular appearances. A common error made by some candidates was that they assumed that there were 360 seconds in one hour. Candidates need to recall how to convert hours to seconds. Once a student found 22 500 some then divided by 0.002 rather than multiplying by 0.002. Some candidates miscopied the probability as 0.02. Many responses for this question were left blank.

Question 16

There was a mix of blank responses and fully correct responses for this question. For those who attempted the question, a fully correct graph was often seen. Although it's disappointing to see a number of candidates who plot the correct points and don't put a line through them. A few candidates made errors such as wrongly plotting one of the points, but these were generally able to gain 2 marks for a correct line through at least three of the correct points. A small minority gained just one mark for a line drawn with a negative gradient going through (0, 7) or for a line

in the wrong place, but with the correct gradient. Some candidates did not extend their lines through the full range of values specified, losing one mark as a result.

Question 17

This question was generally answered poorly by the majority of the candidates. Many candidates could not work out the value of x or stated that the value of x was the median value of 9. It was encouraging to see a few candidates setting up an equation such as $\frac{4+7+x+10+2y}{6}=11$ and then going on to solve for y when $x = 8$ or when x may be a number $7 < x < 10$. A large number of candidates opted for a trial and error approach and some were able to reach the correct final answer. However, a common incorrect approach was to write $\frac{4+7+9+10+18+18}{6}=11$. Thus, it was, however, quite common to see $x = 9$ and $y = 18$ given as the final answer. Many responses across this question were left blank.

Question 18

Part (a) was well answered. Some candidates wrote down 0.057 or 000.57 or 5700 as incorrect answers.

Part (b) was well answered however some candidates wrote down incorrect answers such as 8^5 or 8×10^{-5}

In part (c), many correct answers were seen, usually without any intermediate working. Those who didn't get the correct answer often gained one mark for showing the digits 455 or for working out the numerator as 273 000. Many candidates, though, made hard work of this question which could have been done easily with the correct use of a calculator. Many converted the values to ordinary numbers to do the calculation causing them to lose their way.

Question 19

This question posed some difficulties for some candidates. There were a lot of distance, speed, time triangles, but not all were correct and those that were written in the correct orientation were not always used correctly. Some candidates tried to convert 100 km into metres and 28 440 km/h into m/s. The most common error seen was to write down 28 440 ÷ 100. Some candidates calculated 100 ÷ 28440 as 0.004 ie rounding prematurely thus eventually losing the accuracy mark. Once again, there was evidence of poor numerical skills with the initial part of the question. Many candidates were not sure whether to work out 100 ÷ 28440 or 28440 ÷ 100 as they are used to dividing large numbers by small numbers.

A few candidates did not use their calculator and tried to round the given figures; this was not appropriate for this question. If candidates are expected to estimate they will be told to do so in the question.

However, there were many good responses seen with many arriving at the correct answer from correct working.

Question 20

In part (a), few candidates were able to score full marks on this question, though many were able to score at least one mark for expanding the brackets to obtain $20 – 5x$

Many candidates had difficulty in isolating the terms on either side of the equation. Candidates wrote down $20 - 5x = 7 - 3x$ but many could not isolate the x terms and the numbers. Common errors were based on fundamental misunderstandings of algebraic processes, e.g., $-5x - 3x = 7 - 20$, $3x - 5x = 20 - 7$, incorrectly moving terms from one side of the equation to the other side, usually by not changing the sign of the term.

As the question clearly states 'Show clear algebraic working', some of those candidates who attempted to find the solution by trial and improvement gained no marks.

In part (b), it was encouraging to see a fair number of correct responses for factorising a two term expression with common factors. Where full marks were not awarded, others gained one for a correct partial factorisation with at least two factors outside the bracket or having the correct factor outside the bracket. There were also many and varied incorrect attempts. There were also many non-responses.

In part (c), many incorrect answers were seen and the main incorrect answer was to write the signs the wrong way round in the brackets e.g. $(y - 6)(y - 8)$ or $(y - 6)(y + 8)$ or $(y + 6)(y + 8)$; one mark was awarded for this. Many candidates found this part difficult and then could not answer the second part of this question. Some candidates tried to factorise again or try to use the quadratic formula.

Question 21

This question was only accessible to candidates who were able to calculate the sum of interior angles. Majority of the candidates could not recall $(n-2)\times 180$ or use the method of triangles to work out the sum of the interior angles. As a consequence, many candidates scored no marks. Those who were able to make a start usually attempted to find x by a numerical approach, rather than forming an equation. A correct equation was enough for the second mark but a complete numerical method was required for this mark. Many candidates found 1302 but did not know how to continue with the question. A common incorrect approach was for candidates to recognise the symmetry in the shape and assume that all the angles were duplicated. They therefore incorrectly identified the missing angle in the polygon as '148' and subtracted this from 360.

Question 22

A minority of candidates were successful in this question, where understanding that the given value had already been decreased by 20% was rare. The incorrect method of finding 20% of 1080 and then subtracting or adding was widespread. Careful reading of the question would help candidates realise that the 20% is a percentage of the original price and not 20% of the given price.

Question 23

Part (a) was poorly answered as many candidates did not know how to work out the highest common factor. There were also many non-responses.

Part (b) was answered poorly. Some candidates simply used their calculator to work out $A \times B$ as $4.279\ldots \times 10^{39}$. Many responses across this question were left blank.

Summary

Based on their performance in this paper, candidates should:

- learn and be able to recall metric conversions such as 1 km = 1000 m
- learn how to convert hours to seconds
- apply the formulae for a volume of a cuboid and speed = distance ÷ time
- show clear working when answering problem solving questions
- 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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