Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

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Pearson Edexcel International Primary Lower Secondary (iPLS)
Year 9 Mathematics (LMA11/01)

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General Comments

The paper in this series seemed to present a comparable level of challenge to papers in previous series, with several questions and topics being examined in similar ways. This was reflected in the performance of candidates across the board with the raw marks achieved being distributed across the full mark range. Grade boundaries were therefore set at levels which are consistent with recent series. Sections A and B of the paper both had questions that differentiated between candidates effectively between candidates of varying abilities.

A large majority of candidates attempted all of the questions across both sections of the paper so only very small proportion of answers were blank. Where there were blank answers, they were almost always towards the end of Section B. This may be due to the more complex nature of the topics and problem-solving questions that were being tested, but there may also have been a smaller number of candidates who ran out of time (although there is little evidence to suggest that this is the case, as hardly any questions were left partially answered).

As we have seen in previous series, algebraic work seemed to be a strength of many candidates. However, the standard of responses on data handling and shape, space and measures questions (which has improved over recent series) has been maintained. Questions that involved worded problems and/or problem solving seem to challenge candidates the most so this may be an aspect that centres want to focus on in preparation for future series.

There was also some evidence of arithmetic errors during this series, which have not been an issue previsouly, which suggest that candidates are not using calculators to check their numerical answers. Candidates overwhelmingly seemed to have a suitable calculator which will have allowed them to complete several questions in a fast, effective way. However, there was also appropriate working out shown in the vast majority of cases, which is pleasing to see as it enabled many candidates to earn method marks where their final answer was not completely accurate.

Unfortunately, inaccurate answers were relatively common, either due to the arithmetic errors mentioned above or because of truncation or rounding errors. In several cases, this was caused by overly severe rounding at early stages of calculations which then led to final answers that were outside of the acceptable range. Centres may want to highlight the impact of premature rounding on the accuracy of answers and stress to their candidates that they should use values that have been rounded to at least three significant figures, where necessary. Many candidates would have secured more marks if they had written answers from their calculator display in full before rounding or truncating them, so that accuracy mark could be secured, even if their subsequent rounding was incorrect or overly severe.

Section A

The first section of this paper contained 15 multiple choice questions that each had one correct answer and three incorrect distractors. The reasons for choosing each of the distractors is set out in the mark scheme so centres can see what potential misconceptions candidates may have. The lack of method marks in Section A means that we usually see far less working out, which unfortunately makes it impossible to know which correct answers were thanks to accurate methods and which were due to good fortune. Similarly, incorrect answers may indicate a complete lackof understanding, an unlucky guess or a slight slip in an otherwise correct method but again, it is not possible to tell.

The questions around the start of Section A were attempted more successfully than those towards the end, altough this is generally expected and always likely to be the case because the overall level of challenge increases as we move further into the paper. There are exceptions to this though, as Questions 2 and 4 are both early in this section of the paper but were completed less successfully than many other questions, including Question 12 which was completed more successfully than any almost all other multiple-choice questions, despite being towards the end of the section.

Candidates indicated their chosen answers clearly and effectively in almost all questions which allowed their responses to be assessed by OMR. Hardly any questions in Section A were left blank, and hardly any candidates indicated more than one answer for a question (which is good as this would have meant they lost the mark, even if one of the answers selected was correct).

Section B

Section B contained 20 questions in total and 7 of these questions had multiple parts. Each question (or part) gave candidates the opportunity to earn up to 5 marks towards the overall total of 65 marks for this section. Marks were awarded for evidence of correct methods on each of the questions that were worth more than one mark. Specific details on each question in Section B can be found below.

Question 16
Part (a) was completed very effectively overall with the vast majority of candidates securing the single mark that was on offer. A small minority seem to have been fortunate that they confused mode with median and chose the middle value, but also forgot to order the values before doing so, and hence managed to stumble across the correct answer.
Part (b) was attempted equally well with a large majority of candidates scoring both available marks, and almost all of the others getting at least one mark for a correct method. Unfortunately, this was one of the questions where arithmetic errors (and a lack of effective checking) lead to candidates losing accuracy marks.

Question 17
There were a few candidates who did not understand that a line of best fit was a single straight line that covered the whole of the graph and that the array of points should be spread evenly about the line. It was noticed that some candidates simply drew a straight line from the top left corner of the grid to the bottom right suggesting that they completely misunderstood this important step in data processing. Most made a reasonable attempt though, and there were only a few who simply joined up all the points.

Question 18
Most candidates were able to answer Part (a) correctly and the majority gained full marks, with fully correct working. Of those that didn't, many attempted the question but confused the method with finding the gradient, by subtracting coordinates rather than adding before dividing by 2. Only very occasionally was one mark scored. Where mistakes were made it was often because of negative numbers.
Part (b) was completed equally well with most candidates securing the mark with a straight line that had obviously been drawn with a ruler (although the mark was still awarded even if a ruler was not used). Common incorrect answers included drawing the lines $x=4$, $y=-4$ or $x+y=-4$.

Question 19
The vast majority of candidates were able to answer Part (a) correctly, so again lots scored full marks, with most converting the fraction and percentage to decimals for comparison. The question was very well answered and it was good to see that many had worked out comparable values so gained method marks.
Part (b) seemed to be a generally 'all or nothing' question with many candidates gaining full marks but, of those who didn't, very few had any method marks. Many found 15% and added or subtracted it, with the most common misunderstanding being to find 15% of 391 and subtract.
Part (c) was extremely well done by a large majority of candidates so most gained full marks on this part of the question. Of those that didn't, some were confused by the reverse percentage question in Part (b) and used a similar method here. A small number of candidates found the two correct sale prices but then gave an incorrect answer of Bargains. It was pleasing to see this type of question was generally so well understood though.

Question 20

Most candidates gave a fully correct solution to Part (a) with very few candidates failing to score full marks, as the concept of ratio was clearly well understood.

Part (b) was completed even more successfully, with a large majority of candidates showing the correct division followed by a correct answer, and hence scoring both marks in an efficient manner. There were a small handful of candidates who showed the correct division but failed to find the final answer, which suggests they were not able to use their calculator effectively, while a very small minority divided 5 by 4.8 or multiplied the values instead.

Question 21

Part (a) was another well answered question which seemed to be well understood by most. Almost all candidates showed working out for factor decomposition and went on to give fully correct answers supported by accurate working. Many candidates opted to use index notation for their answer, which was not required but is perfectly acceptable. For those who did not get this completely correct, marks were mostly lost for occasional careless mistakes.

In part (b), the process of factorisation was obviously understood by almost all candidates with arithmetical errors being very rare. A small number confused HCF with LCM but most understood exactly what to do. Decomposing both numbers into prime factors and then selecting those which are common was the most frequently seen method.

Question 22

There were many correct answers to Part (a) but many candidates made errors removing the brackets. Many combined the first two terms before expanding the brackets. Lots of mistakes made because of the negative outside the bracket so -15w was incorrectly processed as +15w and -12w was also seen often. There were many candidates who misread the question by assuming the given expression was equal to 17w (4w + 5) as a first step. Many didn't get a w squared term.

Most candidates approached Part (b) correctly though and gained both marks for the final answer $x = 8$. After multiplying by 5, some candidates went wrong by subtracting 11 from 45 rather than adding (the inverse of -11). Some were confused about the order of operations and tried to add 11 to both sides before multiplying by 5. A fully correct method was needed for the first of the marks, so no marks were awarded if this mistake was made.

The algebra in Part (c) was done well by many candidates, leading to lots of fully correct answers. However, there were many candidates who failed with the transfer of terms from one side of the inequality to the other. Mistakes were made by changing the inequality sign thus only gaining a method mark. Many candidates also showed their unfamiliarity with this topic by working with an equality and often lost the final mark by leaving the answer as $y = 5.25$.

Question 23
Around half of candidates gained full marks on this question. For those that didn't, some gained one mark for the arc length (9pi or 28.3) but many got confused with sector area and scored zero. Some candidates did correctly identify it was arc length but confused it with using the diameter (2x18) and also dividing by 4 leading to an error of 18pi, meaning that no marks could be awarded. Many candidates correctly started with C = 2πr and found the perimeter of the quarter circle to be 9π (or equivalent) which gained M1. However, a good proportion of those candidates either failed to add on the two radius lengths of 18, or added only one, and so lost the A mark. A small number of candidates started, wrongly, with πr2 and hence gained no marks. An even smaller group found a third of the perimeter of the circle, rather than a quarter.

Question 24
Candidates who knew (or who could work out) that the sum of the angles in a pentagon is 540 had no trouble with this question and almost always went on to score full mark. However, many candidates assumed the angles of a pentagon total 360 which led to them scoring no marks. Some candidates intelligently split the diagram into a rectangle and an isosceles triangle to arrive at the correct answer.

Question 25
Around two thirds of candidates gained full marks on this question by correctly drawing two pairs of intersecting arcs and joining the intersections together. Those who didn't seemed to have some understanding of what was required, but many needed to ensure that they centred the arcs on the ends of the line BC.

Question 26
The majority of candidates scored full marks on this question and even where mistakes were made, one mark was usually earned. Some candidates gave the wrong vertical lengths but correctly joined the two diagonal lines at the top. These candidates were given one mark for 3 correct lines. Some wanted to draw guidelines in which were superfluous.

Question 27
Many candidates are clearly used to dealing with questions like this on sequences and the fact that this sequence was decreasing did not put them off. However, only a small proportion of candidates went on to gain full marks. Many used 4n instead of -4n. Some were stuck after realising that the common difference is -4 and could go no further.

Question 28
Candidates who squared both sides of this expression as a correct first step usually went on to score both marks. However, a large number of candidates did not answer this question particularly well. The first step was the stumbling block with many candidates multiplying by 5c as the first step, which led them to score no marks.

Question 29
Very few candidates were able to answer this with an algebraic method and therefore not many achieved full marks on this question. Some tried an algebraic method but used x+21 as the daughter's age and x–38 as the father's age instead of x–21 and x+38 respectively. Some understood that setting up a simple equation was necessary and derived contributing terms like d+38 or d-21 but could not see their way to progress further. What might have been a complete answer by some was let down by a failure to recognise that three terms d+38, 3-21 and d were involved so (d+38) = (d-21) = 158 or the equivalent was sometimes seen.

Question 30
This question was done very well done by the majority of candidates, although a significant number who carried out the calculation correctly did not follow the instruction to give the answer in standard form, leaving it as 27100, or something equivalent. The vast majority of answers were fully correct though, with the only common incorrect method seen being to add the 3.1 and 2.4 then add the powers.

Question 31
Most candidates completed this question efficiently and effectively with clear working out and an accurate correct answer. Only a very small number misinterpreted the word estimate, but a more significant number failed to use the mid-point in each interval in their calculations. A surprisingly high number of candidates divided 4 (the number of intervals) or by the sum of four midpoints, rather than the sum of frequencies.

Question 32
This question was answered poorly on the whole. The small proportion of candidates who understood how to find the total age of a group when given the average almost always produced fully correct answers while others produced seemingly random workings out, but rarely anything that gained any method marks.

Question 33
Both parts of this this question were answered well by the majority of candidates, given the level of difficulty involved. The most common errors were to square then subtract in Part (a) and squaring then adding in Part (b). Apart from that, and the occasional arithmetic error, the use of Pythagoras' Theorem seemed to be well understood. Several candidates were seemed comfortable with leaving their answers in surd form, which was completely acceptable. A small proportion of candidates tried to find areas which yielded no marks.

Question 34
Only a small minority of candidates recognised the need to form two simultaneous equations which could then be solved to find the answers required. The majority who did this as their first step went on to show excellent algebraic skills and invariably completed the question to obtain full marks. However, the worded nature of the question, and the need to represent the information using algebra, seems to have proved too much for many candidates.

Question 35

Only a very small number of very good candidates were able to solve this problem correctly. Many candidates assumed that angle B was a right-angle, and simply wrote 90 as their answer, or started from this assumption then went on to use trigonometry and/or Pythagoras erroneously. Some measured and gave an answer of 95 degrees but no marks could be awarded without evidence of working. For the small percentage of candidates who gained marks here, the most common method was to drop a vertical down from the point B, thus splitting the angle ABC into two parts, and finding the size of each using the tangent ratio. Most candidates who used this method, carried it on to full marks.

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