Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

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

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General Comments

This paper seems to have challenged candidates to a greater extent than in previous series, although that is probably more to do with the profile of the cohort rather than the difficultly of the paper. Several of the topics tested were the same as in previous papers, and usually in fairly similar question types, so there was a good degree of consistency with past papers. Although candidates' attainment across the paper was still spread across the full range of marks, as has been in the case in other series, the marks overall were generally lower than on recent papers. Both section A (multiple choice questions) and section B (short open questions) had a good selection of questions that allowed us to differentiate between candidates of various abilities in an effective manner.

The vast majority of candidates attempted the vast majority of questions in each section of the paper, with a very low proportion of the questions remaining unanswered. Questions which were left unanswered were usually towards the end of section B, which is not unusual as this is where the most-complex questions are generally found, testing higher-level topics and candidates' ability to solve problems. A small proportion of candidates may have run out of time before completing the entire paper but, as very few questions were left part-completed, it is unlikely that this was a significant issue for many candidates.

Questions on algebra remain an area of strength for candidates on this paper, although perhaps slighlty less so than we have seen in previous series. Questions involving work on number seemed equally challenging whereas questions on shape, space and measures and data handling were very obviously areas where candidates were often less confident. Whilst this fits with the trends seen in recent years, there seemed to be more students who found data handling very challenging in particular. This may be an aspect of the curriculum that centres could concentrate on when preparing candidates for for future examinations, in order to improve their attainment.

Whilst most papers had working and answers which showed that candidates had access to an appropriate calculator during their examination, there still a number of basic arithmetic errors that cost candidates marks on fairly straightforward topics. This could easily have been remedied by using a calculator to check all arithmetic but it would appear that this pratice was not embedded across the cohort. Candidates seem willing to use calculators to attempt more challenging number work in an efficient way, but appear to be reluctant to use a calculator on questions that they perceved to be easier.

Candidates showed a pleasing amount of working out on the majority of questions where it was required, particuarly in Section B. This meant that they were able to earn method marks on questions including those where they had not managed to reach a correct final answer. Incorrect answers on questions where candidates had scored method marks usually came from arithmetic errors (as mentioned above) or from inaccurate rounding.

Overly severe rounding (which often included rounding to the nearest whole number) led to answers which did not fall within the range stated on the mark scheme. Centres may therefore wish to stress the effects of excessive rounding, particularly during working out, and the impact this has on the accuracy of their answers. Candidates should always try to use values which are rounded to at least three significant figures wherever necessary.

There were several cases where candidates would have earned more marks if the answer on their calculator display was recorded in full before being rounded. This would've allowed accuracy marks to have been awarded, regardless of whether rounding was excessive or even incorrect.

Section A

Section A of the paper was made up of 15 multiple choice questions which were each worth one-mark. Each question had 4 multiple-choice answers and all 15 questions had 1 correct answer and 3 distractors. The distractors were all potential answer which candidates could have reached if they had any common misconceptions. The way that candidates could have reached each distractor is expalined in the mark scheme which means centres can then use these with candidates where needed.

As usual, candidates showed considerably less working out on qustions in section A then in section B. This makes it very difficult to know which answers were from correct methods and which were just lucky guesses. It is similarly difficult to work out which wrong answers were complete guesses, which were due to minor errors in otherwise correct methods and which were due to a common misconception. In future examinations, candidates should be encouraged to show full working on all questions, including multiple choice questions in section A, rather than relying on calculators or mental arithmetic, as appears to be the case in many cases at present.

The questions in both sections were organised so early questions are more accessible and later questions more challenging. Therefore it is not surprising that the early questions were generally better, and the later questions were answered less well. There were some exceptions to this, with Questions 18b and 24b featuring relatively early in section B despite being completed less well than most other questions, and Question 14 being done very well, despite it being the penulmate item in section A.

Candidates indicated the answers they had selected on each question in section A clearly, and in an appropriate manner, which means their answers were able to be marked by OMR. Hardly any multiple choice questions were left blank and there were very few questions where candidates selected more than one answer, which is positive as this will always be awarded zero marks (even if one of those indicated was correct).

Section B

The second section of the paper contained 17 questions, of which 8 had more than one part. This meant that there were a total of 27 short, open items altogether, worth between 1 and 4 marks towards the total of 65 marks available in this section. Marks could have been earned for accurate answers only on 1 mark questions, and for accurate answers from correct methods on questions where more than 1 mark was available. Details on how well each of the questions were attempted, as well as common methods used and common errors seen, in Section B are below:

Question 16

The majority of candidates were able to earn both marks on part (a) for correctly sharing the amount given into the ratio stated, although the working shown was often sporadic and, in many cases, would not have earned any credit had the corrects answers not been reached. Very few candidates scored 1 mark, with those who did not score full marks almost always scoring no marks and clearly evidencing that they had no idea what to do.

Just over half of the candidates got part (b) correct which is far less than on similar questions in previous series. The number involved was relatively large although this did not seem to put many candidates off. However, there were a significant number who left it blank and many others who failed to score any marks as they simply listed factors or, in some cases, prime numbers.

Question 17

Candidates only secured around a third of the marks that were available on this question. All three parts of the question proved equally difficult for candidates overall with many getting one or two parts correct but very few getting all three correct and a significant proportion getting all three wrong.

The most common incorrect answer to part (a) was y=3 although several candidates put M=3 too.

Some candidates seemed to ignore part (b), possibly as they did not know how to tackle it, or possibly as they had not read the question carefully enough (if at all). Those who did attempt it often scored fully marks but those who didn't usually got one mark for a correct y-intercept, as the correct gradient proved more challenging.

On part (c) only a very small minority of candidates got the correct answer. The vast majority of those who didn't score this mark showed no understanding of what to do, often giving a coordinate as their answer, with hardly any giving an incorrect answer in the form $y=mx+c$.

Question 18

Part (a) proved to b surprisingly challenging for candidates with the majority scoring zero marks. Most knew that perimeter required them to add the lengths of sides but some just added the lengths given and many added those given plus the unmarked vertical 4cm and 8cm sides, but not the unmarked horizontal 6cm side. Candidates need to show a correct method that involved the addition of 8 sides to score the first mark, which is why so many scored zero. Of those who got one mark for a correct method, almost all went on to score full marks for a correct answer. Only a minority seemed to be calculating an area instead, although far more candidates failed to attempt the question at all.

Part (b) was completed by far more of the candidates although the success rate was even lower, with less than one sixth of the available marks being secured. The accessible nature of the question meant that almost all candidates gave an answer in each of the four boxes but many scored no marks, a large proportion only scored one mark and only a small minority managed to score both marks. There were also very few who got 3 out of 4 answers correct, with almost all candidates who scored one mark doing do for getting two correct answers. The third gap was the one that most candidates filled correctly, with the other three proving to be equally challenging and filled with a variety of the incorrect answers available.

Question 19

This was the question in section B that most candidates got correct and almost all scored at least one mark. The vast majority completed the table correctly and gave the correct answer on the answer line. Very few showed any working out, although it really wasn't necessary with the values given and a calculator allowed. Candidates who did not score full marks seem to have calculated missing values mentally, rather than using written methods or a calculator, which reinforces the need for checking answers to basic arithmetic. There were a small minority of candidates who completed the table correctly but then gave an incorrect answer, perhaps because they had misread the question.

Question 20

Part (a) was the individual item that most candidates got right in section B, while part (b) was also completed relatively well, with well over half off all candidates getting it correct.

On part (a) almost all candidates simply wrote the highest value in standard form on the answer line. Some converted one or more values into ordinary numbers first, while a small proportion gave their answer as an ordinary number (which was accepted in this instance). A few candidates indicated their answer by circling or underlining the correct answer. Whilst this was given credit, it is not to be encouraged and candidates should always look to record answers on the answer line given.

In part (b), most candidates seem to have worked out their answer on a calculator then written just their answer down on the answer line, which was fine as long as it is done correctly. Unfortunately, there were a number of candidates who had an answer that was very nearly correct but, because it was not accurate did not score both marks and, because they had showed no working out, couldn't get one mark either and hence scored zero.

Question 21

The first part of this question was done surprisingly badly overall, with only just over half of candidates getting it correct. Those who did almost always just wrote the correct answer on the answer line with no further working. Those who didn't generally just wrote an incorrect value. The most common incorrect answers were -12 (the second term in the sequence) and -50 (the fourth term in the sequence). This suggests that candidates knew what to do but either didn't read the question carefully enough, or needed to write out the sequence to see which term was third.

Part (b) proved to be a far greater challenge with only around a quarter of marks secured overall. The majority of candidates scored no marks while those who didn't almost always scored both marks for a fully correct answer. Candidates who knew what method to use and/or were able to find two correct terms then went on to find all three. Those who didn't secure both marks usually showed no working of value. Only a small minority understood that substitution was required but failed to do so correctly.

The final part of the question was equally challenging with around a quarter of marks being scored once again. This time, a very small minority of candidates scored all three marks, despite the question being relatively straightforward, and generally answered well in previous years. Those who didn't score full marks rarely scored two marks (as those scoring the first two marks almost always went on to secure the third as well) with a significant number getting the first mark for a correct number sequence (usually 4, 11, 18, 25, 32, …) but an equally significant number scoring no marks, either for leaving the question blank, writing down a seemingly random number with very little or no working, or for trying to work algebraically but without any clear or correct method.

Question 22

Most candidates got this question correct by drawn two correct intersecting arcs and a correct bisector. Those who didn't usually scored zero for drawing nothing, or for drawing other lines on the diagram that were incorrect and/or not relevant. Only a small minority scored one mark, and this was almost always for drawing a bisector in the acceptable range but without arcs, or with arcs that had not been drawn accurately or correctly (possibly in an attempt to mimic a correct answer?).

Question 23

This question was expected to be challenging for a large number of candidates so it was pleasing to see well over half of the marks available being scored by candidates overall. The majority of fully correct answers referred to sample size and random sampling, with a smaller proportion referring to bias. Those who scored one mark but not a second often did so by giving one correct answer but then simply rewording it as their second answer, which obviously did not earn any further credit. The quality of written communication was not being assessed on this question so spelling and grammatical errors were not penalised although the standard of written English was generally quite high.

Question 24

Performance on the question varied vastly across each of the different parts.

Part (a) was done relatively well with around two thirds of marks being scored, usually for a correct answer with no working out shown. Those candidates who did show working usually did so without appearing to use a calculator, which sometimes led to a loss of accuracy due to arithmetic errors and/or overly severe rounding.

Part (b) was one of the least well-answered questions in section B, with only around one in ten candidates getting it correct. Those who did almost always did so with a correct, efficient method that was worked out on their calculator. The remainder of candidates showed no understanding at all of what compound interest was, and hence scored zero.

Candidates managed to complete Part (c) much better, earning around half of the marks available. Almost all candidates who found a correct method went on to use it correctly, so those who didn't have a correct answer usually didn't have a correct method either. Therefore, candidates almost always scored zero or two marks. The most common error was to subtract the values but then divide by the wrong value, and hence get an answer of 8.6… (or 9, where rounded). This scored no marks, although almost as many candidates scored no marks on this item for leaving it blank.

Question 25

Those candidates who realised that both parts of this question could most easily be solved using algebra usually did so effectively and efficiently scoring some, if not all, marks in both parts. However, a significant proportion of candidates saw both parts purely as number problems and set about trying to solve them with a whole range of trial and improvement methods.

On part (a), several candidates did manage to find a correct answer through lengthy trial and improvement methods, although this often involved them filling the entire page with working and inevitably spending much more time on this item than expected.

Part (b) was far harder to use trial and improvement methods on successfully so those who did so didn't reach correct answers but again seemed to spend disproportionately long periods of time trying to find correct answers.

Question 26

Part (a) of this question contained two parts (i and ii) which were expected to e relatively simple for candidates. However, this proved not to be the case as on around one in six of the available marks were secured. On the first part, several candidates reflected the shape in the y-axis instead (or in both the x- and y-axes, which scored no marks as it gave the examiner a choice of answers). On the second part, the majority of candidates performed a translation, but some translated triangle K (their answer from the first part) and others translated the correct shape but not quite correctly. Many answers were close to the right answer but were found to be one or two squares away from being correct. The third part was expected to be significantly harder but this did not seem to particularly be the case. Most candidates who scored full marks on the first two parts went on to score at least part marks here (usually for rotation by 180 degrees) but very few identified the centre of rotation correctly, with many not identifying a centre at all.

On part (b), around one in seven of the available marks being scored. Again, the centre of rotation seemed to cause significant issues for many candidates with even the shapes that were the correct size and orientation rarely being in the correct place. There were a fairly evenly distribution of candidates who scored one or two marks for one or two correct conditions, but zero was still by far the most common mark on this item, partly because so many candidates failed to attempt it.

Question 27

This was another relatively straightforward question which was done surprisingly badly, with a large majority of candidates scoring no marks. The most common errors were adding the frequencies and dividing by 24, or by 6 (the sum of the top row of the table) which attracted no marks. Those who knew what to do generally did so in a very clear, methodical way and went on to score full marks. There were a small number of candidates who appeared to have a correct method but lost marks having relied on mental arithmetic rather than using their calculators.

Question 28

Most candidates scored zero marks on this question which was unexpected as the number work involved is relatively simple. Some candidates seem to have been put off by the worded question structure, while others seem to have ignored the fact that the values given were in different units. Again, the vast majority of candidates who secured the first mark went on to score the second mark too, although this only accounted for a small proportion of the whole cohort, as less than a third of the marks available to candidates were awarded.

Question 29

The content and structure of this question seemed unfamiliar to the vast majority of candidates as many left it completely blank while an equal number showed working out that was not relevant or appropriate (including Pythagoras, trigonometry and angles in a triangle) as none of this led to any marks being awarded. Only a tiny minority of candidates managed to secure any marks and this was for providing one or two correct statements about angles and/or sides of the triangles that were equal, with reasons. Almost none of the candidates went on to give full, correct proof with an appropriate conclusion though, so this would be another area that centres may wish to concentrate on as they prepare candidates for future series.

Question 30

Despite being towards the end of the paper, part (a) of this question was very simple and straightforward. However, this was another data handling question that a surprisingly high proportion of students struggled with, with significantly less than half scoring the marks that were on offer. Some candidates left the answer lines blank, other wrote numbers of them, and a smaller proportion wrote an incorrect fraction. Most candidates who got the first mark went on to score the second mark too, although some left their second answer as 0/12 (rather than just 0) which was not an acceptable answer, and hence did not score the second mark.

Part (b) of this question was the lowest scoring question on the entire paper with no candidates scoring any marks at all. The vast majority left it blanks and those who did attempt it did not do enough to attract any marks. A very small proportion had answers that looked like they were in an appropriate format (either multiplying then adding fractions or drawing probability tree diagrams) but did not execute either at all accurately so still scored zero.

Question 31

This question was done marginally better than others towards the end of the exam, which suggests that low marks on other questions in this part of the paper were not due to candidate running out of time. Only around one in six marks were awarded but the vast majority of candidates attempted the question, and those who managed to find the lower bound of each measure usually went on to score both marks for a full correct answer. By far the most common wrong answer was 209.5 which came from adding the measures together to get 210 then finding what candidates thought was the lower bound of that value. This shows some understanding of the topic in hand and suggests that it would not take very much further input for many candidates to get this right in future.

Question 32

As this was the final question on the paper, and on a relatively challenging topic, it was not surprising that the majority of candidates failed to score any marks. In fact, it was quite pleasing to see so many candidates attempting it, and that around one in every eight marks was awarded (which is good compared to many of the latter questions on this paper). The majority of candidates who scored marks here managed to score at least 2 marks for a correct method and, in almost all of these cases, their working started with a diagram. Whilst these were often just very rough sketches, they were enough for these candidates to recognise what was required and how to tackle the question. This is definitely something that should be encouraged on similar questions in future. Some candidates lost the final mark for failing to round their answer accurately, with many rounding to the nearest whole number.

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