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Examiners' Report/ Principal Examiner Feedback

Summer 2012

Primary and Lower Secondary Curriculum (PLSC) Year 9 Mathematics Achievement Test (LMA01) Paper 01

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General Comments

The paper seemed to provide an appropriate level of challenge to candidates and the vast majority managed to attempt all questions. All candidates seem to have had access to a calculator but it was pleasing to note that, even where a calculator had obviously been used, working out was still present in most cases.

Section A

The majority of candidates did relatively well on Section A. However it is difficult to identify any particular questions where candidates performed particularly well (or badly) as there were no obvious trends, other than more correct answers at the beginning of the section and less towards the end, as you would expect. The nature of multiple choice questions mean that it is impossible to identify questions that different ability bands did well (or badly) on. It was refreshing to see that some candidates left multiple choice questions blank where they did not know the answer, rather than taking a guess (although this practice may well have cost them valuable marks). A number of candidates marked an answer, then crossed it out and marked another answer instead, but then crossed that out and returned to their original answer but this time circled it to make clear their intent. In subsequent years, when multiple choice questions are marked by OMR this would not be given any credit so candidates would be well advised to consider their answer carefully before marking it.

Section B

Report on individual Questions

Question 31

This proved to be a relatively difficult question to begin Section B but candidates generally tackled it well. Where marks were lost it was usually a simple arithmetic error or a poor attempt to divide by 6 first that caused this.

Question 32

While the majority of candidates got this question correct, there were a number of common errors too. Several took '25' to be the side length and, in a number of these cases, went on to give a final answer of 625. Hardly anyone got 1 mark as everyone who managed to find $\sqrt{25}$ or 5 went on to get the answer correct.

Question 33

This question was done badly by a high number of candidates, considering is was relatively easy. Many just wrote a wrong answer down with no working (often 35, which was the middle number in the list) but there were several other incorrect methods including calculating mean, calculating range or giving 38.5 as an incorrect response.

Question 34

Where errors were made it was generally on the second part, and often because the numbers they selected added up to 4 (rather than -4). This usually seemed to be due to candidates not understanding the effect of two minus signs together.

Question 35

This was a question which differentiated between candidates well as there was a good mix of candidates scoring full, part or no marks. Several scored 1 mark for collecting like terms (usually correctly) but many then equated their expression to 180 rather than 48. A smaller number managed to form a correct equation but were unable to solve it. Even fewer managed to score 2 marks for collecting terms incorrectly but then correctly solving 'their' equation.

Question 36

Very few candidates managed to get this question completely correct, which was something of a surprise considering its level of difficulty. Many were able to secure 1 mark for rotating the shape to its correct orientation but very few were able to use the centre of rotation correctly to ensure that the triangle was in the correct place. Hardly any candidates got 1 mark for rotating the shape the correct amount but in the wrong direction.

Question 37

Most described the correlation correctly in part (a) and, pleasingly this was generally by using the word 'positive' rather than for describing the relationship between the scores in each subject. The coordinates were generally plotted well in part (b) although a number seemed to miss this question out completely, perhaps suggesting that they hadn't read it. Only around half got the final mark and many of their answers were right at the top of the acceptable range. Candidates who did not earn the final marks usually gave an answer that was slightly too high.

Question 38

Most candidates did this question well and secured full marks and those who did not generally managed to get 1 mark for at least 3 correct terms. There were a number of candidates who correctly found all four terms from expanding both brackets but then simplified incorrectly. This was usually due to incorrect handling of the negative term.

Question 39

Part (a) seemed to cause some confusion for a number of candidates who often gave a correct value of 85% but then went on to do an unnecessary calculation with it. Most candidates managed to get part (b) correct, irrespective of whether they got part (a) right or not. Where errors were

made on part (b) it was usually because of an inability to find 15%. Hardly any students got marks for following through from an incorrect answer to part (a).

Question 40

Most candidates got at least 1 mark from this question, although very few got all 3 marks. Part (c) unsurprisingly proved to be the most difficult but on all three parts most candidates managed to get the correct format for their answer but then either misplaced their decimal point and/or gave an incorrect power of 10. There were a few unfortunate candidates who earned no credit for finding the correct answer to part (c) but then giving it in standard form.

Question 41

This question was done badly by the majority of candidates and many even left it blank. Some realised that they needed to use Pythagoras' Theorem but used incorrect values (often $h^2 + 8^2 = 10^2$). There were very few candidates who scored partial credit as those who earned the first mark generally went on to secure full marks. There were a number of candidates who just gave 6 as answer, usually after no working. This was assumed to be a guess based upon the Pythagorean triple 6, 8, 10 rather than a correct answer which had been incorrectly rounded.

Question 42

This question differentiated between candidates well as there were a good mix of those scoring full, part or no marks. Where part marks were scored it was generally for getting part (a) correct. Many candidates left there answer embedded in the index notation, rather than giving a value for a and b, but this was deemed to be acceptable. Where errors were made it was often by giving a as 3 and b as 3 which seem to come from multiplying and dividing the powers.

Question 43

This question was done badly by a number of candidates, most of whom scored no marks and many of whom left it blank. Where some marks were scored for a correct method, candidates generally went on to secure full marks. Some of the common incorrect methods included calculating cumulative frequency, adding up some numbers (sometimes the frequencies, sometimes the upper or lower bounds, sometimes the midpoints of each class) and dividing by either 5 (the number of classes) or 20 (the number of swimmers). The few who scored partial credit generally did so for using a consistent value within each class, but not the midpoint, then going on to calculate 'their' estimate of mean.

Question 44

This question proved to be difficult for a large majority of students. Many got no marks on part (a) as they obviously did not know the formula for area of a circle (many used 2πr or πd). Some achieve 1 mark for finding 113. … as the area of the circle but most who then halved that value also went on to round correct for full marks. Many candidates ignored the relevance of part (a) when calculating part (b) by trying (usually unsuccessfully) to rearrange and use the formula for volume of a cylinder. There were a few candidates though who managed to score a mark in part (b) having followed through from an incorrect answer in part (a).

Question 45

A surprisingly low number of candidates scored full marks on this question. Where marks were dropped it was usually on part (a) as those who got part (a) correct almost always went on to get (b) right too. However numerous candidates who got part (a) wrong still went on to correctly subtract their answer from 1 to earn a mark in part (b) even though, at times, their answer to part (a) seemed to make no sense.

Question 46

This question proved to be a real challenge for many candidates. Only a minority managed to get part (a) correct, although a number got 1 mark for two correct values. Most candidates earned 1 mark on part (b) for correctly plotting at least 6 of their points but few of them went on to score the second mark for a full correct graph. Common errors included joining points with straight lines and plotting points incorrectly that included negative or zero values. Hardly any candidates earned the final mark in part (c) as so many of them ignored the question and solved the equation instead. This earned no credit. We needed to see clear indication on the graph that candidates had used their graph to reach their answer. The only candidates who did this but still didn't attract a mark were those who did it inaccurately, giving '2' as their answer.

Question 47

This was a question where candidates generally either scored full marks or no marks. Candidates usually used an elimination method to begin with but many were not able to handle the negative value of y correctly, so scored no credit. Those who did, or who used a substitution method instead, generally went on to score full credit. There were many candidates who did alot of erroneous working to score no marks when their time may well have been better spent elsewhere.

Question 48

A worrying number of candidates did not attempt this question. This may simply be due to running out of time but some may simply have failed to look on the back of their paper. Those who did attempt the question generally did well, especially on part (a), despite the relative difficultly level that the question presents. The most common error on part (b) was to add the fractions rather than multiplying them, although several candidates managed to get (b) correct despite an incorrect answer in part (a). Most left their answer in its unsimplified form (which did not incur penalty) although some did cancel it down correctly too.

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