

Junior Lyceum Examination into Form 1 – May 2006

MATHEMATICS

CHIEF EXAMINER'S REPORT

General comments about the examination paper

The examination paper focused on questions aimed at testing and assessing the candidates' mathematical knowledge, applications, skills and understanding at the end of their Primary Education.

The examiners used a specification grid to ensure that all the questions set were within the syllabus and that their level catered for the wide range of the candidates' abilities. Various areas of the syllabus were tested by means of carefully graded questions.

The paper contained twenty questions carrying a total of 100 marks. The first ten questions carried 4 marks each while the remaining ten carried 6 marks each. Clear and appropriate diagrams and setting using larger fonts made the paper child-friendly. Particular attention was given to the use of language to ensure that the paper was accessible to all candidates, including those with special needs.

General comments about the performance of the candidates

74.5% of the total number of candidates who sat for the Mathematics examination secured a pass. The pass mark for the paper was set at 50.

The first five questions were all on Number work and were easily tackled by a very high percentage of the candidates. These questions encouraged the candidates to make progress with the rest of the questions.

As a whole candidates performed well in Number work, in Shape and Space and in Data Handling. The strand on Measurement proved to be a problem with candidates. Area was confused with perimeter. In question 19 a good number of candidates used $L \times B \times 2$ as a formula to find the area. Children should be encouraged to use concrete methods for finding perimeter and area rather than using a formula blindly. Reading the protractor (question 12) has also confounded some candidates. As suggested in previous years, children should be encouraged to give a rough estimate of an angle first rather than using the protractor right away to measure an angle.

The number of candidates using the repeated subtraction method for division and the partition (decomposition) method for multiplication has increased. Candidates are performing positively with these methods because now they understand more what they are doing.

Questions 18, 19 and 20 were the least tackled. They were application problems and only the above average candidates succeeded in presenting a logical sequence of steps leading to the correct solution.

Once again marks were lost because some candidates failed to present any working. In question 15b quite a good number of candidates lost all the marks simply because they chose not to show any intermediate work and just wrote only the wrong answer.

Finally more stress should be made during the teaching and learning process on the understanding and the correct use of mathematical language.

Exemplars:

The following is an excellent exemplar of a sequential solution of question 20. The candidate explained every step leading to the correct solution and has checked and corrected the work accordingly.

20. This is the menu at Fiona's Restaurant.
Part of the menu is missing.

a) What is the bill for **egg, chips and tomatoes**?

egg + bacon = Lm1.00 $\frac{Lm1.10}{-Lm1.00} = 45c$

egg + bacon + tomatoes = Lm1.10 $\frac{Lm1.10}{-Lm1.00} = 10c$

Tomatoes 10c + egg 45c 50c 85c + 40 = 45c

Egg + tomatoes = 50 - 10 = 40 ~~10~~ 45 cents

b) What is the bill for **egg, bacon, tomatoes and chips**?

egg 40c + Tomatoes 10c + chips 45c = 95c bacon 60c

Egg + bacon = Lm1.00 $\frac{Lm1.00}{40} = 0.60$

$95c + 60c = 1.55$

Lm ~~1.55~~ 1.55

Fiona's Restaurant	
Egg and bacon.....	Lm1.00
Egg and chips	85c
Egg and tomatoes	50c
Egg, bacon and tomatoes.....	Lm1.10
Egg, chips and tomatoes.....	
Egg, bacon, tomatoes and chips ...	

The candidate in the following exemplar gained 2 method marks in part (a) (one for adding and one for dividing by 4) but lost the final accuracy mark. The candidate forfeited **all the marks** in part (b). The markers could not award any method marks as no working was seen in this part and the answer was wrong.

15. The headteacher organised a school outing.
The numbers in the circles below show how many children are on each bus.

a) Work out the **average** number of children on each bus.

$$\begin{array}{r} 36 \\ 33 \\ 31 \\ 24 \\ \hline 125 \end{array}$$

$$\begin{array}{r} 125 \\ 4 \overline{) 125} \\ \underline{312} \\ 500 \\ \underline{312} \\ 188 \\ \underline{188} \\ 0 \end{array}$$

31.25 children

b) $\frac{2}{3}$ of the children in **bus 1** are boys.
 $\frac{3}{4}$ of the children in **bus 3** are boys.

In which of these two buses are there **more** boys?

bus 2

Markers' comments:

1. The question was generally answered correctly by the great majority of the candidates. Some interpreted “the **value** of **3** in **8319**” to mean division.
2. The question was graded to help the candidates arrive at the correct answer. Many missed the link between parts b) i and b) ii. Candidates are still finding questions on fractions difficult to tackle.
3. A few candidates mixed up **largest** with **smallest**.
4. a) Multiplying 30 by 30 by 30 presented a problem.
b) A few mixed **odd** with **even**.
5. Most candidates performed well in this question.
6. Part b) (working from the perimeter to find a side) presented a difficulty to a high number of students. In part c) some repeated one of the rectangles already given in the question.
7. A straightforward question. Mostly answered part a) well but failed to convert the final answer into millimeters.
8. Even the high achievers failed to tackle part b). They failed to realize that they had to add 2.5 km/h to the result in a).
9. The most common mistake was that of giving the number of shaded squares instead of the percentage. The last part was the least attempted.
10. The repeated subtraction method is proving to be beneficial to the candidates. The majority of the candidates who worked out the division correctly, failed to add the extra month. Quite a few misinterpreted the part that stated “**Each month ... except for the last month**” to mean 11 months of the calendar year with the last month being December.
11. Data handling proved to be quite easy to tackle. Candidates lost marks mainly in the last part when they failed to simplify the fraction to its lowest terms.
12. When they come to read angles candidates still mix up which of the two scales on the protractor to use. This means that their concept of an angle is not that good. In part (c) some tried to measure the angles of the triangle and added them up.
13. Candidates seem to have a good grip of the compass directions. The most common mistake was in part (b). When giving the answer as South East, candidates did not realize that the diagonal of each square is longer in length than the side.
14. Very few answered this question correctly. The majority of the candidates succeeded only in answering part (a) correctly. In part (b) the most common mistake was that of writing 7.4 instead of 7.5 when dividing Lm60 by 8.
15. Candidates have a good idea of averages. In part (b) candidates found difficulty in reaching a solution. Some compared the fractions rather than the number of children on the buses.

16. The difficulty in adding and subtracting time intervals still persists. Quite a good number still find it difficult to convert the minutes correctly to hours.
17. This was well answered. Candidates were tested in the application of the appropriate mathematical language and this seemed to present no problem to them.
18. Candidates found it hard to come up with a logical and sequential solution.
19. Only candidates who understood the difference between area and perimeter answered the question correctly.
20. This was a very challenging question. It was interesting seeing how this problem was tackled. There were candidates who found the price of each item before completing the solution. Others showed remarkable reasoning skills in arriving at the solution.

Implications for teaching and learning

Although most of the following recommendations have already been put forward in previous reports one cannot but emphasize their importance:

- Teachers and parents alike should continue to encourage children to make use of a variety of methods and approaches to arrive at a solution. This equips children with a bank of options when trying to solve a problem.
- Children should be encouraged to make rough estimates to check the validity of a result. They should appreciate that checking is an essential step in the process of problem solving.
- The teacher should emphasize the use of correct mathematical language.
- Children should be provided with practical opportunities at home and at school to develop their measurement skills. Children should become familiar with and be able to choose the appropriate unit.
- Children should be able to give a rough estimate of the value of an angle before measuring it.
- Misconceptions and errors should be tackled both on class and on individual basis as they both offer an excellent opportunity to clear any difficulties.
- More use of the time-line is recommended. When using the formal method for finding the time-interval, the time-line could be used to check the accuracy of the answer.
- Children should be exposed more to situations where they can express and explain their methods and reasoning.