Mathematics Chief Examiner's Report
- Mathematics Examination -
- Junior Lyceum Entrance Examination into Form 1 - 2001

General Comments about the examination paper

The main objective of the examination paper was to assess the children's mathematical knowledge, skills and understanding at the end of their Primary schooling stage.

Once again the validity and reliability of the examination were ensured by the adoption of a specification grid to ascertain that all the questions were within the syllabus and that the questions were pitched at appropriate levels to cater for different abilities. The questions were set according to the weighting used for past examinations: 20% of the marks were allotted for Problem Solving, 40% for Number work, 15% for work on Measurement, 15% for work on Shapes and 10% for work on Data Handling. For more specific details please refer to this year's specification grid displayed at the end of this report.

The candidates had to answer 20 questions. These were presented on a 12-page booklet, with ample space provided to enable candidates to show their working. Clear diagrams and pictures contributed towards making the paper child-friendly. In addition special attention was given to the language used in the questions to facilitate the understanding of the problems for all candidates, including candidates with special educational needs.

General comments about the performance of the candidates

The average mark for the paper was 55.6, while the standard deviation was 26.2.

65% of the candidates passed the examination. This indicates an improvement in performance over last year's when 60% had passed.

A good number of candidates performed sufficiently well in most of the questions. This was not the case however for questions 2b, 4, 5, 9, 10, 19 and 20 which tested the candidates' understanding of particular mathematical concepts (fractions, conversion of units, time, perimeter and area) and their ability to reason and apply mathematics in problem solving situations.

Some candidates lost precious marks for not showing their working, particularly when their answer was wrong and therefore could not be awarded the marks that were allotted for applying a correct method. In most instances, however, candidates displayed their working in a satisfactory way.

It was also noted that the number of candidates employing the methods recommended in the syllabus is increasing. Those who used these methods showed a better understanding of the relevant topic and obtained the correct answers. The samples shown below, taken from the candidates' scripts, highlight this feature.

6. A ticket for a film show costs Lm2·40.
25 people pay to watch the film.

How much money is paid in all?

25 = 10 + 10 + 5

Lm 2.40 × 10 = Lm 24

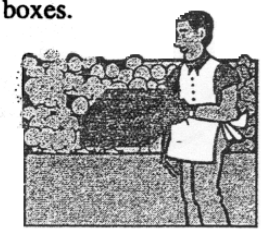
Lm 2.40 × 10 = Lm 24

Lm 2.40 × 5 = Lm 12

Lm 60

Lm 60

11. A greengrocer has **700 apples**. He packs the apples in boxes.
Each box holds the same number of apples.
He fills **29 boxes** completely.
Some apples are left over.



i) How many apples are packed in **one box**?

29 boxes rep. 700 apples
1 box rep. ? (nos)

700 / 29

700 −
580 (20) × 29
120 −
87 (3) × 29
33 −
29 (1) × 29
4

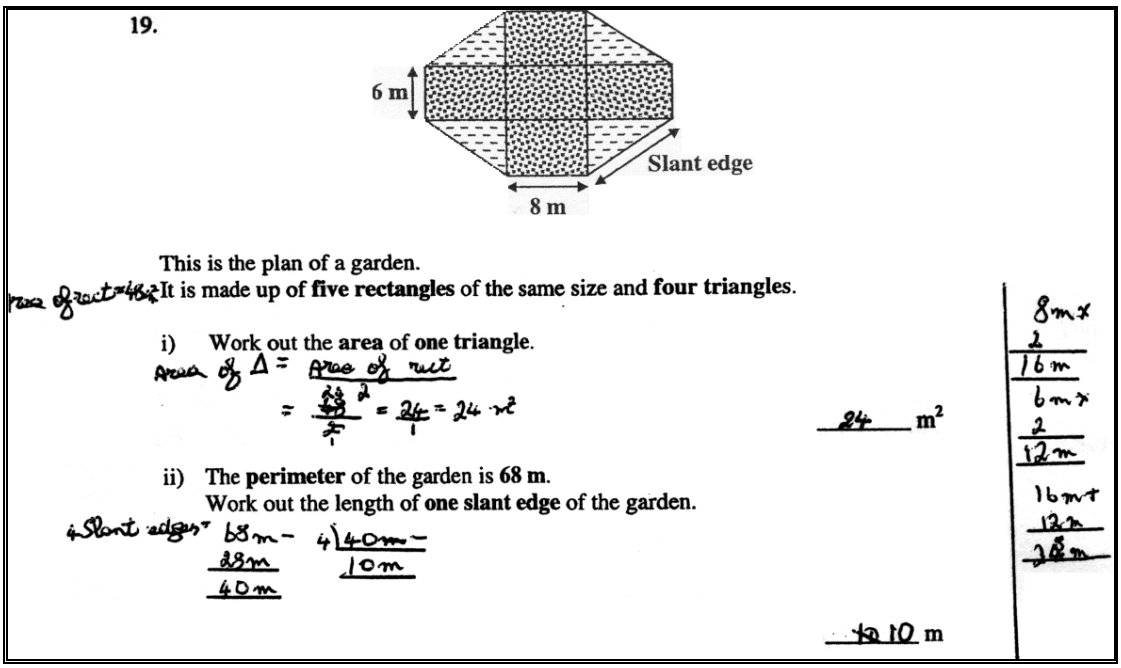
290 × 2 = 580

29 × 3 = 87

24 apples

ii) How many apples are **left over**?

4 apples



19.

This is the plan of a garden.
It is made up of **five rectangles** of the same size and **four triangles**.

i) Work out the **area** of **one triangle**.

Area of Δ = Area of rect
= 48 m² / 2 = 24 m²

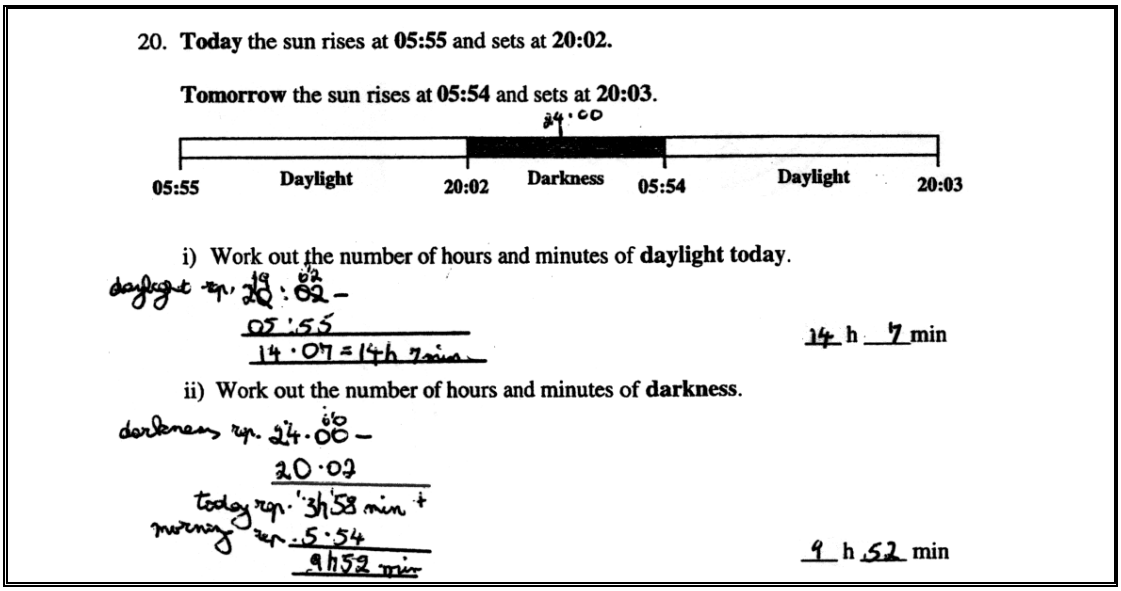
24 m²

ii) The **perimeter** of the garden is **68 m**.
Work out the length of **one slant edge** of the garden.

4 Slant edges: 68 m − 40 m = 28 m
28 m ÷ 4 = 10 m

10 m

8 m ×
2
16 m
6 m ×
2
12 m
16 m +
12 m
28 m



20. **Today** the sun rises at **05:55** and sets at **20:02.**

Tomorrow the sun rises at **05:54** and sets at **20:03.**

i) Work out the number of hours and minutes of **daylight today**.

daylight rep. 20:02 − 05:55
14:07 = 14 h 7 min

14 h 7 min

ii) Work out the number of hours and minutes of **darkness**.

darkness rep. 24:00 − 20:07
today rep. 3 h 58 min +
morning rep. 5:54
9 h 52 min

9 h 52 min

Markers' Comments

The following comments submitted by the markers highlight the strengths and weaknesses demonstrated by the candidates in each question.

Question 1
Most candidates managed to select the smallest number but then failed to write the remaining numbers in the correct ascending order. In the second part some failed to pick the odd number and also failed in subtracting correctly.

Question 2
In part (a) (i) some candidates wrote 109 or 111 instead of 110.
Many candidates failed to answer correctly part (b). Although the question involved multiplication and division of simple numbers, many failed to deduce the missing numbers – perhaps due to lack of observation and reasoning on their part.

Question 3
Some candidates showed that they lack the ability to give an approximate answer to a numerical calculation.

Question 4
In part (a) the majority of the candidates failed to split the shape into equal parts before deciding on the size of the fraction of the shape which was shaded. In fact they did not realise that the three parts of the given shape were unequal. The prevalent misconception is that "fractions" are simply "parts"; the qualifying adjective "equal" before "parts" needs to be emphasised more.

Question 5
A good number of candidates failed to carry out the conversions appropriately, particularly for parts (c) and (d).

Question 6
The majority of the candidates were able to multiply 2.40 by 25, using equally well both the decomposition method and the long multiplication method. It was surprising to see that some candidates are still converting the money to mils!

Question 7
This open ended question was answered correctly by a good number of candidates, with the exception of the weaker ones.

Question 8
Many candidates gave 16 as an answer for part (a) and did not convert 16/25 to a percentage.

Question 9
(a) Many candidates ignored the word "prime" and gave 34 as an answer instead of 43. Attempts at using "trial and error" were minimal.
(b) Likewise many candidates ignored the word "odd" and gave 36 as an answer instead of 81.

Question 10
Some of the candidates made good use of the time line (evidenced by not showing any working) and deduced the correct answers. Other candidates used traditional and formal methods but forgot that time has no connection with the decimal system.

Question 11
The use of the repeated subtraction method has gained considerable ground with the weaker pupils scoring well. In some cases, however, the presentation of the working was poor and confusing.

Question 12
A good number of candidates answered this question correctly. Unfortunately only a few realized that to work out the cost for 13 kg they could have used the cost of 8 kg, 4 kg and 1kg.

Question 13
(a) A common error was to add the divisions instead of counting the spaces.

(b) Some candidates committed multiplication errors even though the question was a straightforward one.

Question 14
A good number answered this question well. However some candidates showed that they still lack the skill of choosing the appropriate scale on the protractor.

Question 15
A common mistake was to take the percentage of females as the difference between 50% and 40%.

Question 16
Many candidates did not even attempt to use the vertical and the horizontal grid lines to indicate 26 minutes or 700 m.

Some deduced the speed from the graph by using simple direct proportion while a small number extended the line and the axes to determine the speed.

Question 17
This question presented little difficulty to the candidates. Some candidates, however, still need to master the skill of using compasses.

Question 18
Most candidates completed the table easily for Pattern 5 but not for Pattern 10. Candidates used various approaches (drawing sketches, spotting the pattern, etc) successfully.

Question 19
Many candidates confused the area of a triangle with that of a rectangle, perhaps not knowing or realising from the diagram that the area of a triangle is half that of a rectangle.
Only a few managed to answer correctly the second part of the question as it entailed more thinking and reasoning.

Question 20
A good number of candidates did not interpret the diagram correctly. Many others committed the usual mistakes when computing time differences, subtracting from 100 instead of 60.

Implications for Teaching and Learning

1. Teachers and parents should continue to encourage children to make more use of the methods and approaches described in the Year 4, 5 and 6 Syllabus. Since these methods are based on understanding, the children develop a stronger foundation and learn Mathematics in a meaningful way.

2. Children should also be further encouraged to justify their answer to a problem by checking the reasonableness of the result. They should appreciate that checking is an essential part of the problem solving process.

3. Children should be encouraged to use different calculation strategies (formal, informal, pictorial, trial-and-error).

4. Children need to be more engaged in problem solving approaches – these make them think and therefore learn. Children need more opportunities to talk about the way they reach a solution to a problem. During these discussions they should be encouraged to use the appropriate mathematical language to verbalise their thoughts and reasoning.

5. Since children need to develop certain sub-concepts associated with fractions, such as "a unit" and "equal partitioning", children should be given opportunities to experience a variety of activities to establish the proper meaning of a fraction by using concrete and pictorial models. Learning experiences limited to partly shaded shapes which have some regularity about them lead to children developing misconceptions.

6. Before children use the protractor to measure an angle, they should first give an estimate for the size of the angle and use this estimation to decide on the appropriate scale they should choose. Children should therefore be given ample opportunities to develop the skill of estimation of angles before they embark on measuring the angles with a protractor.

7. More use of the time line is recommended. The low performance shown by the candidates in answering questions dealing with time indicates that teachers need to reflect on their present approaches of teaching this topic and should give alternative approaches a try.