



**ASSESSMENT & EXAMINATIONS**

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## **NSC 2011 CHIEF MARKER'S REPORT**

<b>SUBJECT</b>	<b>MATHEMATICAL LITERACY</b>
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<b>PAPER</b>	<b>ONE</b>
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<b>DATE OF EXAMINATION:</b>	<b>28 – 10 - 2011</b>	<b>DURATION:</b>	<b>3 HOURS</b>
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### **SECTION 1:**

(General overview of Learner Performance in the question paper as a whole)

The standard of the question paper on the whole was entirely within the requirements of the National Curriculum Statement. The syllabus was well covered and all LO's and AS's for MLIT PAPER 1 were covered as outlined in the NCS.

Because this question paper only covers Level 1 and 2 questions, learners could easily manage to score more than 75 marks, but this was not the case.

The performance of learners ranged from very poorly answered to extremely well answered. Although the question paper catered for all learners at different levels of thinking, some of them (especially the weak learners) couldn't answer the very easy questions. This will be elaborated on Section 2.

### **SECTION 2:**

**Comment on candidates' performance in individual questions**

(It is expected that a comment will be provided for each question on a separate sheet).

#### **QUESTION 1**

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

This question was out of 34.

In general this question some of the learners performed well while others struggled. Transfer from the living environment to simple mathematics was poor. Language still seems to be a barrier to learning.

<p>(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.</p> <p>1.1 1.1.1 Learners made calculation errors by not applying the BODMAS-rule. Instead of simplifying the bracket by multiplying they changed the multiplication to addition or learners changed the operations that suits them best.</p> <p>1.1.2 Learners, instead of dividing by 100 to convert from centimetres to meters, they divided or multiplied by 10 or 1 000. They also lost a valuable mark as they ignored the instruction of 'without rounding off'.</p> <p>1.1.3 Learners have no idea what the value of a dozen is. They experienced great difficulty in converting dozen to a number. Some used the value of 6 as the concept of a dozen.</p> <p>1.1.4 Candidates found it extremely difficult to calculate the time 2h07min after 22:57. They simply added and wrote their answer as 24h64min or 25h04min. They experienced difficulties in working in units of 60. Learners also have to take note that there is a difference between writing the final as 1h04min and 01h04. If written as 1h04min, learners must indicate am or pm. Learners were unable to work with the 24 hour clock.</p> <p>1.1.5 Many of the learners still confuse 'perimeter' with 'area', therefore carrying out the incorrect operation. Instead of dividing 36 by 4, learners calculated the <math>\sqrt{36}</math>. Seems like some learners misinterpreted the 'square' with <math>\sqrt{\quad}</math>.</p> <p>1.1.6 This question was very poorly answered, because learners calculated the probability of 26<sup>th</sup> February being on a Saturday as <math>\frac{1}{28}</math> (the number of days in February) or from the 9<sup>th</sup> to the 26<sup>th</sup> (17 days). Concept of probability is still a problem. They couldn't work out the calendar.</p>
<p>1.2 1.2.1 A very well answered question, because learners calculated the final answer either for 1 person or a couple which was both accepted. The common mistake was made when learners instead of multiplying, divided by the exchange rate.</p> <p>1.2.2 This question proved to be highly problematic. Learners could not (a) understand the context fully, (b) substitute the correct information in the formula, (c) follow the implied mathematical instructions (BODMAS) and (d) changed the formula because of lack of understanding of BODMAS.</p> <p>1.2.3 Most of the learners still don't grasp the concept of time in decimal format eg converting 15 minutes to hours (0,25h). Learners lost a valuable mark for not converting to hours as well the final mark.</p>
<p>1.3 1.3.1 (a) This question was generally well answered, although many don't fully understand the concept of millions. Learners lost valuable marks for not writing the final answer in millions (either in words or with zeros).</p> <p>(b) Learners experienced difficulties writing 50,88 million as a number. A valuable mark was lost for not writing the final answer in either millions or with zeros.</p> <p>(c) Learners lack conceptual understanding of percentage. Some still divided by 100 to find the percentage instead of multiplying. A common mistake learners made was to swop the values of the numerator and the denominator. Learners also chose the incorrect values from the given data.</p>

<p>1.3.2 (a) No concept of the term mobile device (language barrier).</p> <p>(b) This question was well answered, because it was only a reading a value (%) from the graph.</p> <p>(c) Again in this question learners lack the concept of percentage and that 100% is representing a whole.</p> <p>(d) Most of the learners only identified the correct percentage, but did not solve the problem which can be due to a language problem or incorrect interpretation of the question. Learners lost valuable marks.</p>
<p>(a) Provide suggestions for improvement in relation to Teaching and Learning</p> <p>A small part of teaching should perhaps be non-contextual meaning teachers have to work through all of the problems stated in (a) by teaching the basics before applying it to a context.</p> <p>Focus on the following:</p> <ul style="list-style-type: none"> <li>• Conversions.</li> <li>• Writing final answers in the correct units.</li> <li>• Must make use of calculators and teach learners how to use calculators.</li> <li>• Workshops must be held to assist teachers in problem areas.</li> <li>• Teachers must expose learners to real life situations</li> <li>• Make use of news papers to expose the Mathematical Literacy learners to reading.</li> <li>• Expose learners to different types of graphs and teach them how to analyze it.</li> </ul>
<p>(d) Describe any other specific observations relating to responses of learners</p> <ul style="list-style-type: none"> <li>• Learners do not understand the questions (language barrier).</li> <li>• Learners don't analyze the questions properly and therefore come to the wrong conclusions.</li> <li>• Learners are given formulae, but have the tendency to change them in any way to suit them.</li> <li>• Learners lack basic skills to solve simple mathematical operations.</li> <li>• If learners are not sure about a solution they write down two or more solutions. This is unacceptable.</li> <li>• Learners tend to transfer the incorrect information from the question paper to their scripts.</li> <li>• Learners only write answers and ignore the instruction 'SHOW ALL CALCULATIONS CLEARLY'.</li> </ul>
<p>e) Any other comments useful to teachers, subject advisors, teacher development etc.</p> <ul style="list-style-type: none"> <li>• More in service training for teachers in the subject.</li> <li>• Subject advisors to visit schools on a regular basis and to assist teachers with difficulties.</li> <li>• Form cluster groups where teachers can exchange their expertise.</li> <li>• Common assignments, control tests, etc from Grade 10 -12 to be set.</li> <li>• The use of common textbooks for all schools.</li> <li>• A great deal of revision should take place especially in the 4<sup>th</sup> term.</li> <li>• Teacher must bring real life examples to the classrooms in order for learners to use it unfamiliar context.</li> </ul>

## QUESTION 2

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

This was a 28 mark question.

This question was overall well answered although there were certain questions that were not interpreted correctly. In order to answer these questions it was expected from learners to have the skills to read, understand and interpret graphs.

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

2.1 2.1.1 - 2.1.4 Learners did well in this question and scored full marks as they only had to read the temperature from the graph.

2.1.5 Learners struggled to score full marks in this question. They knew the concept of range, but as one of the values was a negative (-2), they found it extremely difficult to subtract the negative (-2) from a positive (8). Learners found it difficult to read the minimum temperature as a negative.

2.1.6 The question was well answered, but some learners although reading the temperature (13) correctly from the graph they did not apply the BODMAS- rule.

2.2 2.2.1 – 2.2.4 These questions were answered well as learners only had to read from the two pie charts with some exceptions. Learners mistakenly read values from the wrong pie chart and lost marks.

2.2.5 Many learners did not even attempt to answer this question. They experience problems in finding the total population if the a percentage of a province is given. Instead of finding the total population they've calculated 6,5% of 3 249 415. Most of the only identified the percentage, but did not know what to do with it.

2.3 2.3.1 Learners misinterpreted this question by not giving the maximum therefore losing valuable marks. Simply give the answer as 0 – 1 hours.

2.3.2 Learners experience difficulties in reading and understanding the step graph. They could not interpret that the open circle excludes the number and the close circle includes the value.

2.3.3 – 2.3.4 These questions were answered well with minor errors such as not reading correctly from the graph.

(c) Provide suggestions for improvement in relation to Teaching and Learning

- Teachers to focus on how graphs should be interpreted.
- Expose learners to different types of graph.
- Teachers to teach learners how to analyze a question before answering a question.
- Use weather maps showing minimum and maximum temperatures and ask learners to plot it on the same set of axes.
- Expose learner to working with negative numbers.
- Encourage learners to think their answers through and that the answer is reasonable eg. 410 °C as a temperature or 100 as a total population for South Africa.
- Discourage learners from only writing down answers without showing calculations.
- During the year learners should be penalized for omitting units.

- (d) Describe any other specific observations relating to responses of learners
- Most of the learners struggled with the calculating the range because of the negative value.
  - Important units are omitted and valuable marks are lost.
  - Learners find it difficult to interpret the questions or don't read the questions with understanding.
  - The step graph was totally misinterpreted due.
  - The interpretation of inequalities confused the learners.
  - Learners are careless in writing the incorrect values from the information in the question paper.
  - Learners substitute values in the incorrect places when formulae are given.
  - Guide learners how to answer a question by looking at the marks allocation and not writing a whole page for 3 marks only.
- e) Any other comments useful to teachers, subject advisors, teacher development etc.
- Subject Advisors (within districts) should conduct a meeting with the teachers who marked to get feedback on the marking and then convey all concerns to rest of MLIT teachers.
  - Workshops should be held to discuss marks awarded as well as possible answers (memo) to set a standard of marking for test and activities in the province.
  - Attendance of workshops is of utmost importance.
  - The use of circulars, various text books, resources, etc will provide a better learning environment.
  - Emphasis to be on the using, reading and interpreting graphs and to be integrated throughout all LO's.
  - Subject advisors to supply all schools with marking memorandum of the final question papers.

### QUESTION 3

- (a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

This was a 23 mark question.

This question was answered quite fairly because a majority of learners obtained more than 50% with exceptions of some questions. Again in this question language was a barrier because learners interpreted the questions wrong and got to the wrong conclusions.

Learners also experience difficulty in the question on the seating plan as not all our learners are doing Geography.

- (b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

3.1 3.1.1 Learners could easily find the missing values except for B where learners instead of using 30 calendar days for April, they either used 31 days or 4 for the number of weeks.

3.1.2 Most learners scored full marks in this question. Although the total of the budget was given in the key information, learners when calculated A,B,C and D in 3.1.1 and one of their values were incorrect, they lost valuable marks.

3.1.3 For reducing her expenses learners gave any explanation without thinking that some of the expenses are fixed and others are variable.

3.2 In this question learners confused the 4 years at university with the term of the investment from 2011 – 2014 which was 3 years. Learners cannot substitute the correct values in the formula or they used incorrect information to substitute. Some, although correctly substituted in the formula, lack calculator skill as they don't know how to the 'power' button on the calculator. This question was overall very poorly answered. Learners were penalised for not rounding off to 2 decimal places (leaving their final answer to 3 decimal places) as this question referred to Rand and cents and they were ignoring a general instruction of 'ROUNDING OFF TO 2 DECIMAL PLACES'

3.3 3.3.1 The question was well answered in most cases although learners first referred to the column and then to the row which was also accepted in the marking guideline.

3.3.2 - 3.3.3 Because the seating plan in this question didn't have any indication of the general geographical directions, learners were not disadvantaged, because it was catered for in the marking guideline. Because alternate answers were accepted, the learners scored well in these questions.

3.3.4 Learners had difficulties calculated the number of desk in the seating plan and either used (8) for a column or (4) for a row instead of multiplying the two values. The other mistake they made was to square the 0,75 and a final answer of 18 m<sup>2</sup>.

(c) Provide suggestions for improvement in relation to Teaching and Learning

- Give learners different types of formulae where they have to do substitution within a context.
- More exposure must be given to learners on the use of maps to improve their map work skills although some of them are not doing geography.
- More exercises on when to round up or down or off.
- Teaching to the world and not merely regurgitating knowledge.
- Learners to be trained to apply knowledge in a variety of contexts and not strictly use a textbook.
- More challenging exercises should be given in the classroom.
- Learners must be taught the difference between variable and fixed expenses.
- Concept of grid referencing and longitude and latitude must be taught.

(d) Describe any other specific observations relating to responses of learners

- Learners don't understand the concept of general direction.
- Learners don't realize that fixed payments cannot be changed.
- Learners must be made aware of what short term and long term solutions.
- Learners find it difficult to express themselves in simple language.
- The scenarios given to learners are not read or studied carefully.

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

- Educators must be encouraged to expose their learners to a variety of contexts especially for our second language learners who are exposed to the language of English.
- Educators must remind learners of the importance of instructions.
- Create an awareness that MLIT is a subject in its own right and not pawn as a second rate version of MATHS.
- We need qualified teachers to teach the subject in order for our learners to maximise their inherent potential.
- Encourage learners to read and interpret context (newspapers, magazines, etc).
- Problem areas must be identified and subject advisors should conduct workshops on these problem areas.

#### QUESTION 4

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

This was a 16 mark question.

In this question learners performed extremely well with a few minor errors in some of the sub-sections with a few exceptional cases of very low scores. Learners found it extremely difficult to work with 2 sets of data.

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

4.1 4.1.1 – 4.1.2 Learners who did not score full marks in these questions had difficulties with the concepts of 'modal' value and median. They confused concept of modal value with median or they calculate the mean instead of the median. There was a misunderstanding between mean and median.

4.1.3 The median shoe size for boys was calculated as the mean. Instead of calculating the median, they only identified the two middle values without finding the median value of these two values, causing to lose a valuable mark.

4.1.4 In this question language was a problem as learners did not understand what is expected from them. Some of them only gave their answer as one, two or three shoe sizes while marking guideline indicates 1 mark for every two correct shoe sizes.

4.1.5 The most common mistake learners made was to swop the two values as 15:14, because learners are not reading carefully or they might not understand the concept of ratio.

4.2 4.2.1 Although the formula for calculating the volume was given, learners substituted incorrectly or either omitted the decimal for the given dimensions. As volume refers to 3 dimensions learners could not give the correct unit.

4.2.2 Learners used the volume of 1 box and divided it with the height of the shelf. They also found it difficult to round down. In this question learners really missed the concept. As the answer to the division was 9,915, they did not know that you can only have a full box and not only part of a box.