



**THE ANNUAL NATIONAL ASSESSMENT OF 2014  
DIAGNOSTIC REPORT  
FOUNDATION PHASE  
MATHEMATICS AND HOME LANGUAGE**



**basic education**  
Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**





# ANNUAL NATIONAL ASSESSMENT

2014

DIAGNOSTIC REPORT

FOUNDATION PHASE

MATHEMATICS AND HOME LANGUAGE

## TABLE OF CONTENTS

	FOREWORD	3
1.	INTRODUCTION	4
2.	PURPOSE AND SCOPE OF THE REPORT	4
3.	METHOD USED TO COMPILE THE REPORT	4
	PART A: DIAGNOSTIC ANALYSIS	7
4.	SUMMARY OF KEY FINDINGS: MATHEMATICS	8
4.1	Grade 1 Mathematics	8
4.2	Grade 2 Mathematics	9
4.3	Grade 3 Mathematics	10
5.	DETAILED ANALYSIS: MATHEMATICS	11
5.1	Grade 1 Mathematics: Content areas, knowledge and skills assessed	11
5.2	Grade 2 Mathematics: Content areas, knowledge and skills assessed	15
5.3	Grade 3 Mathematics: Content areas, knowledge and skills assessed	23
6.	SUMMARY OF KEY FINDINGS: HOME LANGUAGES	33
6.1	Grade 1 Home Language	33
6.2	Grade 2 Home Language	34
6.3	Grade 3 Home Language	35
7.	DETAILED ANALYSIS: LANGUAGES	36
7.1	Grade 1 Home Language: Language components, knowledge and skills assessed	36
7.2	Grade 2 Home Language: Language components, knowledge and skills assessed	43
7.3	Grade 3 Home Language: Language components, knowledge and skills assessed	50
8.	CONCLUSION	60
	PART B: FRAMEWORKS FOR IMPROVEMENT	61
	PART C: DIAGNOSTIC ANALYSIS AT SCHOOL/DISTRICT LEVELS	75
	SUMMARY	80

## FOREWORD



There is no doubt that in the four years that the Department of Basic Education (DBE) has been administering Annual National Assessment (ANA) the focus in the basic education sector has shifted in the right direction, viz. towards continuously improving the quality of teaching and learning. Every ANA cycle provides evidence of areas of improvement as well as areas that require special attention to improve learner performance in the key foundational skills of literacy and numeracy.

The next phase towards the improvement of educational quality in this sector is enhancing the effective utilisation of the assessment data at all levels of the system, particularly at the classroom level. There is need for a detailed analysis of the knowledge and skills that learners were able or not able to demonstrate in the ANA tests and use that evidence to inform all plans for intervention. But evidence must lead to appropriate action for it to result in the desired changes, hence the crucial value that the diagnostic report adds towards the utilisation of the ANA data to improve the quality of teaching and learning in schools.

The diagnostic report from the 2014 ANA cycle profiles the levels and quality of skills and knowledge that the assessment identified in the system. Evidently, some of the weaknesses that are identified were also raised in previous ANA cycles and new areas of challenge are profiled more sharply in 2014. ANA has added an empirical dimension to some of the concerns that require special attention.

The ANA 2014 diagnostic report must be utilised fully to inform relevant decision-making in developing and implementing appropriate interventions to improve the quality of teaching and learning in basic education.

A handwritten signature in black ink, appearing to read 'u Matsie Motshekga'.

**ANGIE MATSIE MOTSHEKGA, MP**

**MINISTER OF BASIC EDUCATION**

**2 FEBRUARY 2015**

# 1. INTRODUCTION

The Annual National Assessment (ANA) was administered by the Department of Basic Education (DBE) country wide in Language and Mathematics on learners in Grades 1-6 and 9 in September 2014. Both public and state-funded independent schools took part in the assessment. ANA test results serve as a proxy for the quality of education at the General Education and Training (GET) Band in South Africa. Analysis of the knowledge and skills that learners were able or not able to demonstrate in the assessment shows that, while there has been an appreciable improvement in performance in the basic skills in both Language and Mathematics, a significant proportion of learners still experience challenges in providing responses to questions that require high order cognitive skills. In particular, learner performance in Mathematics tends to decline progressively from the Intermediate to the Senior Phase.

The Diagnostic Report provides a detailed analysis of the knowledge and skills that learners displayed or failed to display in the tests that were administered in each grade and subject. The target audience for the report are teachers and School Management Teams (SMTs) in schools. However the information in the report will also be very valuable to district/circuit curriculum officials and subject advisors who need to provide support to schools in curriculum implementation. The report also presents findings that both provincial and national levels of the education system need to consider in monitoring provision of relevant resources to schools.

The Diagnostic Report is phase specific and comprises three separate documents. The first document is compiled for the Foundation Phase and contains analysis, findings and recommendations related to Home Language and Mathematics. For the Intermediate and Senior Phases there is one report for Mathematics and another for Home Language (HL) and First Additional Language (FAL). Each document has three parts viz, Part A: Diagnostic Analysis; Part B: Proposed Frameworks for Improvement; and, Part C: Diagnostic Analysis at school/district levels.

# 2. PURPOSE AND SCOPE OF THE REPORT

The purpose of the Diagnostic Report is to provide detailed evidence of the knowledge and skills that the analysis shows learners were able or not able to demonstrate in the ANA tests. The diagnostic evidence will inform appropriate interventions for a) teaching and learning, b) management of curriculum implementation, c) curriculum and management support at district/circuit level, and d) resource provision and monitoring at national and provincial levels. The report also provides SMTs with objective evidence to identify areas where individual teachers may need specific support in terms of various methods of facilitating learning and teaching.

# 3. METHOD USED TO COMPILE THE REPORT

The Diagnostic Report was compiled by panels of teachers and subject advisors who were identified as specialists in Mathematics and Languages. The data that was used in compiling the report was obtained from marked scripts collected from representative samples of schools and learners, drawn from all nine provinces, that participated in Verification ANA in 2014.

For each subject and grade, item (question-by-question) analysis was conducted to identify the content knowledge and skills that learners were able or not able to demonstrate in the relevant tests. Analysis proceeded from calculation of basic descriptive statistics such as the mean, median, mode and range of scores obtained by learners, followed by a systematic interrogation of learner responses to identify common errors and strengths.

Specimens of typical errors made by learners were scanned and included in the report to illustrate possible knowledge “gaps” and common misunderstandings that need to be addressed in each grade and subject. In each content area, the panels suggested remediation strategies included also in this report that can be used to address the identified weaknesses in learner knowledge and skills.

The Proposed Framework for Improvement (Part B) suggests appropriate interventions for remediation at school, district, provincial and DBE levels. It is expected that an improvement plan with clear deliverables and timelines will be developed so that interventions can commence at the beginning of the school year.

The last part of the report is a suggestion on how schools and districts should analyse ANA and any other test data to derive useful information that must be utilised to address identified weaknesses, and ensure that every child in the system achieves learning outcomes of a high quality.



**PART A:  
DIAGNOSTIC ANALYSIS**



## 4. SUMMARY OF KEY FINDINGS: MATHEMATICS

The key findings from the analysis have been summarised for the Foundation Phase in two formats, firstly, in a histogram (bar graph) that shows how learner scores in each grade were distributed and the emerging patterns of score distribution across the grades and, secondly, in a tabular form that shows the areas of strength and weakness displayed by learners within a phase.

### 4.1 Grade 1 Mathematics

Table 1.1: Summary of learner strengths and weaknesses in Grade 1 Mathematics

AREAS OF WEAKNESS	AREAS OF STRENGTH
Learner responses showed weaknesses in the following areas: <ul style="list-style-type: none"> <li>Word problems involving addition and subtraction up to 20;</li> <li>Word problems involving equal sharing without a remainder up to 20; and,</li> <li>Interpretation and analysis of pictographs and bar graphs response to higher order questions e.g How many more birthdays were there in January than February.</li> </ul>	Learners performed reasonably well in the following areas: <ul style="list-style-type: none"> <li>Recognition of number values and write number names and symbols up to 20;</li> <li>Extension and copying of geometric patterns; and,</li> <li>Identification and drawing 2-D shapes and 3-D objects.</li> </ul>

Overall performance of the sampled learners was at the “Meritorious achievement” level (average of 71%). The distribution of learner percentage scores is shown in the histogram below.

Figure 1: Grade 1 Mathematics distribution of learner percentage scores

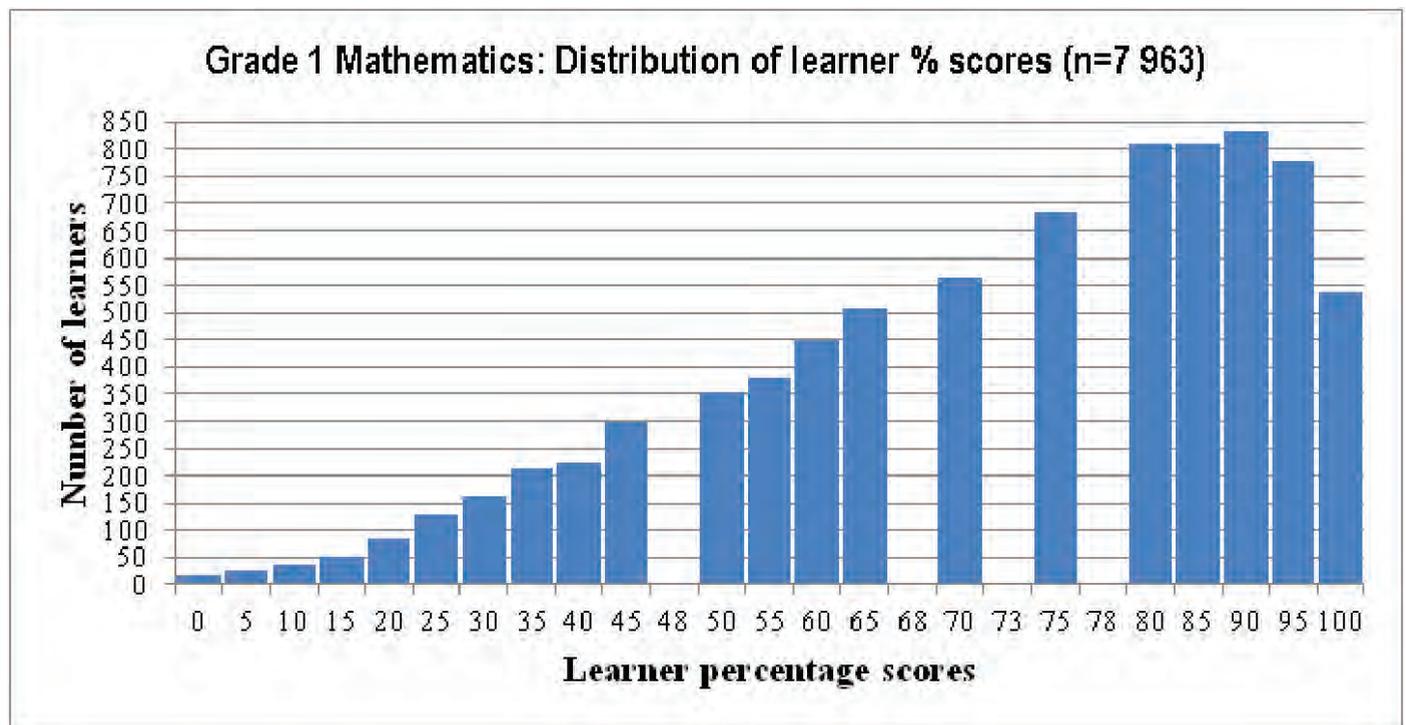


Figure 1 shows that learners’ scores ranged from 0 to 100%, and the modal score (the score most frequently attained by learners) in Grade 1 Mathematics was 90%.

## 4.2 Grade 2 Mathematics

Table 1.2: Summary of learner strengths and weaknesses in Grade 2 Mathematics

AREAS OF WEAKNESS	AREAS OF STRENGTH
<p>Learner responses showed weaknesses in the following areas:</p> <ul style="list-style-type: none"> <li>• Calculations on money involving totals and change with rands and cents;</li> <li>• Number patterns: completion of number sequence involving counting backward and forwards in multiples of 3's, 4's, 5's etc;</li> <li>• Context free addition and subtraction calculations with 2 digit numbers up to 99;</li> <li>• Word problems (money, ×, −, +) based on comparison, combination, repeated addition, grouping and sharing; and,</li> <li>• Data Handling _ analysis and interpretation of data.</li> </ul>	<p>Learners performed reasonably well in the following areas:</p> <ul style="list-style-type: none"> <li>• Comparing and ordering of objects according to mass and capacity;</li> <li>• Identifying and naming 2-D shapes and 3-D objects; and,</li> <li>• Recognising and drawing line of symmetry in 2-D geometrical and non-geometrical shapes. Fractions : identify parts of a whole and the fraction in a diagrammatic representation e.g. halves, quarters, thirds, fifths</li> </ul>

Overall performance of the sampled learners was at the “Substantial achievement” level (average of 63%). The distribution of learner percentage scores is shown in the histogram below.

Figure 2: Grade 2 Mathematics distribution of learner percentage scores

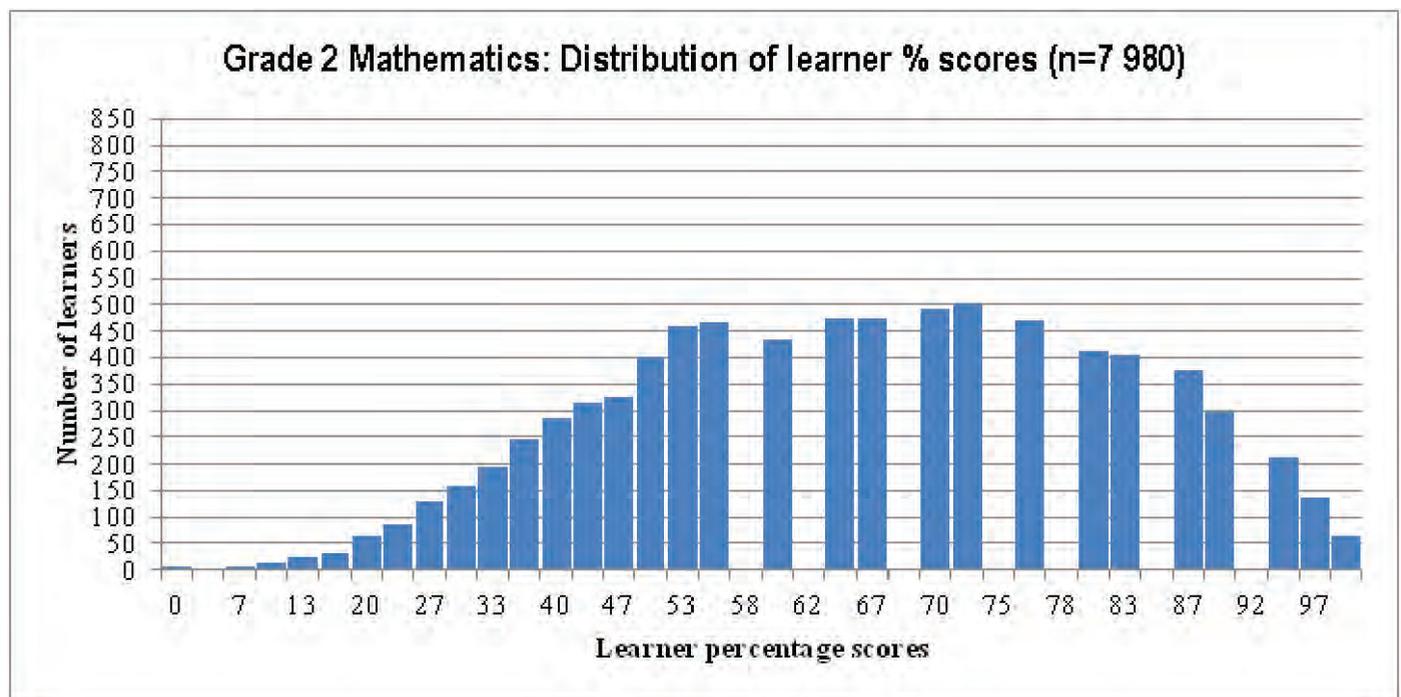


Figure 2 shows that learner scores ranged from 0 to 100%, and the modal score (the score most frequently attained by learners) in Grade 2 Mathematics was 73%.

## 4.3 Grade 3 Mathematics

Table 1.3: Summary of learner strengths and weaknesses in Grade 3 Mathematics

AREAS OF WEAKNESS	AREAS OF STRENGTH
<p>Learner responses showed weaknesses in the following areas:</p> <ul style="list-style-type: none"> <li>• Calculations in money involving totals and change;</li> <li>• Fractions: read and write fraction names e.g. half, quarter, third, fifth etc. Read, convert and show time on an analogue and digital;</li> <li>• Word problems involving equal sharing in 3's, 4's in the number range up to 99;</li> <li>• Interpretation of the position and direction of objects in a diagrammatic representation e.g. a map; and,</li> <li>• Addition, subtraction of context free calculations using the building and breaking down method to do calculations involving 2 and 3 digit numbers.</li> </ul>	<p>Learners performed reasonably well in the following areas:</p> <ul style="list-style-type: none"> <li>• Identification of the correct place value of 2 and 3 digit numbers up to 999;</li> <li>• Copying and extension of geometric patterns;</li> <li>• Completion of number patterns involving counting forwards and backwards in multiples of 5, 10, 20, 50 up to 999;</li> <li>• Recognition and drawing a line of symmetry in 2-D geometrical shapes and non geometrical shapes;</li> <li>• Interpretation and analysis of bar graphs and tables;</li> <li>• Identification of and naming 2-D shapes and 3-D objects; and,</li> <li>• Identification of standardised units used for capacity, mass and length and do calculations.</li> </ul>

Overall performance of the sampled learners was at the “Adequate achievement” level (average of 52%). The distribution of learner percentage scores is shown in the histogram below.

Figure 3: Grade 3 Mathematics distribution of learner percentage scores

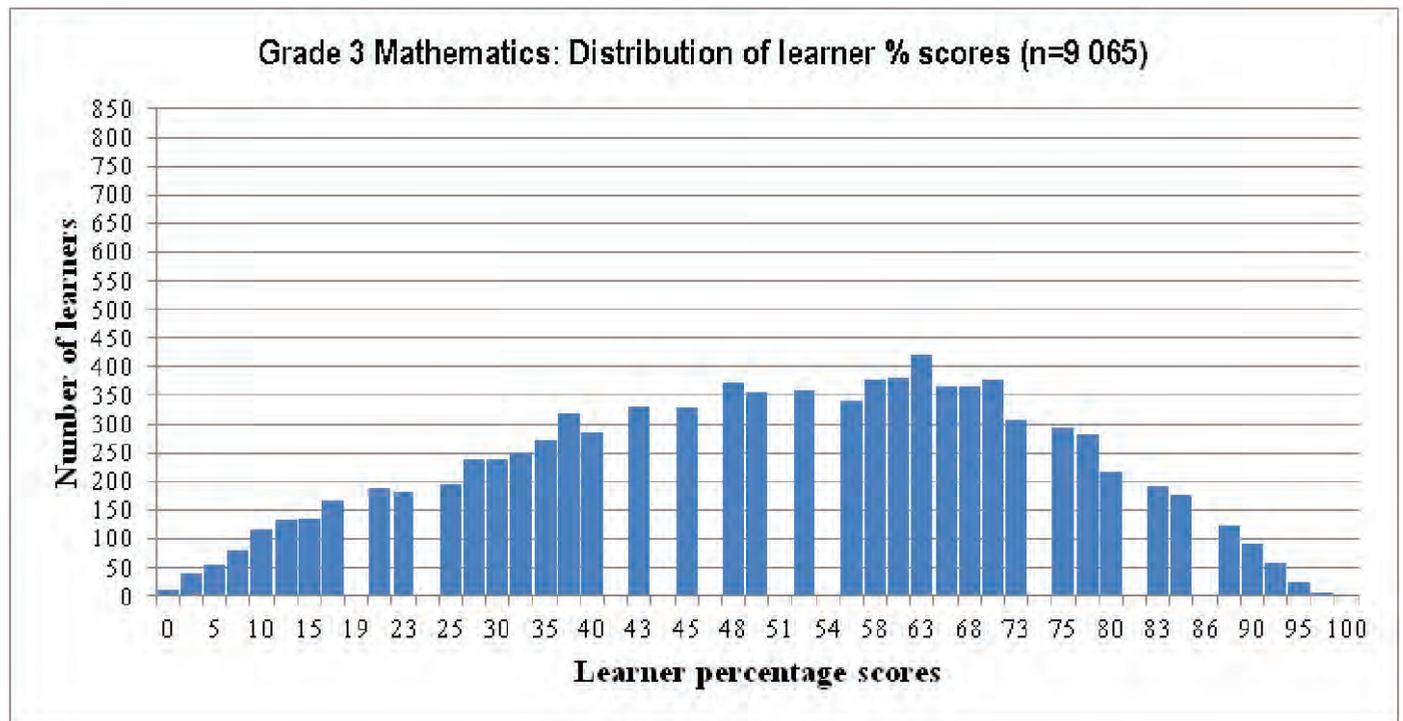


Figure 3 shows that learner scores ranged from 0 to 100%, and the modal score (the score most frequently attained by learners) in Grade 3 Mathematics was 63%.

## 5. DETAILED ANALYSIS: MATHEMATICS

In this section, specific skills, knowledge and competencies related to the Mathematics content areas of assessment that were tested are discussed. Typical learners' responses are shown to indicate misunderstandings/errors/ 'knowledge gaps' which may have affected learners' performances.

After discussing learners' responses, there will be suggestions on proposals for interventions given to support both teachers and learners on how to avoid such errors/ 'knowledge gaps' in future.

### 5.1 Grade 1 Mathematics: Content areas, knowledge and skills assessed

The following content areas, concepts and skills were assessed in the Grade 1 test:

#### a. Numbers, Operations and Relationships

Knowledge and skills that learners had to demonstrate in this content area included the ability to:-

- count forwards and backwards in multiples up to 15;
- order whole numbers in ascending order;
- write number names and number symbols; halve a given number;
- break down a two digit number;
- solve word problems in context by sharing leading to division;
- apply the basic operations in order to solve money problems involving totals and change in rands.

#### b. Patterns, Functions and Algebra

Assessed skills in this content area included the ability to extend/draw a geometric pattern from a given pattern and to complete a table with missing numbers in order to sequence numbers correctly.

#### c. Space and Shape

Learners had to demonstrate knowledge of and the ability to identify 2-D shapes with round or straight edges and to draw a line of symmetry on a 2-D shape.

#### d. Measurement

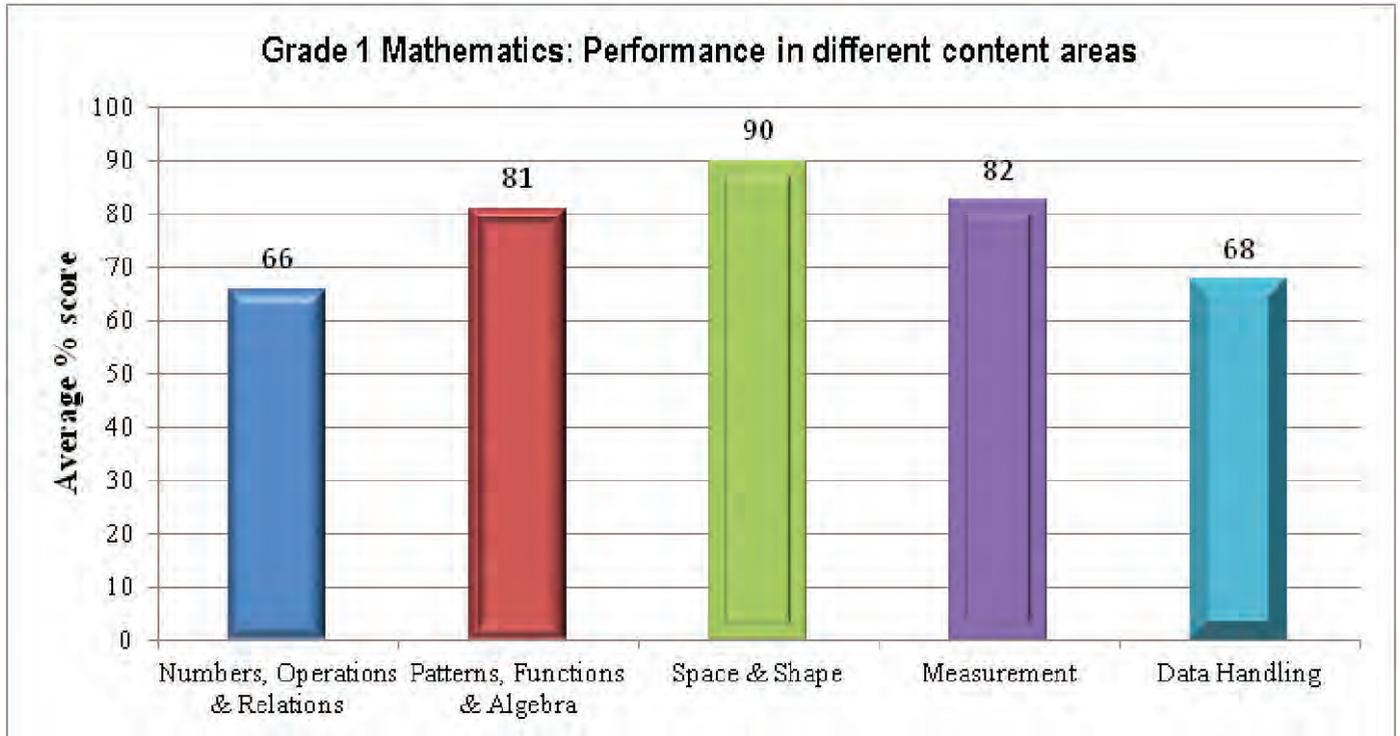
Learners had to demonstrate knowledge of and the ability to identify and compare sizes of objects using non-standard measurements e.g. use of appropriate vocabulary like "shortest" etc. They were also assessed on the ability to name and sequence days of the week.

#### e. Data Handling

Assessed skills in this content area included the ability to read, compare and answer questions based on a pictograph.

Figure 4 shows the Grade 1 overall performance (average %) of the sample learners per content area.

Figure 4: Grade 1 learner performance in the various content areas



According to Figure 4 Grade 1 learners experienced the greatest difficulty in responding to questions on “Numbers, Operations and Relations”. The second area of marked difficulty as experienced by learners was “Data Handling”. Learners found responding to questions on “Space and Shape” relatively easy.

## NUMBERS, OPERATIONS & RELATIONSHIPS

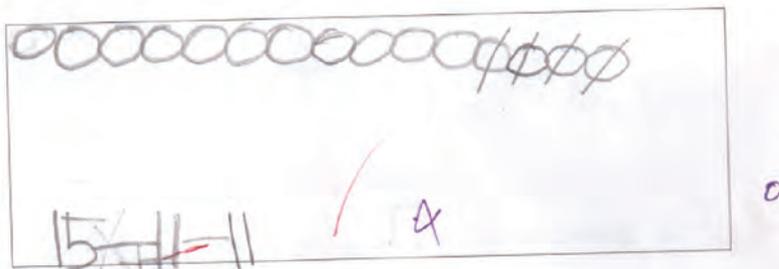
### a. Word Problem – Addition or Subtraction

Learners were expected to solve word problems in context with numbers up to 15.

At Grade 1 level learners are expected to be able to count up to 100 and subtract numbers up to 15 and from 15. In this assessment, learners displayed lack of knowledge of basic operations that are used to solve the word problem. The majority of learners used drawings to work out the answer but could not calculate the number of marbles when given the total number of marbles and the amount of marbles that remained.

An example of a common kind of error made by learners has been presented below. In this example, learners were given a word problem with a total original number of marbles taken to school and the total number of marbles taken back home. From this word problem learners were expected to work out how many marbles were lost at school, by subtracting the number of marbles taken home from the original marbles taken to school.

5. UXola uye esikolweni enamabhastile ali-15. Ugoduke namabhastile ali-11. Ulahlekelwe ngamabhastile amangaphi esikolweni?



In the given example the drawings show that the learner understood the word problem, correctly represented the number of marbles taken to school (15) and accurately cancelled the number of marbles that were lost (4). However, the learner was not able to demonstrate the ability to subtract the number of lost marbles in the number sentence shown in the specimen ( $15 - 11 = 11$ ). It would appear that the learner lacked the knowledge of writing the number sentence as represented through the drawing; that is to say, subtracting the lost marbles (4) from the original number of marbles (15).

### Remediation

To address some of these problems, the following should be applied.

- Teachers should use different kinds of word problems where the unknown is in different positions e.g. in the beginning ( $\square - 7 = 8$ ), middle ( $15 - \square = 8$ ) and at the end ( $15 - 7 = \square$ );
- Teachers should assist learners to identify key words and information from the word sum;
- Learners should be exposed to practical subtraction situations that arise in various contexts in their lives, using real objects like bottle tops, match sticks, beads, etc.;
- Teach learners to use appropriate symbols (+, -, =,  $\square$ );
- Teachers should use counting on and counting back to strengthen counting in learners;
- Assist learners to write number sentences from word sums; and,
- Teach learners different problems solving techniques (Mental calculation, counting skills and a number line) besides the use of simple drawings.

### b. Division with Sharing equally without a remainder

Learners were expected to solve a word problem by (sharing) using numbers up to 12. Grade 1 learners are expected to be able to apply the skill of sharing equally in the number range up to 20 without a remainder.

In this assessment learners knew that they had a total of “12” to share. The majority of learners understood the term “equally” and therefore made drawings showing “3 groups of 4 to get 12” but did not respond to the question “On how many biscuits each child got?”

An example of a common kind of error made by learners is presented below. In this example learners were required to demonstrate their understanding of the concept of sharing the total number of biscuits which is 12 amongst 3 learners equally.

7. Yabela bantf wana laba-3 emakhekhe la-12 ngalokulinganako.  
Mangaki emakhekhe latawutfolwa ngumntf wana ngamunye?

Umntf wana ngamunye utawutfola emakhekhe la 9 4 0

In the example above, the learner correctly represented the number (12) of biscuits in three (3) groups of four (4) biscuits. The grouping technique is shown in the drawing and repeated addition in 4's to get to the total of "12". However, the learner was not able to accurately divide the number of biscuits amongst three learners to arrive at an answer of four biscuits per learner; as the learner finally wrote an answer of nine (9) as shown in the specimen. It would appear that the learner lacked the knowledge of using division as the appropriate basic operation of sharing and may have subtracted the number of learners from the total number of biscuits.

**Remediation**

Based on the identified problems above, some remediation measures are stated below for teachers to consider

- Expose learners to practical equal sharing situations using word problems that arise in various contexts in their lives, e.g. sharing of sweets, money, etc.;
- expose learners to practical sharing activities where they share out one object/item at a time and increase the number range progressively namely up to 5, up to 10 and up to 15;
- teach learners problem solving techniques for equal sharing namely grouping (drawing), number line (count backwards showing equal jumps e.g. from 12 by counting in 4s three times), repeated equal addition (e.g. 4 + 4 + 4 = 12) and repeated equal subtraction (e.g. 12 - 4 - 4 - 4 = 0); and
- teach learners to use appropriate symbols (+, -, =, □) and to write number sentences for each word problem.

## 5.2 Grade 2 Mathematics: Content areas, knowledge and skills assessed

The following content areas, concepts and skills were assessed in the Grade 2 test:

### a. Numbers, Operations and Relationships

Knowledge and skills that learners had to demonstrate in this content area included the ability to:-

- count forwards and backwards in multiples and apply the that knowledge to complete number patterns;
- order whole numbers in ascending order;
- write number names and number symbols;
- halve and double a two digit number;
- apply the grouping technique leading to multiplication and repeated addition; and,
- solve word problems, including money, by demonstrating knowledge of the basic operations as well as the sharing technique. They were also assessed on fractions i.e. identify a given fraction by colouring it.

### b. Patterns, Functions and Algebra

Assessed skills in this content area included the ability to extend/draw a geometric pattern from a given pattern, complete a number sequence of multiples of 3 and 4 in descending and ascending order

### c. Space and Shape

Learners had to demonstrate knowledge of and the ability to draw a round 2-D shape, to draw a line of symmetry on a 2-D shape and to identify and name objects that can slide or be stacked.

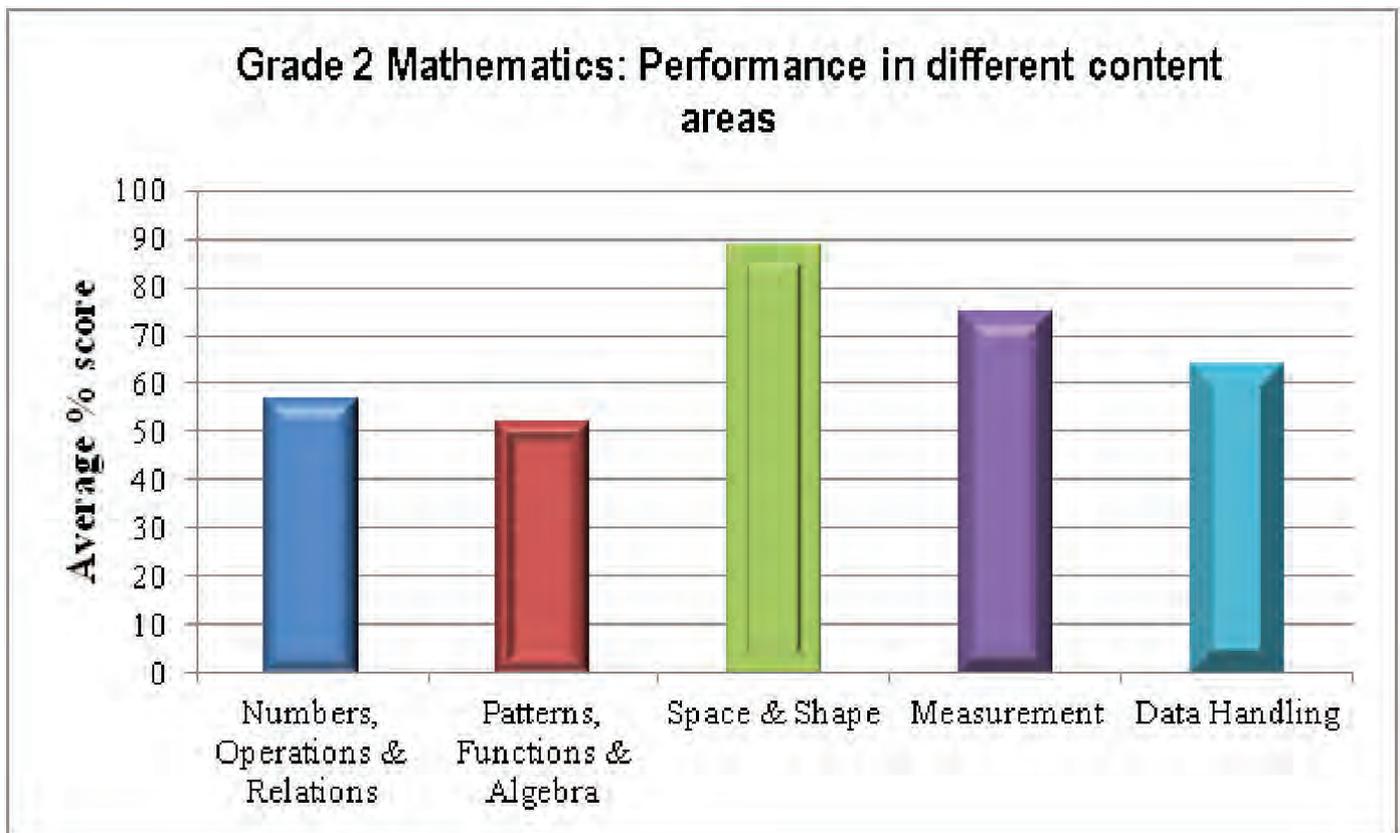
### d. Measurement

Learners had to demonstrate knowledge and the ability to use correct vocabulary words to identify and compare mass e.g. “lightest” etc. and words like “greater than”, “smaller than” when comparing numbers; interpret analogue time; and, count and measure the volume of a container of water using cups.

### e. Data Handling

Assessed skills in this content area included the ability to read, compare and answer questions based on a pictograph.

Figure 5: Grade 2 learner performance in the various content areas



According to Figure 5, Grade 2 learners experienced the greatest difficulty in responding to questions on “Patterns, Functions and Algebra”. The second area of marked difficulty as experienced by learners was “Number, Operations and Relations”. Learners found questions on “Space and Shape” relatively the easiest to respond to.

## NUMBER OPERATIONS AND RELATIONSHIPS

### a. Money (Addition and Subtraction calculations)

Learners were expected to read the amounts and do calculations based on the amount at hand, the money spent and the change received. Learners were expected to demonstrate the ability to calculate money in rands or cents using appropriate signs to get totals, change and money spent.

At Grade 2 level learners are expected to:

- i. read amounts in rands e.g. R45 and in cents e.g. 25c;
- ii. calculate change from a given total amount when the amount spent is given e.g. I have R25. I spent R10. My change is R\_; and,
- iii. calculate the total amount when given the change and the amount spent e.g. I spend 25 c. My change is 15 cents. How much did I have?

In this assessment learners displayed a lack of knowledge of the basic operations that are necessary to solve money problems. The majority of learners could not calculate change when given an amount presented and the amount spent. They were not able to calculate the original amount when given the total spent and the change received.

An example of a common error made by learners is presented below. Learners were expected to do calculations of money, word problems involving change and totals by using appropriate symbols. In this example, learners were given in a table format a total amount, amount spent and change. They were asked to calculate the change by subtracting the amount spent from the total amount, they also had to calculate the original amount by adding the change to the amount spent.

18. Gqibezela.

	Ndine	Ndasebenzisa	Itshintshi
18.1	R35	R15	R20 ✓
18.2	R19 ✗	35c	15c

In the given example, the learner correctly subtracted the amount spent (R15) from the original amount (R35) and accurately worked out the change of R20. However, the learner was not able to add the change to the amount spent and arrive at the original amount ( $35c + 15c = 50c$ ). Instead the learner wrote R19 which is incorrect; it also shows that the learner did not know that the original amount should be in cents.

It would appear that the learner's lack of knowledge was more in working with cents than with rands. It is also possible that the order in which the calculation had to be completed may have been unfamiliar to the learner, i.e. adding from the right to the left.

### Remediation

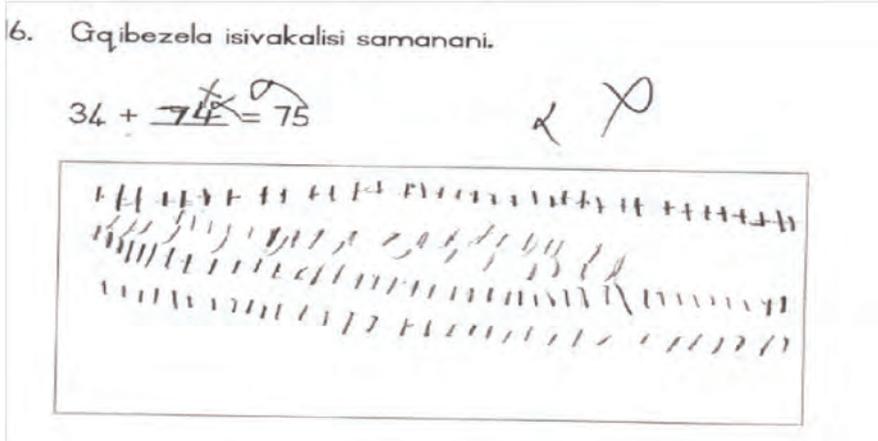
- i. Emphasise addition and subtraction using money;
- ii. Familiarise learners with terminology such as "total", "spent", "change";
- iii. Familiarise learners with number sentences and calculations that include addition and subtraction of money;
- iv. In Grade 2, calculations with money is done separately in units of cents and rands e.g.  $R\ 35 + R\ 15 =$  and  $35\ c + 15\ c =$ ;
- v. Make learners aware that the initial amount is greater; and,
- vi. Look at patterns of numbers e.g.  $R35 - R15 = R20$ , where R35 (the initial amount) is greater than R20 (change).

### b. Addition and subtraction – Number sentences up to 99

Learners were expected to add to 75 and subtract from 75 in number sentences, using appropriate symbols. At Grade 2 level learners are expected to be able to demonstrate an understanding of calculating number sentences where two addends are given; for example,  $(51 + 13 = \square)$ , where the first addend and the sum is given  $(34 + \square = 75)$  and where the subtrahend and the difference is given  $(75 - \square = 41)$ .

In this assessment item learners displayed a lack of knowledge in number sentences where they had to calculate the missing number (second addend) in the sum e.g.  $34 + \square = 75$ . The majority of learners could not apply the appropriate calculation technique (count on, subtract, use number line) to find the missing number when given the first addend and the sum in a number sentence.

An example of a common error made by learners is presented below. In the example, learners were given a number sentence where they were asked to add the unknown in order to get the sum of 75.



In the given example, the learner incorrectly added an incorrect number (74). The learner drew sticks in his attempt to get the answer. The method / technique of drawing sticks did not help as the learner was supposed to add up to 75. This example also shows that the learner could not count forwards from 34 up to 75, when drawing the sticks. It also shows that the learner did not know that 74 is just 1 less than 75, therefore if this number is added to 34 it will be more than 75.

**Remediation**

- i. Expose learners to different techniques that are appropriate for calculations with bigger numbers; e.g. number line (count on from 34 to 75 or count backwards from 75 to 34), building-and and breaking-down method  $75 - 34 = (70-30=40; 5-4=1)$ .
- ii. Encourage learners to use doubling skills, double the addend ( $34+34=68$ ) count on from 68 adding 7 jumps.

**c. Repeated addition – Word problem**

Learners were expected to solve word problems in context that involve repeated addition up to 50. Learners are assessed on reading with understanding, and were expected to demonstrate the ability to identify key information and represent the information in the number sentence.

At Grade 2 level learners are expected to be able to:

- i. skip count in 2s , 3s, 4s, 5s, 10s up to 200 (forward and backward);
- ii. pack out and count concrete objects in equal groups ( 2s, 3s, 4s, 5s , 10s);
- iii. write a number sentence for repeated addition when given a word sum; and,
- iv. solve multiplication word problems involving repeated addition up to 99

In this assessment learners displayed:

- i. that they could count in multiples of 4 to get the answer for 12 groups of 4 = ;
- ii. that they could add 4 repeatedly 12 times on the number line (count in 4’s on the number line beyond 20); and,
- iii. that they could use repeated addition :  $4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 48$ .

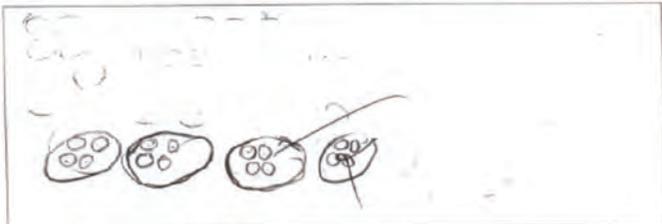
An example of a common error made by learners is presented below. In this specimen the learner has demonstrated that he knew this was a repeated addition sum but drew only 4 groups of 4 and wrote an answer of “45”. It shows that

the learner:

- i. could not draw 12 groups of 4;
- ii. did not know other techniques, namely,
  - counting in 4s, twelve times mentally, or on the number line; and,
  - the doubling technique and building up and breaking down technique.

An example of a common kind of error made by learners has been presented below. In this example, learners were given a word sum, where they were asked to form 4 groups of 12 learners and calculate the total number of learners in the classroom.

17. Abantwana bahlala ngamaqoqo ama-4 ekilasini. Kunamaqoqo abantwana aji-12. Bangaki abantwana ekilasini?



Kunabantwana aba 45 ekilasini.

It is recommended that teachers should:

- i. read and make meaning of word problems involving repeated addition through grouping;
- ii. identify key words by underlining, circling or ticking e.g. groups of 4, 12 groups;
- iii. Encourage learners to write out the multiples instead of using drawings in a repeated addition word problem e.g. 4, 8, 12, 16, 20, 24 etc.;
- iv. write a repeated addition number sentence for a word problem with grouping e.g. 12 groups of 4 which is  $4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 =$ ; and,
- v. use different techniques such as counting in 4s, number line and doubling.

## PATTERNS, FUNCTIONS AND ALGEBRA

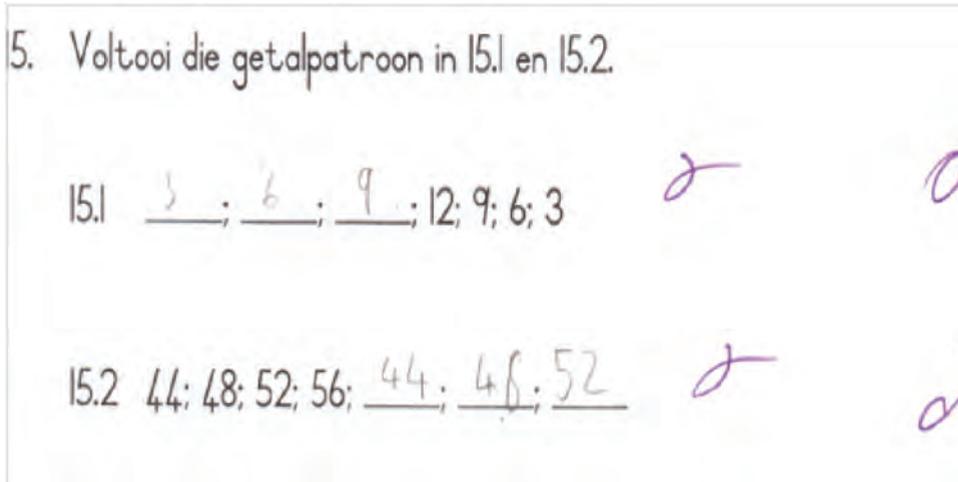
### Number patterns

Learners were expected to complete simple number sequences in multiples of 2, 3, 4, 5 and 10 and were also expected to recognise the number pattern if it ascending and descending.

At Grade 2 level learners are expected to complete a given number pattern by counting in multiples of 2s, 3s, 4s, 5s, 10s up to 200 forwards and backwards.

In this assessment, learners displayed lack of knowledge in completing the number patterns correctly by counting in 3s from right to left and in 4s forwards to complete the number sequence.

An example of a common kind of error made by learners has been presented below. In this example, learners were given number patterns and they were expected to complete them.



In the given example, the learner was not able to complete the number pattern from right to left in 3s and forwards in 4s. It would appear that the learner lacked knowledge of counting in multiples of 3 and 4. The learner simply rewrote the given multiples of 3 and 4 instead of adding 3 or 4 where it was required. This type of number sequence may have been unfamiliar to the learner and therefore mistakes were made.

### Remediation

- i. expose learners to copy, extend and complete number patterns by counting forwards and backwards in multiples of 2s, 3s, 4s, 5s and 10s from right to left and left to right in the number range 0 to 200; and,
- ii. use examples of number lines to encourage counting forwards and backwards.

### DATA HANDLING

#### a. Analyse and interpret data

Learners were expected to answer questions related to the data represented in the pictograph using one-to-one correspondence. They were also expected to read and use information represented vertically and horizontally in the graph in order to be able to respond correctly to the questions posed.

At Grade 2 level learners are expected to be able to:

- i. read and make meaning of data represented in a pictograph;
- ii. use one to one correspondence to make comparisons; and,
- iii. read the information on the horizontal and vertical axis and respond to questions related to the information given in the pictograph.

In this assessment, learners displayed a lack of knowledge on how to read and interpret the data represented and make comparisons between the numbers of windy days with the number of stormy days and subtract the difference.

An example of a common error made by learners is presented below.

21. Gebruik die prentgrafiek om die onderstaande sinne te voltooi.



21.2 Daar was 8 meer winderige dae, as donderweerdade.

In the given example, the learner was unable to read and analyse the pictograph and give the correct answer. The learner simply counted the number of windy days and wrote the answer as 8.

It would appear that the learner's lack of understanding of the phrase "how many more" could have led to the misunderstanding. It is evident that the learner could also not compare the number of windy days with the number of stormy days and subtract the difference.

## Remediation

- i. Familiarise learners with the relevant vocabulary that relates to comparisons by responding to questions e.g. which is more than/less than, which is the most/least etc.;
- ii. Help learners to compile a pictograph that will show e.g. the weather patterns over a period of three days;
- iii. Assist learners on how to read the graph vertically and horizontally;
- iv. Teach learners to read and make meaning of data represented on a pictograph;
- v. Use a wall calendar to depict daily weather and ask learners to use the calendar to answer questions like:
  - How many full weeks are in the month e.g. March?
  - How many days are there in March?
  - 20 March falls on which day?
  - What date is the second week's fourth day? Etc.
  - Count 3 days (etc.) backwards from today.
  - Count 4 days forwards from today.
  - Count 10 days backwards the 15 March.
  - Count 9 days forward from 8 March.

## 5.3 Grade 3 Mathematics: Content areas, knowledge and skills assessed

The following content areas, concepts and skills were assessed in the Grade 3 test:

### a. Numbers, Operations and Relationships

Knowledge and skills that learners had to demonstrate in this content area included the ability to:-

- count forwards and backwards in multiples of 20s and more up to 500; and apply the knowledge to complete number patterns; order whole numbers in ascending order;
- write number names and number symbols;
- double a two digit even number;
- apply repeated addition leading to multiplication;
- solve word problems by demonstrating knowledge of the basic operations as well as the sharing technique;
- apply the breaking down and adding on methods in solving sums; round off a number to the nearest 10. They were also assessed on fractions e.g. to determine a fraction from a whole.

### b. Patterns, Functions and Algebra

Assessed skills in this content area included the ability to extend/draw a geometric pattern from a given pattern and complete a number sequence of multiples of 20 in ascending order.

### c. Space and Shape

Learners had to demonstrate knowledge of and the ability to name a 2-D and 3-D shape, to draw a line of symmetry on a 2-D shape and to follow directions from an informal map and answer questions based it.

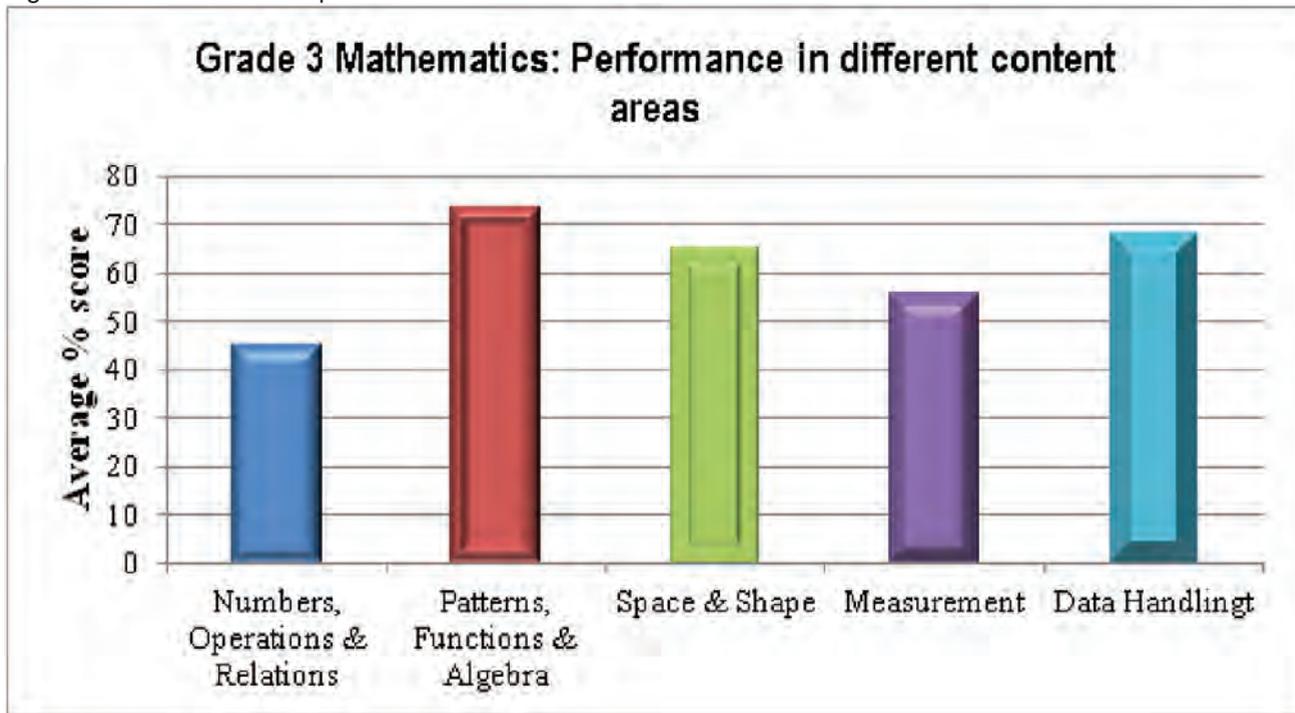
### d. Measurement

Learners had to demonstrate knowledge and the ability to identify the mass and capacity of commercially packaged items, interpret analogue time and convert analogue to digital time, and measure the length using non-standard measures e.g. hand spans.

### e. Data Handling

Assessed skills in this content area included the ability to read, compare, analyse data and answer questions based on a bar graph.

Figure 6: Grade 3 learner performance in the various content areas



According to Figure 6, Grade 3 learners experienced the greatest difficulty in responding to questions on “Number, Operations and Relations”. The second area of marked difficulty as experienced by learners was “Measurement”. Learners found responding to questions on “Patterns, Functions and Algebra” relatively easy.

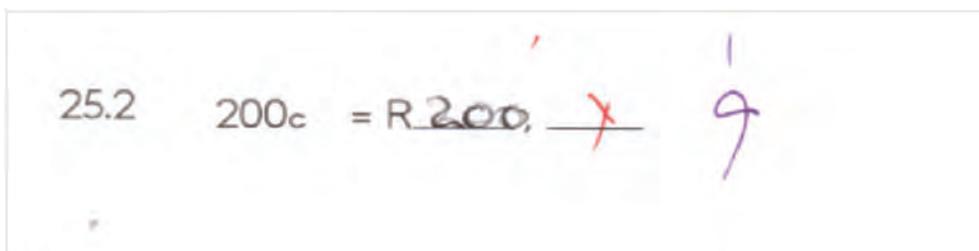
**NUMBERS, OPERATIONS & RELATIONSHIPS**

**a. Money - conversions**

Learners are expected to show understanding of the value of rands in relation to cents and vice versa. At Grade 3 level learners are expected to convert money from cents to rands and rands to cents.

In this assessment, Grade 3 learners displayed knowledge gaps in converting cents to rands. Generally learners seemed to lack basic knowledge of how many cents make a rand, and as a result they were not able to convert cents to rands correctly. The majority of learners could not convert money given from cents to rands and rands to cents.

An example of a common error made by learners is presented below. In this example, learners did not know that 200 c = R2, hence a wrong answer of R200 was written. According to the learner 200c is equal to R200 which is wrong. This shows that learners did not know that 100 c = R 1 and therefore 200 cents converted to rands is R2. The learner just changed the money unit from cents to rands and wrote R200 instead of R2.



In this example the learner placed 200 behind the given rand (R) symbol. According to this learner 200c is equal to R200.

## Remediation

- i. Make learners familiar with real money (notes and coins) so that learners will know the difference between rands and cents;
- ii. Make learners understand practically that cents are smaller in value than rands e.g. 50c is smaller than R1;
- iii. Engage learners in practical activities which require them to convert cents to rands e.g. 100c = R1 etc.;
- iv. Assist and ask learners questions like “how many cents are in small amounts like R1 so that learners can understand the relationship between rands and cents;
- v. Play games (“play money”) where they exchange notes into coins (R10 = 5 two rand coins etc.), and discuss with peers the value of coins and notes;
- vi. Assist learners to write conversions from rands to cents; and,
- vii. Create a shopping centre in the classroom to expose learners to practical handling of money e.g.:
  - buying and selling; and,
  - change etc.

### b. Money – word problems

Learners were expected to read prices in rands and cents and do calculations which also included change.

At Grade 3 level learners are expected to:

- read prices and amounts in rands and cents e.g. R18,25;
- solve money problems involving total amount by using addition, subtraction, multiplication and division;
- calculate change in a shopping context e.g. “I buy a book for R18, 25 and pay with R50. What is my change?”; and,
- do conversions from rands to cents and cents to rands.

In the example below, the learner chose to subtract R25 which is the price of the drum from R50 and avoided the price of the Trumpet. The majority of learners were unable to represent the amount of the Trumpet correctly hence their calculations were incorrect.

In this example, learners were given pictures and names of three different instruments and how much they cost.

R25,00 	R13,50 	R18,25 
Moropa	Katara	Phala

24.2 Neo o duela ka R50 ya pampiri fa a reka phala. O tla boelwa ke tshentshi ya bokae?

$$50 - 25 = 26 \text{ r}$$

O tla boelwa ke R 26 r

In the given example above the learner lacked the skill of subtracting and could not match the correct instrument (trumpet) with the correct amount (R18,25) hence the learner wrote the incorrect number sentence ( $50 - 25 = 26$ ). From the learners' final answer, it is evident that the learner was not able to write it correctly as it was written as "R2,6".

**Remediation**

- i. Teachers should assist learners to read instructions with understanding;
- ii. Teach learners to read prices and amounts in rands and cents e.g. R18, 25;
- iii. Teachers should assist learners to do calculations with money that include addition and subtraction; and,
- iv. Assist learners to identify key words by underlining, circling or ticking and write number sentences for a word sum.

**c. Fractions**

Learners were expected to solve problems in context by making meaning of the drawings and identifying the number parts in the whole that included unitary fractions e.g. half, quarter, three quarter, two fifths, etc. Learners were expected to show understanding of a whole divided into equal parts and show how equal parts can form a whole. Thereafter, identify the fraction half, quarter etc.

At Grade 3 level learners are expected to recognise, use and name unitary and non-unitary fractions and write fractions as 1 half, 1 third etc. In this assessment, learners were expected to identify a fraction that represents two pieces of a chocolate in the given picture (a whole) and also to identify the number of pieces. The majority of learners lacked the knowledge of the terminology (in words) that represented the required fraction.

An example of a common error made by learners is presented below.

**Example 1**

17. Answer questions 17.1 and 17.2.

17.1 Nelson eats 2 pieces of the chocolate shown below.



What fraction of the chocolate did Nelson eat?  $\frac{2}{1}$  X Y 0

In the above example the learner responded by writing a fraction symbol  $\frac{2}{1}$  instead of  $\frac{1}{2}$ . It shows that the learner recognised that 2 parts of the whole chocolate is equal to half but could not write the word “half” or the number symbol  $\frac{1}{2}$ . It is evident that the learner is not familiar with fraction symbols.

**Example 2**

17. Araba dipotso 17.1 le 17.2.

17.1 Tshepo o ja dikarolwana tse 2 tsa t'jhokolete e bontshitsweng ka tlase.



Tshepo o jele palophatlo /forakeshene e kae ya t'jhokolete?

o jele tshapedi X 0

In the example above the learner responded by writing the whole number “two” in words instead of writing half or 2 quarters. The learner did not comply with the instruction that requested an answer as a unitary fraction.

## Remediation

- Teachers should fractions using correct terminology (half, quarter, thirds, eighths, sixths, fifths, tenths) by:
  - allowing learners to divide the whole into fractions and put it back together into a whole e.g. 4 equal parts are called quarters and 4 quarters = 1 whole etc.;
  - assisting learners to draw objects, cut into different fractions and label accordingly; and,
  - paste drawings on a big chart which is hung on the wall for incidental/ referral reading to serve as a constant reminder to learners about the names of different fractions in relation to their sizes.

### d. Grouping and Sharing – word problems with equal sharing

Learners were expected to solve the division word problem involving equal sharing without a remainder in the number range up to 50. In this word problem the learner was required to share 42 sweets equally among 3 children.

At Grade 3 level learners are expected to:

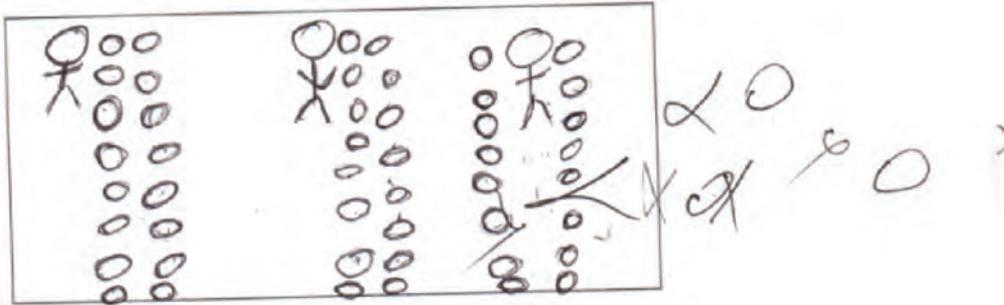
- i. apply the skill of grouping and sharing to solve word problems involving division of whole numbers by 2, 3, 4, 5, and 10;
- ii. write a number sentence for a word problem;
- iii. use other problem solving techniques besides drawings to solve word problems. These may include:
  - building-up and breaking-down e.g.  $42 \div 3 = (30 + 12)$ ; then dividing ( $30 \div 3 = 10$ ) ( $12 \div 3 = 4$ ) and add  $10 + 4 = 14$ ;
  - counting backwards in 3's on the number line from 42 to 0;
  - Counting the jumps in 3's on the number line; and,
  - repeated addition 14 three times which is  $14 + 14 + 14 = 42$ . Each child gets 14.

In this assessment in example 1, the learner used drawings to share 42 sweets equally amongst 3 children but drew 48 objects instead of 42 and got 3 groups of 16 instead of 3 groups of 14. It shows that the learner knew how to use the grouping technique but used 48 instead of 42.

An example of a common error made by learners is presented below.

Example 1

19. Mme o arolela bana ba hae ba 3 dipompong tse 42 ka ho lekana.  
Ngwana ka mong o fumane dipompong tse kae?



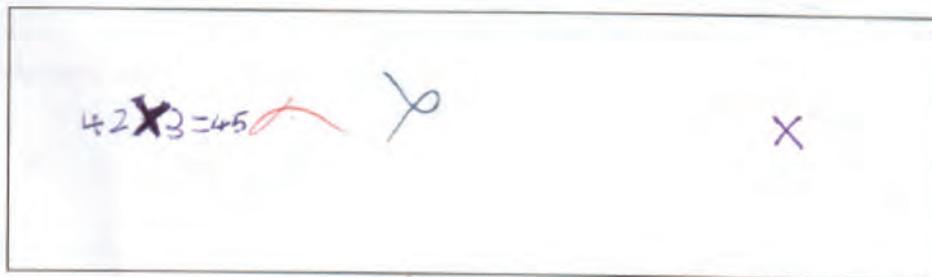
The response above suggests that the learner miscalculated the total number of biscuits, but was able to share the biscuits equally amongst three children. The total number of biscuits was incorrect. Instead of drawing 42 biscuits the learner drew 48 biscuits.

Example 2

19. Make wehlukaniasele bantf wana bakhe laba-3 emaswidi la-42  
ngalokulinganako.

Mangaki emaswidi latfolwe ngumntf wana ngamunye?

3



In example 2, the learner did not use the correct basic operation; instead of using a division sign to solve the word problem the learner used a multiplication sign. The learner could not multiply correctly. The learner's response showed that the learner added instead of multiplying. This could mean that the learner confused a multiplication sign with the addition sign.

## Remediation

- i. Teachers should assist learners to read word problems with understanding, so they can identify key words and numbers from the word sum and be able to write the correct number sentence;
- ii. Teachers should assist learners to practically share, draw and count the number of objects to be shared;
- iii. Encourage learners to discuss the methods they used when sharing; and,
- iv. Teachers should use different problem solving techniques to work out the answer besides drawings.

### e. Addition and subtraction – context free calculations

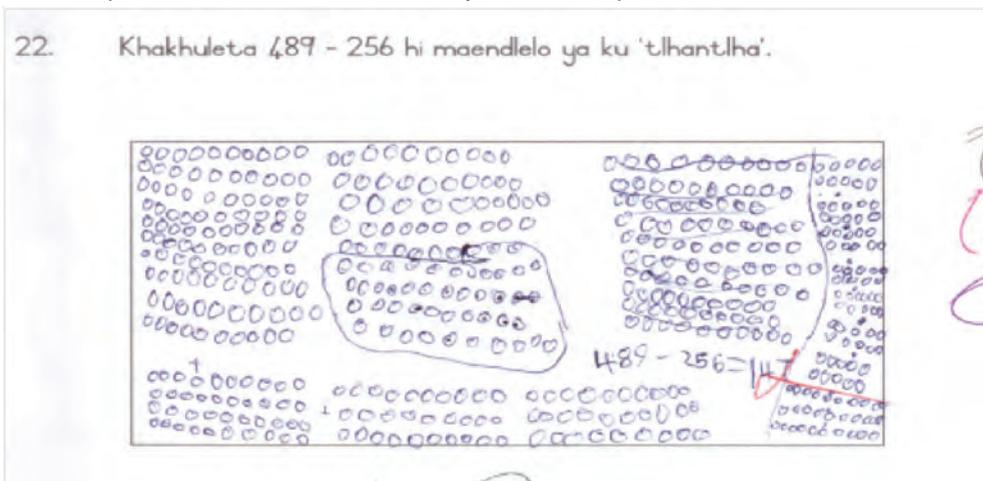
Learners were expected to subtract three digit numbers from three digit numbers by using the breaking down method and, to show the ability of breaking down three digit numbers correctly, work with hundreds, tens, and units in order to do calculations correctly.

At Grade 3 level learners are expected to:

- i. do calculations involving subtraction of three digit numbers in the number range up to 800; and,
- ii. use the breaking down method to subtract one 3 digit number from another 3 digit number.

In this assessment learners were required to calculate  $489 - 256$  using the “breaking down” method. The majority of learners were able to break down the given numbers but could not subtract 256 from 489 correctly.

An example of a common error made by learners is presented below.



The response above shows that the learner did not use the breaking down method as required, the learner drew circles to represent the calculation; this method of drawing objects to calculate does not work well when subtracting 3 digit numbers. It is very time consuming and becomes confusing and complicated.

## Remediation

Having observed the shortfalls of learning as portrayed the example above, some remediation measures are presented below for teachers to use.

- Teachers are encouraged to expose learners to the following techniques:
  - building-up and breaking-down;
  - doubling and halving;
  - number line; and,
  - rounding off in tens.

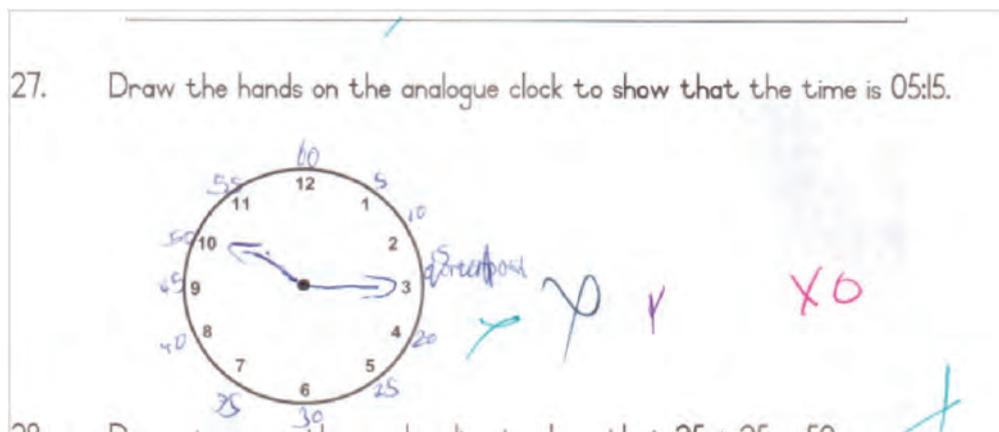


## MEASUREMENT

### Time

Learners were expected to convert time from analogue to digital, and from digital to analogue and to represent 5:15 on the given analogue clock. At Grade 3 level learners are expected to read dates on a calendar, tell 12 hour time on an analogue and digital clock, use clocks to tell and read time, convert days into weeks and weeks into months. In this assessment, learners were expected to represent digital time on an analogue clock. It was imperative that learners correctly represent the hour and minute hand. The majority of learners could not correctly show 5:15 on an analogue clock. They could not distinguish between the minute hand and the hour hand.

An example of a common error made by a learner is presented below: The learner represented 5:15 as quarter past 10. The learner showed 5 minute intervals from 1 to 12 starting at 1 (5 minutes) and ending at 12 (60 minutes) outside the clock also indicated “quarter past” next to 15 and 3. This means that the learner knew that 3 on an analogue clock represented quarter past or 15 minutes past. The learner drew the minute hand at 3, which is correct, to show the 15 minutes past, drew the hour hand pointing to 10 instead of 5. The learner drew the hour hand slightly shorter than the minute hand, however, the hour hand should be much shorter than the minute hand.



### Remediation

- i. Teachers should use an analogue clock with calibrations (lines/dots) that represent minutes and numbers representing hours (1 to 12);
- ii. Teachers should assist learners to label each dot/lines with numbers to clearly show all the minutes;
- iii. Learners should be aided in counting in multiples of five as prior knowledge when teaching time on an analogue clock.;
- iv. Make available and use working clocks to enable learners to refer and apply time correctly showing the “past” and the “to”; and,
- v. Read and represent digital time on an analogue clock.

## 6. SUMMARY OF KEY FINDINGS: HOME LANGUAGES

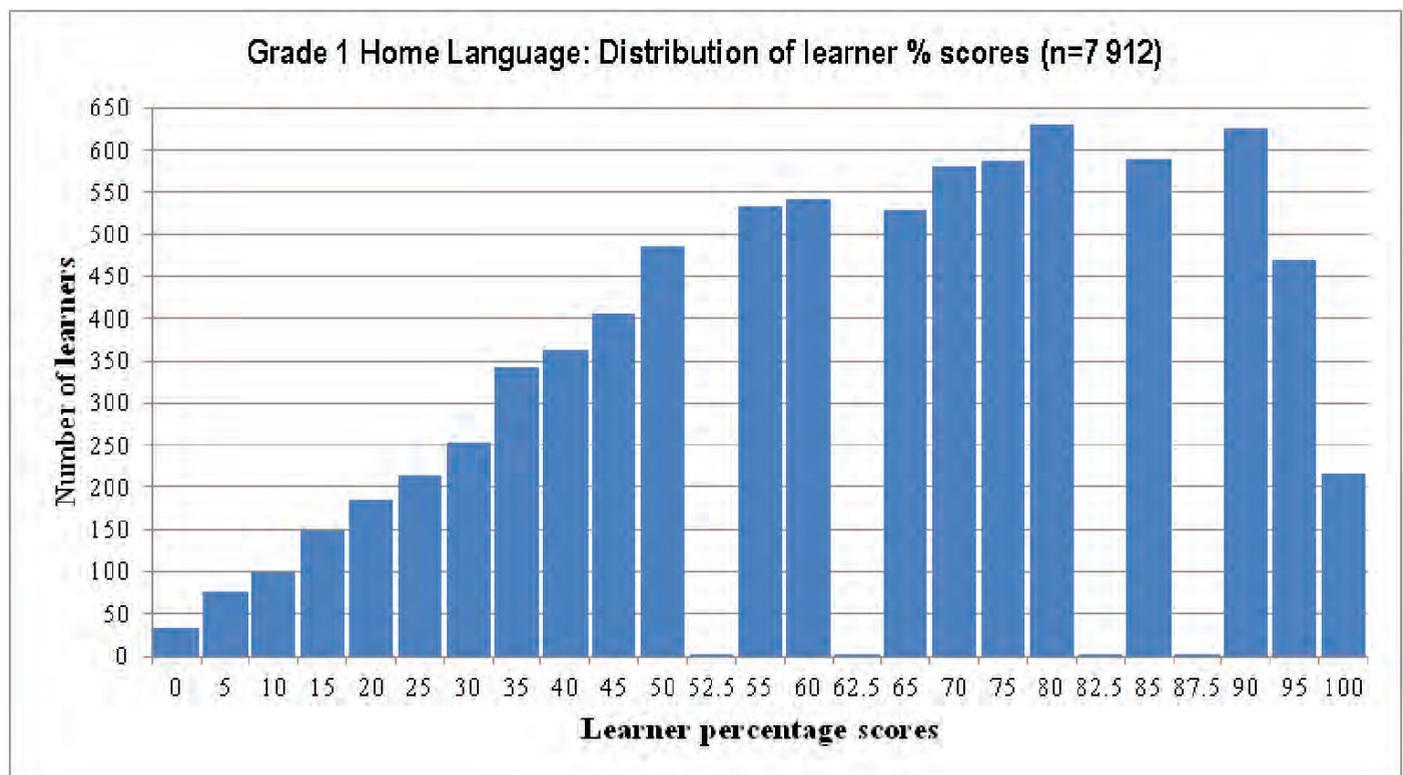
### 6.1 Grade 1 Home Language

Table 1.4: Summary of learner strengths and weaknesses in Grade 1 Languages

AREAS OF WEAKNESS	AREAS OF STRENGTH
<p>Learner responses showed weaknesses in the following areas:</p> <ul style="list-style-type: none"> <li>• Writing of words and simple sentences;</li> <li>• Sequencing of events in a story; and,</li> <li>• Using punctuation, capital letters and full stops correctly.</li> </ul>	<p>Learners performed reasonably well in the following areas:</p> <ul style="list-style-type: none"> <li>• Matching labels with pictures (phonics);</li> <li>• Writing the correct word for a visual text and complete the missing word in a sentence; and,</li> <li>• Answering closed comprehension type questions.</li> </ul>

Overall performance of the sampled learners was at the “Substantial achievement” level (average of 62.4%). The distribution of learner percentage scores shown in the histogram below.

Figure 7: Grade 1 Home Language distribution of learner percentage scores



In figure 7 it can be deduced that learner scores ranged from 0 to 100%, and that the modal score (the score most frequently attained by learners) in Grade 1 Home Language was 80%.

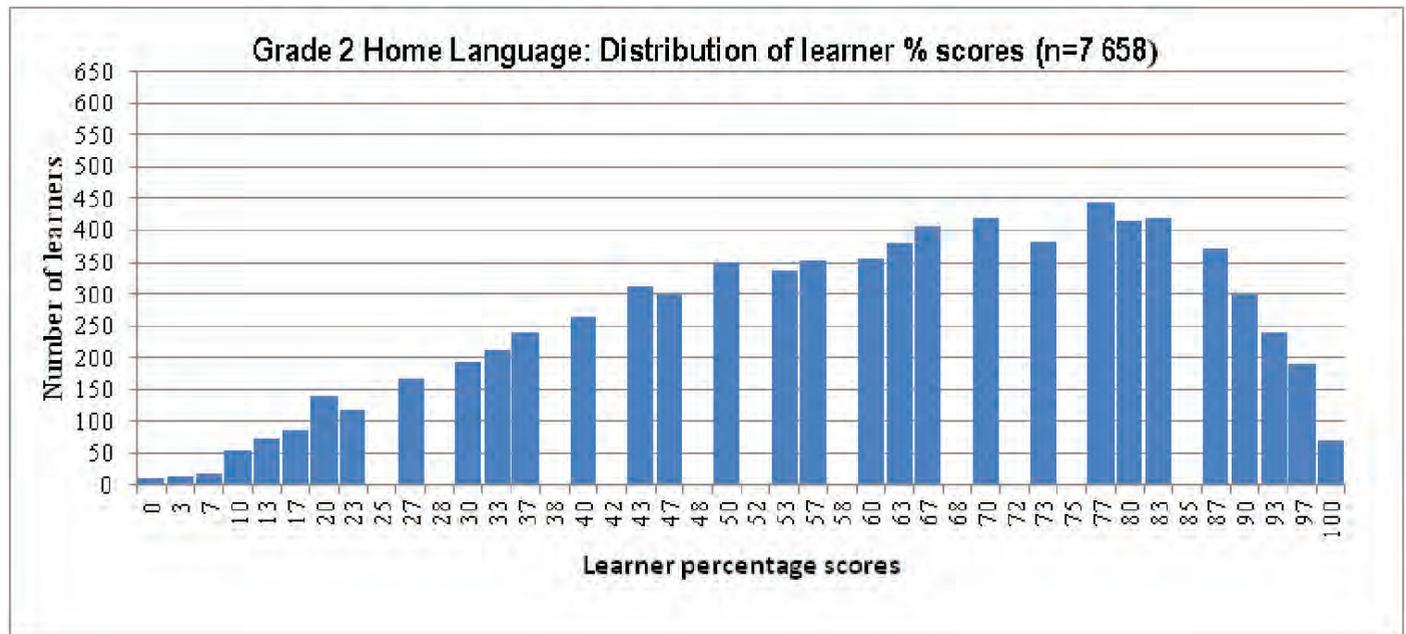
## 6.2 Grade 2 Home Language

Table 1.5: Summary of learner strengths and weaknesses in Grade 2 Languages

AREAS OF WEAKNESS	AREAS OF STRENGTH
<p>Learner responses showed weaknesses in the following areas:</p> <ul style="list-style-type: none"> <li>• Writing a text of at least 5 sentences about a picture using correct punctuation;</li> <li>• Sequencing of events in a story, cause and effect; giving opinions and reasons; and,</li> <li>• Using capital letters and full stops.</li> </ul>	<p>Learners performed reasonably well in the following areas:</p> <ul style="list-style-type: none"> <li>• Matching pictures and words (phonics);</li> <li>• Interpreting graphical texts e.g. pictographs and tables; and,</li> <li>• Using pronouns e.g. I we, our etc.</li> </ul>

Overall performance of the sampled learners was at the “Substantial achievement” level (average of 61%). The distribution of learner percentage scores is shown in the histogram below.

Figure 8: Grade 2 Home Language distribution of learner percentage scores



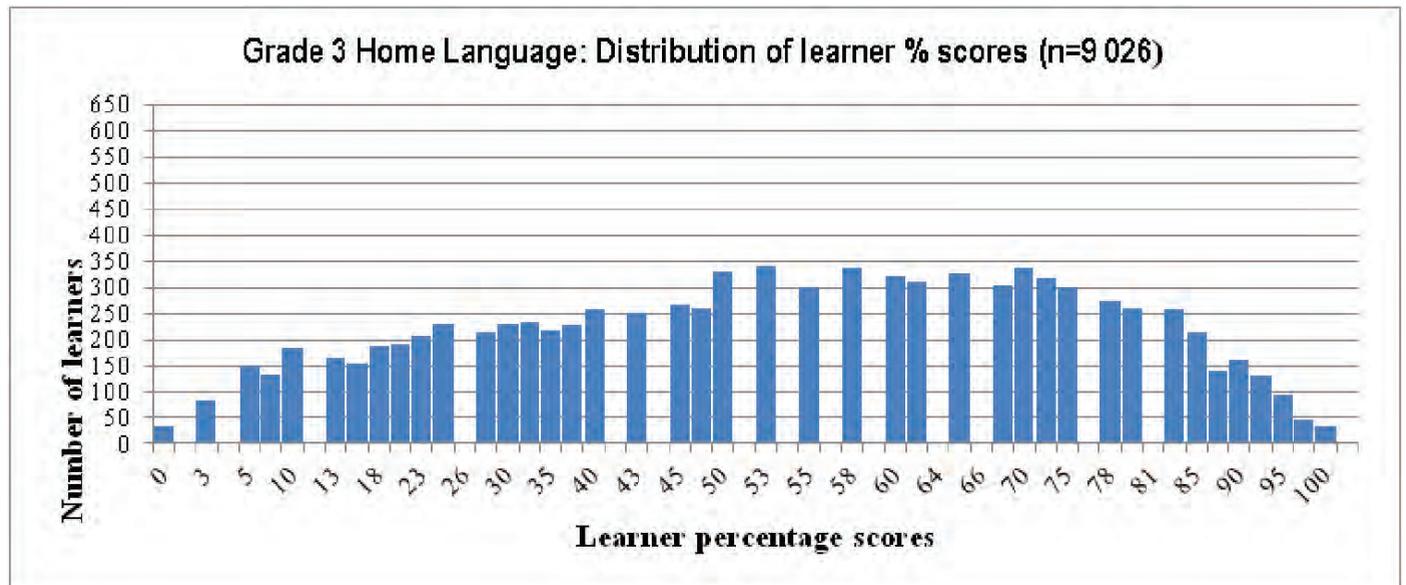
In figure 8 it can be deduced that learner scores ranged from 0 to 100%, and the modal score (the score most frequently attained by learners) in Grade 1 Home Language was 77%.

## 6.3 Grade 3 Home Language

Table 1.6: Summary of learner strengths and weaknesses in Grade 3 Languages

AREAS OF WEAKNESS	AREAS OF STRENGTH
<p>Learner responses showed weaknesses in the following areas:</p> <ul style="list-style-type: none"> <li>• Interpreting graphical texts e.g. tables;</li> <li>• Responding to high order questions e.g. sequencing of events in a story, cause and effect ,giving opinions and reasons;</li> <li>• Writing a paragraph of 5-8 sentences on a given topic using correct punctuation, spelling and grammar; and,</li> <li>• Using e.g. punctuation (capital letters, commas, question marks and full stops) tenses (present and past) and grammar (conjunctions, adjectives and nouns).</li> </ul>	<p>Learners performed reasonably well in the following areas:</p> <ul style="list-style-type: none"> <li>• Identifying key elements in a text e.g. characters, main idea and setting;</li> <li>• Interpreting of different types of texts e.g. advertisements; and,</li> <li>• Interpreting and analysing bar graphs.</li> </ul>

Figure 9: Grade 3 Home Language distribution of learner percentage scores



In figure 9 it can be observed that learner scores ranged from 0 to 100%, and the modal score (the score most frequently attained by learners) in Grade 3 Home Language was 53%.

## 7. DETAILED ANALYSIS: LANGUAGES

In this section, specific skills, knowledge and competencies related to the Home Language components of assessment that were tested are discussed. Typical learner responses indicate misunderstandings, errors and knowledge gaps which may have impacted on learner performance in Home Languages.

The learner responses to the test items that learners found challenging and difficult have been analysed in detail to give teachers a sense of the typical errors made by learners. Included in the analysis are ideas for remediation that teachers are encouraged to use to enhance learner's reading, comprehension and writing skills.

### 7.1 Grade 1 Home Language: Language components, knowledge and skills assessed

The language components assessed were as follows:

**a. Reading and Comprehension**

The skill that was assessed was to make meaning of a written text and identify the sequence of events. They were expected to indicate sequencing by numbering sentences according to the order of events in a given story.

**b. Language Usage**

The skills that were assessed in this component included building words using single sounds learnt during the year. They were also assessed with regards to using a simple noun to complete a given sentence. Punctuation marks were also assessed when learners were asked to indicate where a capital letter and a full stop should be in a given sentence.

**c. Writing**

The skills that were assessed within this component included writing one sentence about a given picture, and writing three sentences about another picture, using correct punctuation, grammar and spelling.

**d. Reading and Viewing**

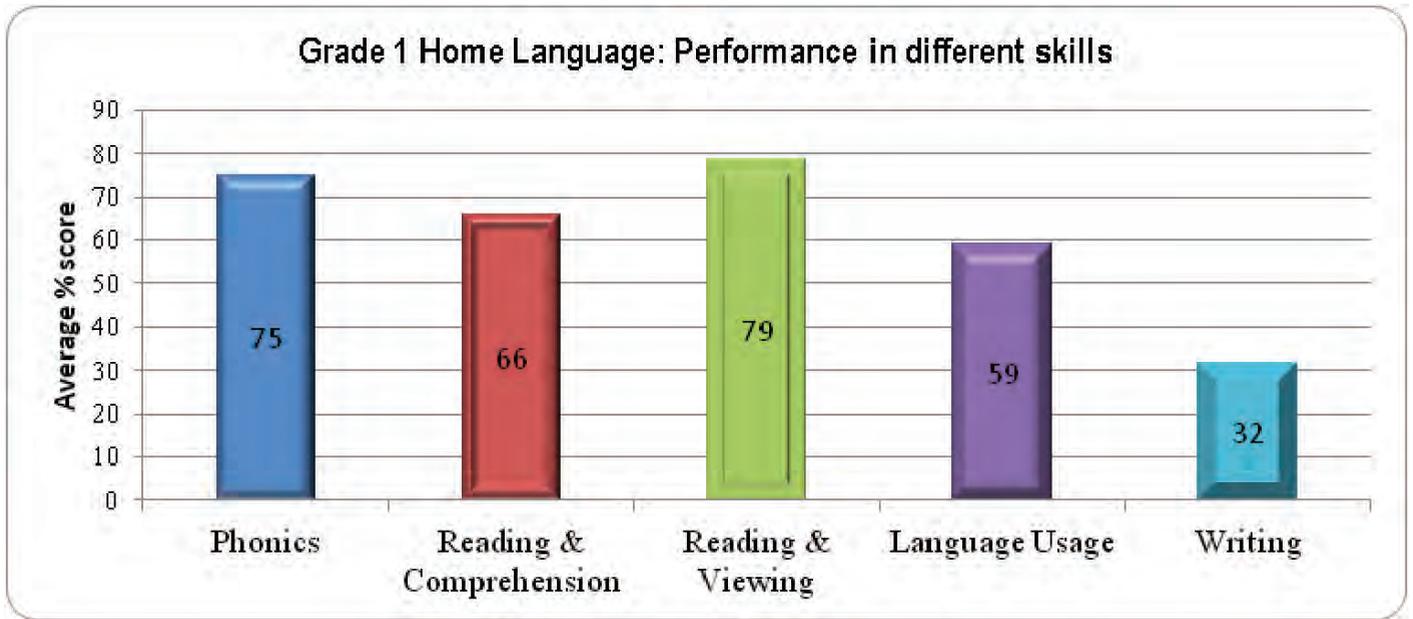
Learners were given pictures to write a letter for the first sound of each, to identify and name each, and to draw a line to match sentences and pictures.

**e. Phonics**

The skill of identification of first sounds was assessed. Similar sounding words that differed with only one letter were given. Learners were expected to pick the one that matched a given picture.

Figure 10 below shows the Grade 1 overall performance (average %) of the sample learners, per language component.

Figure 10: Grade 1 learner performance in different skills



The graph above indicates that learners found the Writing component to be most difficult followed by Language Usage. The graph also shows that learners did well in Reading and Viewing, Phonics and Reading Comprehension. The challenging aspects including an error analysis and teaching ideas for remediation of the test items that learners found challenging are presented as follows:

**a. Writing**

The skills assessed were to write:

- i) one sentence about a given picture; and,
- ii) three sentences about a given picture.

Generally, learners' performance in the writing component was below average. Learners were not able to write words and demonstrated inability to write sentences.

At Grade 1 level learners are expected to be able to write 2-3 sentences about a picture/prompt using correct punctuation, grammar and spelling.

In this assessment it was found that a significant number of learners were unable to write short and simple sentences about a given picture. Most of them did not use capital letters at the start of their sentence and left out the full stop at the end of the sentence.

In the specimen given below, the question required the learner to write a sentence about the picture of a boy. The purpose was to assess if learners could use their phonic knowledge to spell and write words.

0. Kyk na die prente hieronder.

10.1 Skryf 'n sin oor die prent, jie.



seu skineso x x o

The learner's response shows that he/she wrote a word like e.g. 'seu' instead of 'seun' which does not represent a sentence. The learner could identify the picture of a boy but could not spell the word correctly and did not write a sentence as instructed. The learner could not apply sentence construction skills which require a noun and a doing word(verb).

In the second part of the question the learner was required to write two sentences about "people having a meal".

The next example shows a more complex assessment which required learners to write more than one sentence from a given picture. The purpose was to assess if learners could connect ideas in simple sentences that are correctly punctuated and show logical thinking based on a given visual prompt.

10.2 Bhala imisho lemibili ngesit fombe lesingentasi.



Mhala p...  
B...  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

0

As evident in the specimen above, the learner was unable to write two sentences about the given picture. The learner wrote a few incomprehensible words without spacing and punctuation, which demonstrated that this learner did not know that the first word in a sentence must start with a capital letter, and there must be a full stop at the end of the sentence. The learner also shows lack of spacing of words in a sentence which is a fundamental handwriting skill. The learner did not also understand what was asked of them.

**Remediation**

- i. Phonic sounds should be emphasised, including model/shared writing lessons e.g. building of words/sentences using flash cards and sentence strips, separating words and the importance of spaces between words. Punctuation should be introduced as early as possible during the reading period; and,
- ii. Teachers should refer to DBE Workbooks because they have a variety of very useful examples on how to:
  - construct a sentence; and,
  - use punctuation.

## b. Reading and comprehension

The skill that was assessed was making meaning of a written text and identifying the sequence of events.

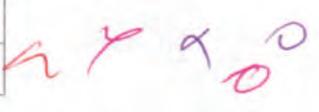
Generally, learners performed fairly well in Reading and Comprehension. The test item that learners found difficult was identifying the sequence of events in the story. At Grade 1 level, learners are expected to sequence events in a story by giving each sentence a number according to the correct order of events.

In this assessment item, a significant number of learners were unable to put the sentences in the correct order of events (sequence). Instead of writing numbers inside the blocks to indicate the first, second and third sentence in relation to the story given, some learners marked one block with an X, others wrote numbers randomly and others shaded all the blocks.

In the specimen below, learners were given a table with rows and columns. The rows had events in the story, put in random order and blocks for learners to indicate sequencing by numbering sentences according to events in the story. The learners were required to write the number inside each block next to each sentence to indicate the first (1), second (2) and third (3) sentence in relation to the sequence of events in the story.

3.3 Nomora dipolelo 1-3 mo mabokosong go bontsha tatelano e e nepagetseng.

Rre o besa ditlhapi.	1
Ba kolobetswa ke letloa.	2
Botlhe ba itumetse kwa letamong.	3



In the example, above the learner did not number the events in the story accordingly but wrote numbers chronologically. This shows that the learner did not comprehend the story and could not follow events in the story.

## Remediation

- i. Learners should be encouraged to dramatize stories told and read to them;
- ii. Learners should be encouraged to be encouraged to retell a story using pictures;
- iii. Learners should be taught how to discuss the main events in a story;
- iv. Learners should be encouraged to retell a story relating the main events;
- v. Learners should be aided in sequence pictures relating to a story in the correct order,
- vi. Learners should be taught how to identify and number sentences related to a story according to the sequence of events.

## c. Language Usage

The skills that were assessed in this component included:

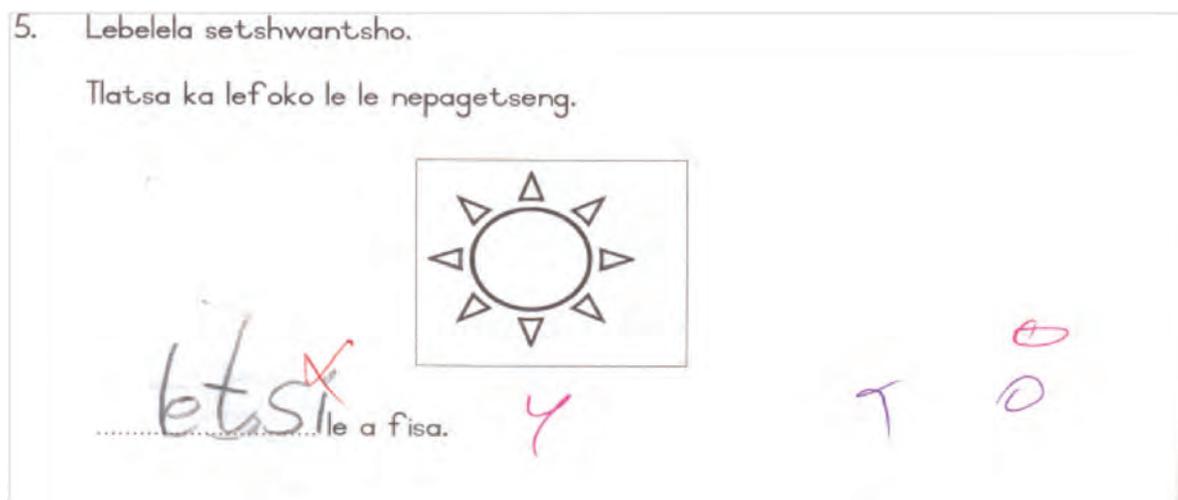
- i) building words using single sounds learnt;
- ii) using a capital letter and a full stop; and,
- iii) using simple nouns to complete a sentence.

Generally, learners did not perform satisfactorily in Language Usage. Even though a significant number of learners could start sentences with capital letters, they did not always end given sentences with full stops. Some learners were able to write some sounds correctly e.g. initial sounds, but were not able to spell whole words correctly.

Learners at Grade 1 level are expected to build words using single sounds learnt, start sentences with capital letters, and end with full stops, and use simple nouns correctly in writing.

In this assessment, learners were given a picture and incomplete sentences. Learners were supposed to complete the sentences by writing the correct noun related to the picture. Instead they wrote the answer with some of the letters omitted. They were also given sentences without punctuation marks and they were expected to write the sentences using a capital letter at the beginning of the sentence and a full stop at the end of the sentence. Instead, the learners wrote the sentence without a capital letter but with a full stop at the end of the sentence.

In the specimen below, learners were given a picture of a “sun” and an incomplete sentence, they were supposed to write a word in the space provided guided by the picture to complete the sentence.



The specimen shows that the learner recognised the picture but did not respond correctly to the question. Generally, learners did well in picture recognition but lacked necessary and expected phonic and writing skills. This learner recognised the object in the picture to be a ‘sun’ but could not spell the word correctly. Instead of writing the correct word/noun, she/he demonstrated lack of blending skills by omitting the second phoneme which in this language is ‘tsa’ and the word would read ‘letsatsi’.

In the following specimen, learners were given a sentence with no punctuation marks. Learners had to rewrite and punctuate the sentence using a capital letter and a full stop.

8. Ngwalolla lefoko.  
Ngwala tlhaka ye kgolo le khutlo mo go swanetšego.  
ba ithabišitše ka moka letamong

*bait habišitšē kgomoka letamong.*

In the specimen provided, the learner's response shows that they did not start the sentence with a capital letter and also did not leave correct spaces between the words. The learner however used a full stop at the end of the sentence. It can be deduced that the learner struggled with applying punctuation marks (capital letters, full stops), and the learner showed poor writing ability as shown by the incorrect spacing used.

It is recommended that:

- i. correct letter formation, and adequate spacing between words be modelled to the learners during shared writing and handwriting lessons. Use of DBE books for tracing, spacing and reinforcement of letter formation is encouraged. The use of basic punctuation (capital letters, full stops, commas, question mark) should be taught in reading and writing lessons;
- ii. learners should be taught that all things (living and non-living) have names e.g. they must be able to look at a real object and name it as well as name objects in pictures; and,
- iii. learners should be able to spell, blend sounds that are taught, and write simple words using their phonic skills.

## 7.2 Grade 2 Home Language: Language components, knowledge and skills assessed

The language components assessed were as follows:

**a. Reading and Comprehension**

The skills that were assessed in this section included identifying the sequence of events in a story that was read with the teacher. The skill of responding to open-ended questions was assessed whereby learners were asked to give an opinion on the passage that was read to them.

**b. Language Usage**

Learners were assessed on the skills of using the simple present, the past and future tenses correctly. Their punctuation marks were also assessed whereby they were required to demonstrate the correct use of capital letters, full stops, commas and question marks. Identification of nouns was also assessed whereby a picture was given and learners were asked to fill in the noun in a given space.

**c. Writing**

Learners were assessed on their writing ability and skills. They were required to write simple sentences about a given picture, spell words and apply punctuation marks correctly.

**d. Reading and Viewing**

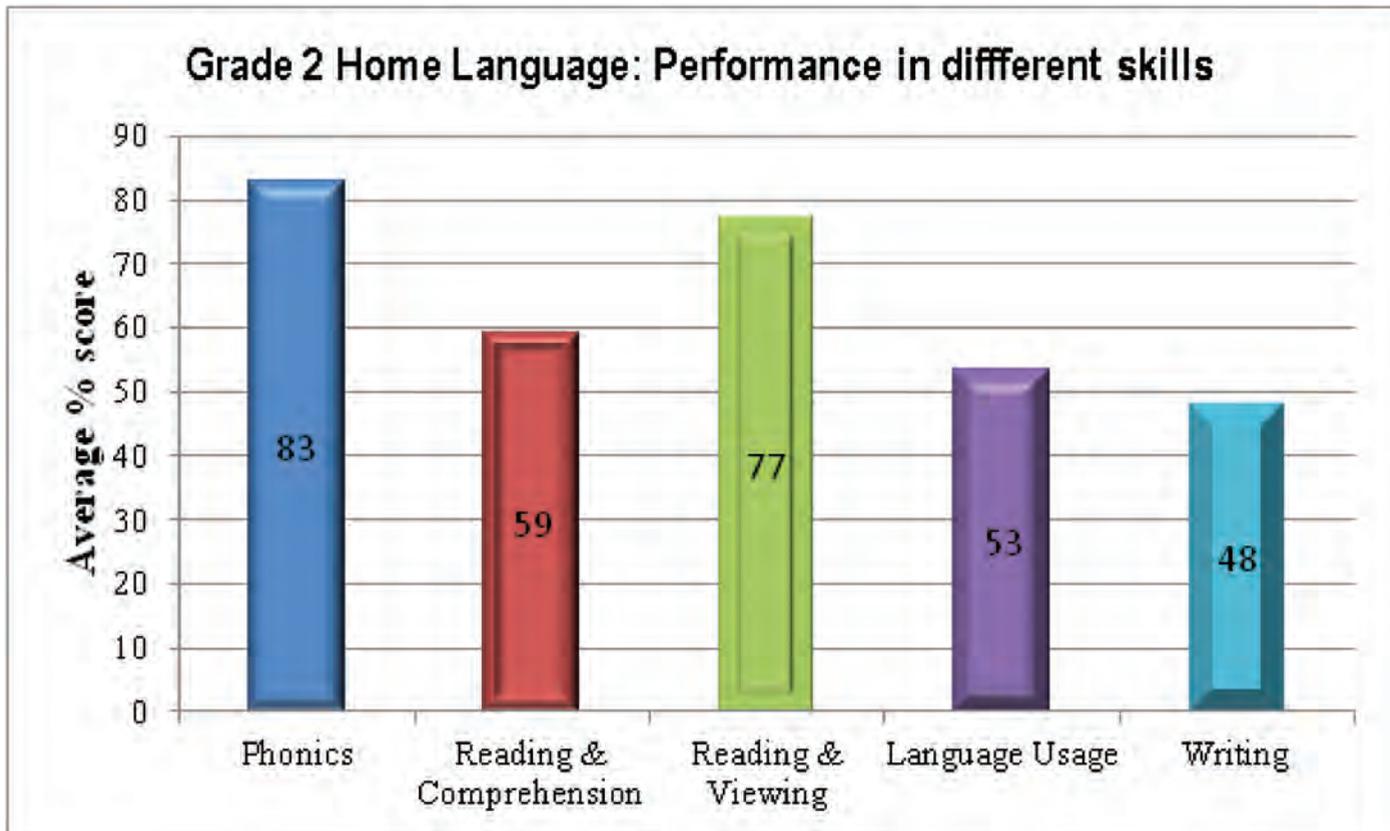
Identification and naming of objects is a skill that was assessed whereby learners were given a picture and asked to name it. They were also assessed on the skill of viewing, interpreting and answering questions based on a graph.

**e. Phonics**

Identification of digraphs was assessed whereby learners were presented with four words that had similar sounding digraphs and were expected to pick the one that matched a given picture.

Figure 11 below shows the Grade 2 overall performance in terms of percentage (average %) of the sample of learners, per content area.

Figure 11: Grade 2 learner performance in different skills



The figure above demonstrates that learners performed better in Phonics than in Writing. The specific areas of concern including error analysis and teaching ideas for remediation of the test items that learners found challenging are mapped out for:

**a. Reading and Comprehension**

The skills that were assessed in this section included:

- i) identifying the sequence of events in the story read with the teacher (this aspect has been discussed in detail in Grade 1 under the same topic; and,
- ii) giving an opinion on what was read e.g. indicating what was liked or disliked about the story and giving reasons for their answer.

An overall analysis shows that learners answered questions correctly in response to visual cues (illustrations) and graphical texts (pictographs and tables etc.) appropriate for Grade 2 level. However, learners found it challenging to make inferences and respond to higher order questions based on the text (comprehension passage) e.g. “Why were the girls and boys excited?”

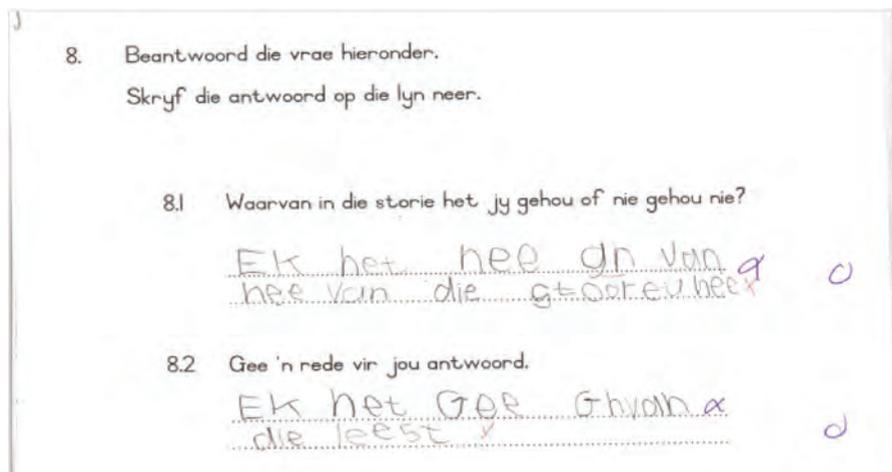
At Grade 2 level learners are expected to demonstrate their understanding of a text that is read to them by the teacher or on their own by responding to questions which require the learner to:

- sequence the main events in the story in the right order (sequence the jumbled sentences); and,
- give an opinion on what was read to them by stating, for example, what they liked and disliked about the story and had to give reasons for their answers.

In this assessment, learners displayed lack of knowledge in giving order of events after reading and listening to the text read to them. A significant number of learners were unable to give the correct order of events in relation to the story.

Other learners found it challenging to express an opinion on the story and give reasons to support their own opinion.

In the specimen below, learners were expected to write about what they liked / disliked in the story and had to give reasons for their answers.



The response indicates that the learner did not respond appropriately to the question. Instead she/he wrote an answer that is not related to the story. Rather than indicating what they liked and disliked about the story, the learner wrote an incomprehensible response suggesting that the learner did not read the story with understanding and as a result could not give an opinion and a reason, both of which require critical thinking and reasoning skills.

It is recommended that at Grade 2 level learners should be exposed to a variety of comprehension activities using the texts read (Big Books, Graded Readers, Story books, DBE Workbooks etc.) in shared and group guided reading sessions. The teacher should engage learners in comprehension activities such as:

- i. Oral comprehension (discuss the title, cover, illustrations, setting, characters, main events, the beginning, middle and ending of the story);
- ii. Written comprehension
  - Choose the best title for the story;
  - Sequence events correctly in a story (number jumbled sentences in the story);
  - Answer multiple choice type of questions related to the text;
  - Answer high order questions e.g. give an opinion;
  - Respond to open and close ended question e.g. What did you like about this story?;
  - Respond to questions such as Who, Why, What etc.; and,
  - Consistent use of story frames (setting, characters, problems and solutions in the story) during reading and comprehension lessons could enhance learners' ability to reason and think critically.

**b. Language usage**

The skills that were assessed were:

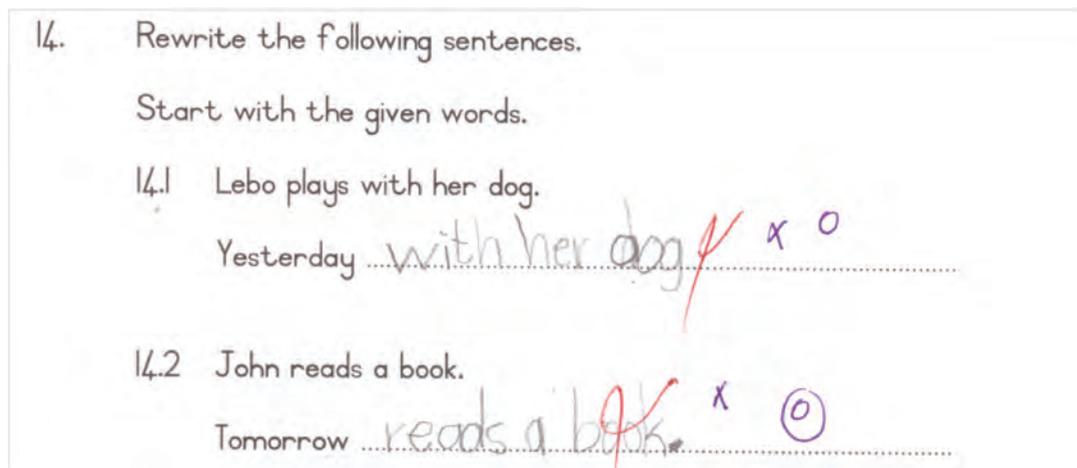
- i) the use of tenses namely simple present, future tense; and,
- ii) punctuation (capital letters, full stops, commas and question marks).

Generally, learners performed fairly well in Language Usage. However a significant number of learners could not change past tense to present tense. They also could not identify where to use most punctuation marks, especially question marks. Some of them started sentences with capital letters, while other did not.

At Grade 2 level, learners are expected to use present, future and past tenses correctly. They are also expected to apply correct punctuation (capital letters, commas, full stops and question marks) in their written work.

In this assessment, learners were expected to rewrite the given sentences in the future and past tenses, beginning the sentence with: (Yesterday and Tomorrow). A significant number of learners could not change the given sentences to the required tenses. Instead, they omitted nouns and verbs and also did not change verbs into required tenses.

In the specimen below, learners were given sentences and were required to rewrite them into past and future tense starting with the keywords “yesterday and tomorrow”.



In the example above, instead of changing the verb “plays” to past tense, the learner left out the verb completely in his/her response.

In 14.2, the learner rewrote the given sentence and left out the noun “John”, which means that he/she did not know that the noun should still be included when a sentence starts with “Tomorrow” (future tense) and that the auxiliary verb “will” denotes the future tense. This indicates that language conventions such as future and past tenses might not have been fully understood by the learners.

In the following specimen, learners were required to rewrite the sentence and fill in the missing punctuation mark which was a question mark.

15.2 Dzhenisani tshiga tsha u vhala tshithihi kha fhungo li re afho fhasi.

Ni a takalela bola ya milenzhe naa

ehe ndiaifuna. L O

The learner's response shows that he/she could not identify that the given sentence was a question and that the missing punctuation mark was a "?" that was required in the sentence, "Do you like to play soccer?" Instead the learner answered the question by writing "ehe ndiaifuna" which means "yes, I would love to", instead of responding to the instruction, which was to adding the missing punctuation mark i.e. "?". This indicates that the learner did not comprehend the instruction given but mistakenly assumed the question as needed his or her response.

### Remediation

- i) Punctuation marks should taught and reinforced during shared reading and writing lessons. Demonstration and modelling of punctuation rules could enhance improved application of these rules when learners read and write. This can be achieved when learners highlight punctuation marks in various texts by underlining, circling and colouring in.
- ii) A lot of oral work where learners are encouraged to express themselves in various tenses may improve learner performance in use of tenses. This activity can be reinforced during listening and speaking activities where learners are expected to relate their personal news and recounts, retell stories and discuss various topics.

### c. Writing

The learners were assessed on their writing ability and skills. They were required to write simple sentences about a given picture. Generally, learners have not performed well in Writing. Learners found it difficult to apply sentence construction skills. Learners at Grade 2 level are expected to write simple sentences about a given picture using correct punctuation, spelling and grammar.

In this assessment, learners were expected to write a paragraph of 5-8 sentences about a given picture using correct punctuation, spelling and grammar. The majority of learners were not able to write a paragraph of 5-8 sentences about the picture. They wrote some phrases with a few nouns, they also wrote a list of words/ nouns that do not constitute a sentence or a paragraph.

In the specimen, the learner was given a picture and was required to write a paragraph of 5-8 sentences about the picture.

17. Write a paragraph of 5-8 sentences about the picture below.



the e bakete  
the e dog  
the e mopo  
the e rake  
the e tepole  
the e setole  
the e katse  
the e forisi  
  
Content = 0  
Grammar = 0  
①

TOTAL: 30

The specimen above indicates how the learner did not write a paragraph of simple sentences but a list of words/nouns with a few nouns spelt in various languages. The instruction is in English, however the learner only wrote and spelt correctly 3 words in English namely “the, dog and rake” The rest of the words are in Sepedi. The learner was able to identify most of the objects in the picture, which are nouns; she/he however, expressed him/herself in more than one language. Words like “mopo”: mop, “bakete”: basket, “katse”: cat are used and spelt correctly by the learner in Sepedi. It would appear that the learner lacks the ability to construct simple sentences and she/he might lack the vocabulary to express him/herself in the language of Learning and Teaching (LoLT) offered at the school

## Remediation

Based on the above observations, the following are recommended remediation measures.

It is recommended that:

- i. Teaching of sentence construction must be emphasized, which includes:
  - Sentence frames should be used where learners are given sentence starters such as (I like, I see, this is, I have etc.) to construct simple sentences;
  - Sight words and phonic words could be used as well; and,
  - Substitution tables can also be used where learners would be asked to select nouns and verbs from a given table.
- ii. a lot of oral work should be encouraged in order to improve learners' vocabulary. Teachers should encourage picture talks. Shared writing and modelling of word and sentence building should be taught on a regular basis. Flash cards to build words and sentences should be used more often. Examples of paragraphs must be displayed in the classroom in order to familiarise learners with them.
- iii. Teach learners, on a regular basis, how to construct sentences(sentence construction skills) in shared group-guided lessons.

## 7.3 Grade 3 Home Language: Language components, knowledge and skills assessed

The language component skills that were assessed were as follows:

### a. **Reading and Viewing**

Learners were assessed on four different comprehension texts – the narrative text, graphical text, an advertisement and a bar graph. In this assessment learners were given information in a table to read and interpret – to analyse information and answer questions relating to the information given in the graphical text.

### b. **Writing**

Learners were assessed on their writing ability and skills. They were required to write at least one paragraph of 8 or more sentences, on a given topic namely “Friends”, with correct punctuation, grammar and spelling.

### c. **Language Usage**

The skills that were assessed were the identification and use of different parts of speech like adjectives, nouns and conjunctions. Agreement between verbs and nouns in singular and plural forms was assessed. Correct use of the present and past tenses was also assessed. Learners were also assessed on the skill of using punctuation marks correctly.

### d. **Reading and Comprehension**

Learners were assessed on the skill of discussing cause and effect relations, answering both lower and higher order questions based on the text read, e.g. by giving an opinion and responding to questions related to cause and effect relations.

### e. **Phonics**

Identification and correct use of digraphs was assessed whereby learners were given different pictures and were required to fill in words in given spaces, using the correct digraphs.

Figure 12 below shows the Grade 3 overall performance (average %) of the sampled learners, per content area.

Figure 12: Grade 3 learner performance in different skills

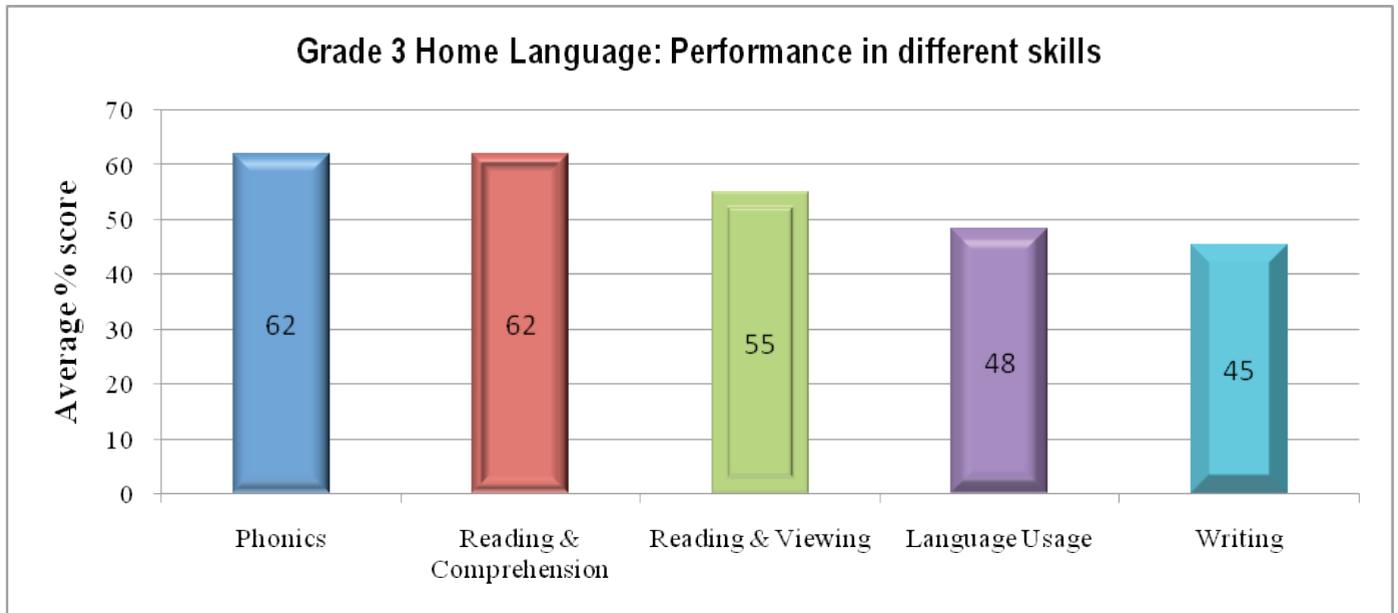


Figure 12 indicates that Writing was the most difficult skill for learners and they did not perform well in that aspect. Learners performed better in Phonics and Reading Comprehension. The challenging aspects and teaching ideas for remediation of the test items that learners found challenging are presented as follows:

**a. Reading and Viewing**

Learners were assessed in four different comprehension texts, namely; narrative text, graphical text, advertisement and a bar graph comprehension texts.

The skill assessed was interpreting information from graphical texts such as a table, showing similarities and differences. Generally learners' performance in this component was at an average of 55% as shown by the graph above. The area that still needs improvement is interpretation of information given in tabular form. At Grade 3 level learners are expected to be able to read, analyse information and answer questions relating to the information given in graphical texts like a table. Learners are also expected to be able to identify similarities and differences with regard to the information given in the tables.

In this assessment, learners were given information in a table to read and interpret. They were expected to identify different and similar days in which learners of a certain school used different modes of transport. Learners displayed lack of interpretation skills of information given in a table. They did not identify key words which would have given them the clues to the answers.

In the specimen below, learners were given information about modes of transportation used by a group of people. The days of the week were shown in the columns and the names of the transport users were shown in the rows. Learners were expected to identify modes of transport used by different persons on the same and different days, and provide their answers in the provided spaces.

13. Lees die tabel en beantwoord vrae 13.1-13.3.

Vervoer na die skool					
Naam	Maandag	Dinsdag	Woensdag	Donderdag	Vrydag
Martin	bus	bus	taxi	bus	trein
Bennie	taxi	bus	taxi	trein	trein
Lebo	trein	taxi	bus	bus	trein
Makkie	bus	taxi	bus	bus	trein

13.1 Martin en Makkie ry op 'n Maandag per bus skool toe.

Op watter dag ry hulle albei weer bus?

~~Maandag, Dinsdag, Donderdag~~  
~~Maandag, Woensdag, Donderdag~~

13.2 Op een van die dae gebruik al die leerders dieselfde vervoermiddel.

Watter soort vervoermiddel is dit?

~~vrydag~~

13.3 Op 'n Donderdag reis Bennie per trein en Lebo per bus en taxi

Given the table in the example above, and the questions following, it appears that the learners did not fully comprehend what was being asked or required of them.

It is possible that in item 13.1 these learners did not pay attention to all the words in the question. The example used in this example suggests that the learner may have missed paying attention to the word 'albei' which means 'both'. This speculation is caused by the fact that the days that she/he listed correspond to the days on which the children travelled by bus individually. In terms of item 13.2, the learner may have made the same mistake by not paying attention to all the words forming the question. The fact that the learner responded to only one part of the question (the first part that ends with 'dieselfde vervoermiddel') suggests that she/he did not pay attention to the part of the question that required the type of transport used on Friday. The response to item 13.3, and overall responses to the other questions also suggest that learners did not understand the meaning of the question, and the learner listed two days instead of one.

## Remediation

Based on the observations made regarding learner responses in this section, teachers are encouraged to consider the following remediation measures:

- i. Use a variety of comprehension texts such as DBE Workbooks/ANA previous papers to teach comprehension skills namely interpreting and analysing information from graphical texts such as;
  - tables (bus time table, television guide etc.), table of contents, duty roster;
  - pictographs, bar graphs;
  - weather chart, birthday chart etc.; and,
  - calendars.
- ii. use strategies such as highlighting keywords when interacting with information on a graphical text.

### b. Writing

Learners were assessed on their writing ability and skills. They were required to write at least one paragraph of 8 or more sentences, on a given topic namely “Friends”, with correct punctuation, grammar and spelling.

Generally learners’ performance in the writing component was around the average of 45% as shown in the graph above. The learners managed to construct simple, short sentences. However, many learners found it difficult to write in paragraphs. Some learners also did not use the correct punctuation marks and grammar in their sentence. Others found it difficult to spell words correctly.

At Grade 3 level, learners are expected to write one paragraph of at least 8 sentences with correct punctuation, grammar and spelling.

In the 2014 assessment, many learners were not able to write meaningful paragraphs using punctuation marks and grammar correctly. There were also many learners who could not construct simple sentences and instead wrote words or phrases. Others wrote a list of unrelated sentences which did not reflect a paragraph. Some wrote words that were unrelated to the given topic. Some mistook a paragraph to mean that each sentence had to be numbered.

In the following example, learners were assessed on the use of punctuation, grammar and spelling on a paragraph. Learners were instructed to write at least 8 sentences about “Friends”, and were also instructed not to number their sentences.



The learner wrote sentences and formulated a paragraph. However, capital letters, full stops and spelling were not applied correctly. This could be due to poor handwriting ability, where spacing is a key requirement. Learners lacked an understanding of applying correct punctuation. The learner did not show spacing between words and sentences and after the full stop a capital letter was not used to indicate a new sentence.

### **Remediation**

It is recommended that these basic writing skills be taught:

- i. Punctuation; (recommendations relevant to punctuation have been addressed in detail in Grades 1 and 2);
- ii. Writing of a short story using a writing frame based on a text that is used for Shared and Guided reading sessions (Big book, graded reader, story book, DBE Workbook etc.);
- iii. Writing on a topic involves these skills:
  - reading and understanding the topic;
  - brainstorming ideas;
  - sketching a mind map listing for example (who is involved, where does it happen, what is happening, how is it happening and when);
  - writing the beginning of a story (a paragraph of 2-3 sentences);
  - writing the middle of a story (a paragraph of 3-4 sentences); and,
  - writing the ending of a story (1-2 sentences).
- iv. Writing process which involves drafting (generate ideas and compose sentences), editing (checking mistakes in punctuation, spelling and grammar) and then presenting their writing;
- v. Use of correct spelling (word book, word wall, phonics etc.);
- vi. Paragraph construction should be taught by engaging learners in activities where they have to put together at least 3 sentences that speak to a common idea; and,
- vii. Use the 5W and H (who, what, where, why, when and how) strategy to assist learners to formulate questions and answer them.

### **c. Language Usage**

The skills that were assessed were the identification and use of:

- i) adjectives;
- ii) conjunctions (and, but); and,
- iii) present and past tenses.

Generally, learners' performance in this component was at the average of 48%, although many learners performed better in identifying nouns and had a fair understanding of the various tenses. However, they seemed to struggle to understand instructions on how to use/identify conjunctions, adjectives and changing sentences from the past to the present tense.

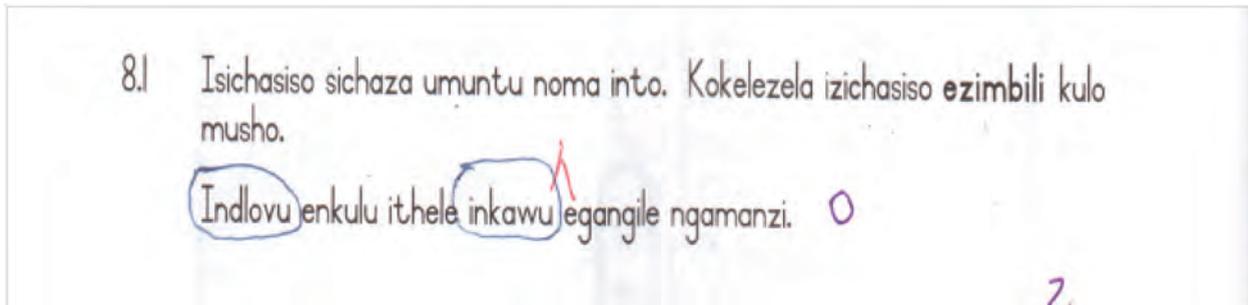
At Grade 3 level, learners are expected to identify and use adjectives, conjunctions and nouns correctly, and are also expected to use present, future and past tenses correctly.

In this assessment learners were given sentences to circle:

- two adjectives in each sentence;
- a conjunction in each sentence; and,
- write sentences from past tense to present tense and present tense to past tense.

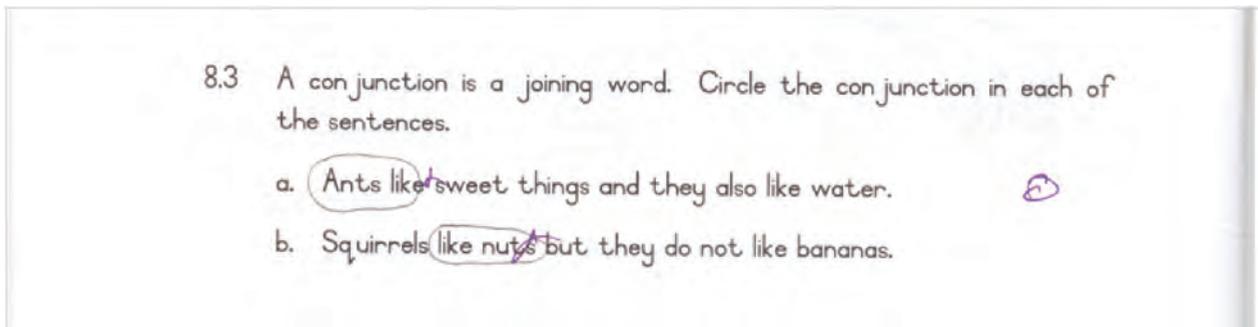
Many learners circled nouns instead of adjectives whereas, others neither an adjective nor a conjunction.

In this specimen learners were given a sentence and expected to circle the correct adjectives.



The example above illustrates that the learner demonstrated an understanding of the instruction by circling two things, however, instead of circling 2 adjectives, he/she circled 2 nouns. This suggests that the learner could not differentiate between adjectives and nouns.

In the specimen below, learners were given two sentences and were expected to circle the correct conjunctions in both sentences.



In the example above, the learner circled words at the beginning of the sentences showing that he/she lacks understanding that a conjunction joins two sentences also circled (randomly) incorrect words instead of circling conjunctions.

In this specimen learners were given two sentences written in the past tense and they were instructed to write the sentences in the present tense.

9. Rewrite the sentences in the ...

9.1 present tense.  
The monkeys climbed the tall banana trees.  
The monkeys will climbed the tall  
banana trees ✗ 0

9.2 present tense.  
The hungry lion roared at the tiny mouse.  
The hungry lion will roar at the tiny  
mouse ✗ 0

Grade 3 English HL Test 7

4

According to this example, in 9.1 the learner did not change the verb which is the rule applied when changing tenses. However, this learner wrote “will” which is an auxiliary verb used in future tense, which means that the learner is aware of the different tenses but did not write the correct tense as required in the questions.

In the following specimen like the previous one, learners were given two sentences in the present tense and they were expected to write the sentences in the past tense.

9.3 verlede tyd.

Die vinnige luiperd jaag die haas.

Die vinnige ~~met~~ luiperd ge jaag

die haas.

9.4 verlede tyd.

Die olifant loop deur die rivier.

Die olifant het geloop deur die

rivier.

In this example, the learner was supposed to write the sentences in the past tense, the learner changed the second sentence to past tense however, the learner's word order is incorrect, e.g. 'het' and 'ge' should not follow each other in a sentence according to the agreement rule in Afrikaans. This indicates that the learner has not yet learnt the word order when writing sentences in various tenses and correct grammar skills to express him/herself in the language.

It is recommended that teachers:

- i. discuss the use of conjunctions and adjectives in different reading texts;
- ii. discuss the use of tenses in reading texts during shared reading and group guided reading; and,
- iii. use DBE workbooks, e.g. Book 2 Term 4.

#### d. Reading and Comprehension

The skill assessed was discussing cause and effect relations; answering higher order questions based on the text read, e.g. by giving an opinion.

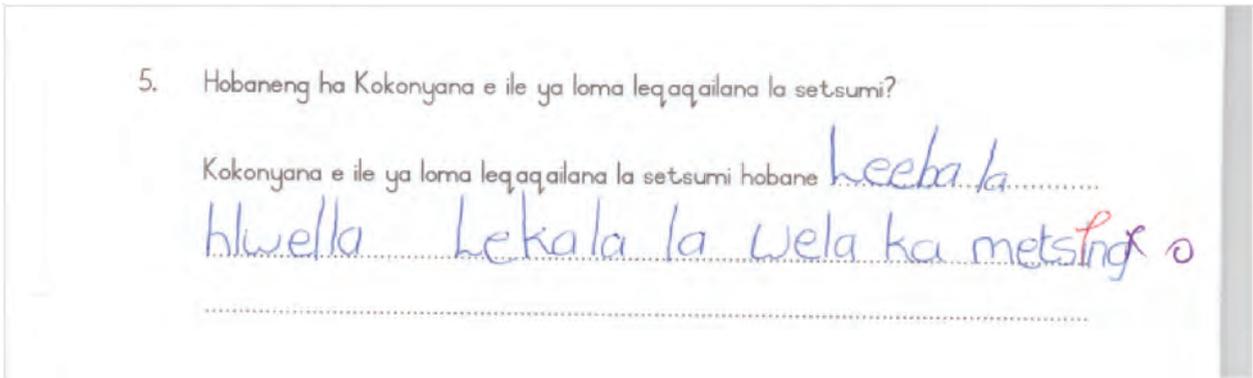
Generally, learner performance in this component was around the average of 62%. Learners performed fairly well in answering most questions based on the text. However, learners encountered difficulty in answering higher order questions based on the text read, namely:

- expressing an opinion (e.g. In your opinion why do you think Ant and Dove became friends?); and,
- responding to questions related to cause and effect relations (e.g. Why did Ant bite the hunter's ankle?).

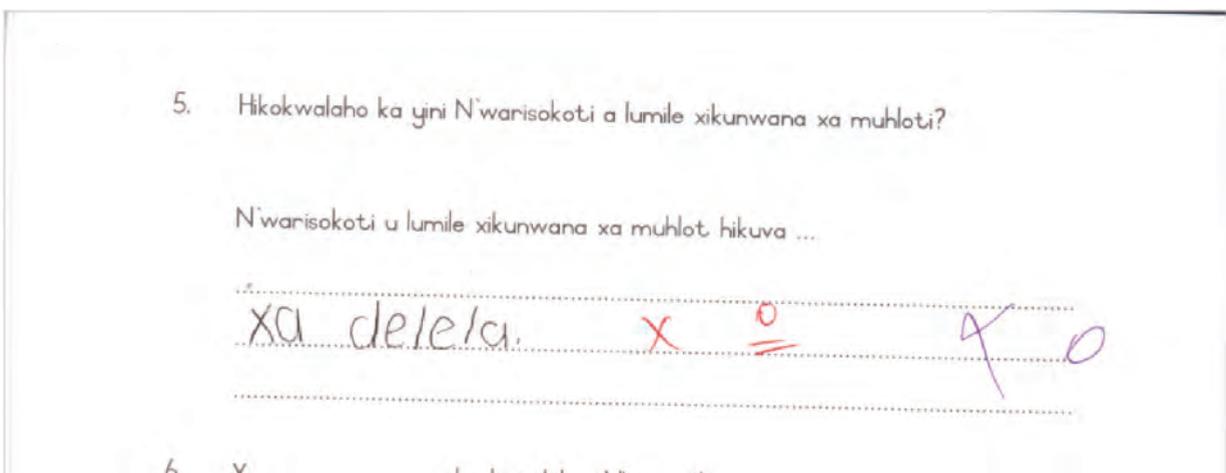
At Grade 3 level, learners are expected to discuss cause and effect relations by giving reasons to support their answers, and respond to closed and open ended questions.

In this assessment, although some learners expressed themselves well in answering the questions related to the story and giving their own opinions, most learners were unable to express their opinions correctly. They rewrote the statements as they were in the question paper. Some learners could not give reasons related to the question. Other learners rewrote sentences from the passage.

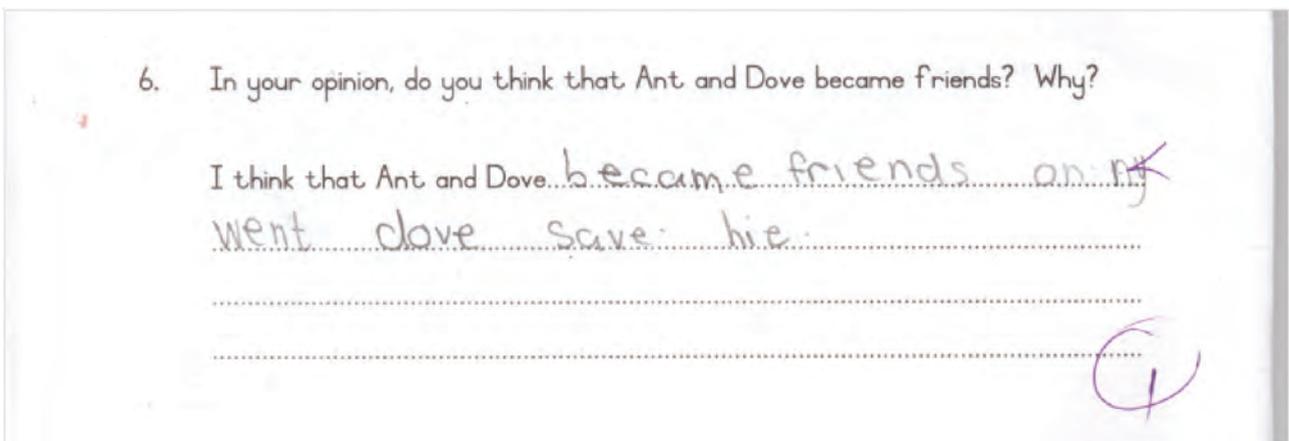
The specimens show learner responses to the question on cause and effect. Learners were given a question and were expected to give a reason in relation to the story. Learners were expected to write their answer in the spaces provided.



This is an example of the learners' response where he/she was expected to give a reason to a question related to the story. Learners were given a text to read, and were asked to complete a sentence by stating the reason e.g. "why did the Ant bite the hunter". The learner did not write the correct answer based on the story but the learner took an extract from the passage. Learners might not have engaged well with the text, there is evidence that critical thinking skills are lacking.



In the example above, the learner did not provide a reason based on the story instead the learner wrote 'xa delela' which means 'it is naughty'. The learner shows an ability to reason but the learner did not relate his/her reason in response to the text.



The specimen shows the learner's response to the question related to expressing an opinion on a text that is read. The learner did not give a correct reason using because, but instead wrote a sentence which included the word "save" which

is part of the correct answer. This shows that the learner had an idea of what the answer should be but had difficulty in expressing him/herself in writing.

It is recommended that teachers:

- i. expose learners to high order comprehension questions (open ended questions) such as:
  - Giving an opinion on text that is read e.g. “Why do you think the story ended this way? Give a reason for your answer.”; and,
  - Respond to cause and effect relations by responding to questions such as” Why did it run away? “
- ii. discuss events in the story during reading sessions, e.g. problems encountered by various characters as well as expected solutions; and,
- iii. practise open-ended questions and sequencing events in the right order with learners.

## 8. CONCLUSION

The key findings and proposed interventions contained in this report are aimed at the teacher for the day-to-day implementation of the curriculum in the classroom. The question samples (learner specimens) were selected strategically in order to give an overview of how learners responded to the test items in Home Language and Mathematics and how teaching and learning can be enhanced to improve learner performance and understanding of the curriculum. The qualitative analysis of Mathematics results reveal that Foundation Phase learners generally perform well in questions that do not require higher order reasoning, for example identifying 2-D and 3-D shapes and objects. Word problems pose the greatest challenge to the majority of learners. This report attempts to assist teachers to develop remedial programmes that address these shortcomings in learners’ skills and knowledge.

This report has also revealed a significant improvement in reading and comprehension skills although many learners still perform poorly when answering open-ended questions. Reading and viewing skills are known by the majority of learners. In all the grades learners were able to identify the phonics but many still perform poorly in spelling and in using words to write meaningful sentences and paragraphs.

It is recommended that teachers implement the proposed interventions and, better still, to combine these proposed interventions with their own experiences based on the day-to-day experiences and challenges they face in the classroom.

This report should not be treated in isolation and it is not intended to remedy all the problems that are experienced in the classroom. The diverse dynamics that teachers experience in the classroom are recognised and teachers are encouraged to sharpen their creativity to respond to individual and unique challenges with regard to curriculum implementation.

**PART B:  
FRAMEWORKS FOR  
IMPROVEMENT**



## Foundation Phase Progress and Improvement in ANA results in Grades 1-3

There has been an overall improvement in the ANA results in Grades 1 to 3. Provincial trends from 2012 to 2014 have shown that the ANA targets set in Action Plan 2014 Towards Schooling 2025 have been exceeded. Tables 1-3 show a comparative overview of ANA results in both Home Languages and Mathematics in Grades 1-3.

Table 1: Home Languages National Percentage			
Grade	2012	2013	2014
1	58%	61%	63%
2	55%	57%	61%
3	52%	51%	56%

Table 1: Mathematics National Percentage			
Grade	2012	2013	2014
1	68%	60%	68%
2	57%	59%	62%
3	41%	53%	56%

Factors that have impacted on the improved ANA results in Grades 1-3 since 2012 are:

- Implementation of the Curriculum and Assessment Policy Statement (CAPS) in Grades R-3 from 2012;
- The provisioning of DBE Workbooks and the availability of other print and digital teaching curriculum resources in Home Languages and Mathematics in all the official languages has encouraged schools to offer mother tongue instruction in the early grades. Hence, teaching across the curriculum in the Language of Learning and Teaching (LoLT) has been enhanced.
- The utilization of ANA exemplars as practice tests and consolidation activities has exposed teachers to a variety of test items that can be used to assess key skills and concepts that are grade appropriate. Learners are also able to demonstrate in many ways their understanding and knowledge of key concepts and skills which are building blocks for the development of more complex acquisition of language and mathematics skills beyond Grade 3.
- The implementation of provincial control (quarterly) of ANA type tests has impacted on ANA results.
- The monitoring of curriculum coverage and strategies to standardize School Based Assessment (SBA) at provincial, district and school level has impacted on improved ANA results in all provinces.

The diagnostic analysis shows that learners performed better in these test items in Mathematics in 2014 as compared to 2013 in Grades 1-3. Improved performance was noted on these items namely:

Numbers operations and relationships	<ul style="list-style-type: none"> <li>• Number sense development (counting skills, recognition of number symbols and names)</li> <li>• Number concepts: halving and doubling, Knowledge of computational skills (basic calculations)</li> <li>• Understanding of routine word problem types</li> </ul>
Patterns	<ul style="list-style-type: none"> <li>• Geometric patterns</li> </ul>
Shape and Space	<ul style="list-style-type: none"> <li>• Recognition of 2 D shapes and 3 D objects and the concept of symmetry</li> </ul>
Measurement	<ul style="list-style-type: none"> <li>• Concept of time, length, mass and capacity</li> </ul>
Data Handling	<ul style="list-style-type: none"> <li>• Interpret data from pictographs and bar graphs</li> </ul>

The diagnostic analysis shows that learners performed better in these test items in Home Languages in 2014 as compared to 2013 in Grades 1-3. Improved performance was noted in these items namely:

Reading and Comprehension)	<ul style="list-style-type: none"> <li>• Read and make meaning of narrative texts, graphical texts e.g. graphs and tables</li> <li>• Make meaning of advertisements</li> <li>• Improved responses to high order questions related to sequence events in correct order, open and closed type of questions and multiple choice type of questions.</li> </ul>
Phonics	<ul style="list-style-type: none"> <li>• Improved knowledge of phonics, vocabulary and spelling skills</li> </ul>
Language Usage	<ul style="list-style-type: none"> <li>• Improvement in grammar skills (use of punctuation, tenses, prepositions, parts of speech)</li> </ul>
Writing	<ul style="list-style-type: none"> <li>• Improvement in the composition of a written text on a picture or a given topic. Improvement in sentence construction skills (capital letters, full stops , grammar and spelling)</li> </ul>

FOUNDATION PHASE GRADES 1 TO 3 MATHEMATICS					
NUMBERS, OPERATIONS AND RELATIONSHIPS					
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY			
		DBE	PROVINCE	DISTRICT	SCHOOL
<p>Money</p> <p>Grade 1:</p> <ul style="list-style-type: none"> <li>Calculations e.g. R10-R6=</li> <li>Word sums e.g. I bought a box of chocolates for R 4. How much change will I get if I pay with a R 10 note?</li> </ul> <p>Grade 2</p> <ul style="list-style-type: none"> <li>Calculations e.g. I have R 35. I spend R12, What is my change?</li> </ul>	<ul style="list-style-type: none"> <li>Money was identified as a weak area in the 2013 ANA.</li> </ul> <p>Teachers should:</p> <ul style="list-style-type: none"> <li>Read prices and amounts in rands and cents;</li> <li>Practice with learners to do calculations with money</li> <li>Practice with learners to do conversions from cents to rands and rands to cents</li> <li>Practice with learners to do word problems and calculate change</li> <li><b>Reinforce Data</b> Handling e.g. interpret pictographs with coins and rands</li> </ul>	<ul style="list-style-type: none"> <li>Distribute Workbooks and make ANA Exemplars available,</li> <li>Conduct workshops on Japanese International Co-operative Agency (JICA) problem solving materials.</li> <li>Extend the JICA project to all provinces.</li> <li>Make ANA a standing agenda item for HEDCOM, CEM and TD&amp;CM.</li> </ul>	<ul style="list-style-type: none"> <li>Provide schools with CAPS documents</li> <li>Conduct Mathematics content workshops</li> <li>Provide ANA exemplars</li> <li>Set quarterly control assessments</li> <li>Provide Mathematics kits</li> <li>Monitor utilization of Workbooks</li> <li>Set ANA provincial targets and develop ANA intervention plan.</li> <li>Submit quarterly provincial ANA improvement plan.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor the utilization of the DBE Workbooks.</li> <li>Mediate ANA exemplars and framework.</li> <li>Monitor curriculum coverage.</li> <li>Mediate ANA diagnostic report and Framework for Improvement.</li> <li>Analyse provincial ANA tests and plan appropriate interventions.</li> <li>Monitor and report quarterly on the ANA improvement plan.</li> </ul>	<ul style="list-style-type: none"> <li>Enhance the teaching of Mathematics using CAPS and the Workbooks</li> <li>Plan and teach Mathematics lessons in Grades 1 to 3 for at least 1,5 hours per day</li> <li>Mathematics lesson to include: <ul style="list-style-type: none"> <li>Mental Mathematics</li> <li>Counting and concept development</li> <li>Problem solving</li> <li>Written activities</li> </ul> </li> <li>At least 3 word problems should be done weekly in Grades 1-3.</li> <li>Use the DBE Workbook activities to consolidate concepts and skills</li> <li>Use previous ANA exemplars to practice ANA test items.</li> </ul>

FOUNDATION PHASE GRADES 1 TO 3 MATHEMATICS					
NUMBERS, OPERATIONS AND RELATIONSHIPS					
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY			
		DBE	PROVINCE	DISTRICT	SCHOOL
<p>Grade 3:</p> <ul style="list-style-type: none"> <li>• Conversions e.g. R3, 50 = ___cents, 250 cents = R___</li> <li>• Reading prices and amounts in Rands and cents e.g. R 13, 75</li> <li>• Calculations with Rands and cents e.g. R 50, 00- R 13, 50 =and R 25, 00 + R 13, 50</li> </ul>	<p>Do Workbook activities and use previous ANA exemplars</p>	<p>Make previous ANA papers and exemplars available</p>	<p>Monitor use of Workbooks and ANA exemplars</p>	<p>Monitor curriculum coverage and provide school based support</p>	<ul style="list-style-type: none"> <li>• Teach money concepts prescribed in CAPS for Grades 1-3</li> <li>• Use ANA exemplars for Word problems (calculation of change, shopping list etc.)</li> <li>• Use DBE Workbook activities and ANA exemplars</li> </ul>
<p>Place value:</p> <ul style="list-style-type: none"> <li>• Recognise the place value of 2 and 3 numbers</li> <li>• Decompose 2 and 3 digit numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Place value was identified as a weak area in the 2013 ANA</li> <li>• Practice with learners to use building up and breaking down method of 2 and 3 digit numbers.</li> </ul>	<p>Make previous ANA papers and exemplars available</p>	<p>Monitor use of Workbooks and ANA exemplars</p>	<p>Monitor use of Workbooks and ANA exemplars</p>	<ul style="list-style-type: none"> <li>• Teach place value according to the content prescribed in CAPS for Grades 1-3</li> <li>• Use ANA exemplars</li> </ul>

FOUNDATION PHASE GRADES 1 TO 3 MATHEMATICS

NUMBERS, OPERATIONS AND RELATIONSHIPS

IDENTIFIED WEAKNESSES

REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE

RESPONSIBILITY

DBE

PROVINCE

DISTRICT

SCHOOL

<p>Ordering numbers of 2 and 3 digit whole numbers (biggest to smallest)</p>	<p>Read and order whole numbers of (1/2/3 digit numbers) from biggest to smallest or smallest to biggest</p>	<p>Make previous ANA papers and exemplars available.</p>	<p>Monitor curriculum coverage and provide school based support</p>	<p>Teach number concepts according to the number range prescribed for Grades 1 to 3 in CAPS.</p>
<p>Computational skills and number operations Grade 3:</p> <ul style="list-style-type: none"> <li>Addition of 3 digit numbers</li> <li>Subtraction 3 digit numbers</li> <li>Division e.g. <math>42 \div 3 =</math></li> <li>Grade 1 and 2</li> <li>Halving even numbers</li> <li>Open number sentences e.g. <math>34 + \_ = 48</math></li> </ul>	<ul style="list-style-type: none"> <li>Practice with learners to use adding on and breaking down methods for calculations with 2 and 3 digit numbers.</li> <li>Practice with learners to complete number sentences e.g. <math>5 + \_ = 12</math>; <math>10 - \_ = 3</math></li> <li>Halving of 2 and 4 digit numbers</li> </ul>	<p>Monitor use of Workbooks and ANA exemplars</p>	<p>Monitor curriculum coverage and provide school based support</p>	<ul style="list-style-type: none"> <li>Teach the number operations according to the content prescribed in CAPS.</li> <li>Do at least 2 to 3 calculations based on number operations.</li> <li>In Grades 2 to 3 teach adding on, building up and breaking down techniques to do calculations with 2 and 3 digit numbers</li> </ul>
<p>Fractions Grade 2:</p> <ul style="list-style-type: none"> <li>Read fraction words e.g. "fifth"</li> <li>Recognize parts of a whole e.g. quarters, two fifths</li> </ul>	<ul style="list-style-type: none"> <li>Fractions was identified a weak area in 2013.</li> <li>Practice practical and concrete activities with learners to demonstrate parts of a whole e.g. halves, quarters, eighths, fifths etc. using real objects</li> <li>Teach fraction names e.g. quarter etc. as in CAPS</li> </ul>	<p>Monitor use of Workbooks and ANA exemplars</p>	<p>Monitor curriculum coverage and provide school based support</p> <p>Do workshops on the teaching of fractions and problem solving strategies.</p>	<p>Teach fraction concepts prescribed in CAPS for Grades 1-3 using practical and concrete activities. Use DBE Workbook activities and previous ANA exemplars.</p>
<p>Word Problems Grade 1: Subtraction (change) Repeated addition Division (sharing) Grade 3: Division (sharing) Grade 2: Division (grouping), repeated addition</p>	<ul style="list-style-type: none"> <li>Word problems were identified as a weak area in 2013.</li> <li>Teach problem solving strategies:</li> <li>Read the problem</li> <li>Underline the numbers in the problem</li> <li>Underline the question</li> <li>Counting strategies, mental Mathematics (bonds, tables etc.), number line, building up and breaking down</li> <li>Learners should write number sentences more often and work out the answer.</li> </ul>	<p>Make previous ANA papers and exemplars available</p>	<p>Monitor curriculum coverage and provide school based support</p>	<p>The word problems prescribed in CAPS (change, combine, compare, repeated addition, division with sharing, grouping etc.) Teach learners a variety of problem solving techniques namely:</p> <ul style="list-style-type: none"> <li>Mental calculations</li> <li>Number lines</li> <li>Building-up and breaking-down</li> </ul>

FOUNDATION PHASE GRADES 1-3: MATHEMATICS				
PATTERNS				
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY		
		DBE	PROVINCE	DISTRICT
Grade 2: Counting in multiples of 3 and 4s (forward and backwards)	<ul style="list-style-type: none"> <li>Learners should count forwards and backwards in 2s, 3s, 4s, 5s, 10s from a given number</li> <li>Assist learners to recognise the number pattern in a sequence as per the number range prescribed in CAPS.</li> </ul>	Make previous ANA papers and exemplars available.	Monitor use of Workbooks and ANA exemplars	Monitor curriculum coverage and provide school based support.
				Teach number patterns in CAPS in accordance with the number range prescribed for Grades 1 to 3. Teach patterns beyond 100 in Grades 1 to 3.

FOUNDATION PHASE GRADES 1-3: MATHEMATICS				
MEASUREMENT				
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY		
		DBE	PROVINCE	DISTRICT
SCHOOL				
<p><b>Grade 3:</b> Time (analogue and digital conversions)</p> <p><b>Grade 2:</b> Read time on an analogue clock</p> <p><b>Grade 1:</b> Days of the week</p>	<ul style="list-style-type: none"> <li>Time was identified as a weak area in 2013</li> </ul> <p>Teachers are encouraged to:</p> <ul style="list-style-type: none"> <li>use a calendar for names of the days, months etc.</li> <li>assist learners to read and tell analogue and digital clock (time).</li> <li>assist learners to convert digital time to analogue e.g. 5:15 is quarter past 5.</li> </ul>	<p>Make previous ANA papers and exemplars available.</p>	<p>Monitor use of Workbooks and ANA exemplars</p>	<p>Monitor curriculum coverage and provide school based support.</p>
<ul style="list-style-type: none"> <li>Teach at least 2 lessons on Measurement weekly.</li> <li>Teach Time concepts prescribed in CAPS namely Calendar (days, months), conversions of days into weeks etc.</li> <li>Teach analogue and digital time and conversions in Grade 3.</li> <li>Use previous ANA exemplars for data handling.</li> </ul>				

FOUNDATION PHASE GRADES 1-3: MATHEMATICS				
SHAPE AND SPACE				
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY		
		DBE	PROVINCE	DISTRICT
Grade 3: Position and direction	<p>Practical activities to demonstrate position e.g. left, right, up etc.</p> <p>Follow directions and draw a map from 1 place to another</p>	Make previous ANA papers and exemplars available	Monitor use of Workbooks and ANA exemplars	<p>Monitor curriculum coverage and provide school based support.</p> <p>Teach at least 2 lessons on Shape and Space per week.</p> <p>Teach recognition of 2 D shapes and 3 D objects, symmetry, position and direction.</p>

FOUNDATION PHASE GRADES 1-3: MATHEMATICS				
DATA HANDLING				
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY		
		DBE	PROVINCE	DISTRICT
Interpretation of pictographs and bar graphs (comparisons) e.g. who had the most, least, how many more than	<ul style="list-style-type: none"> <li>Data handling: was identified as a weak area in 2015.</li> <li>Read and interpret information from, table, pictograph, bar graph etc.</li> </ul>	Make previous ANA papers and exemplars available	Monitor use of Workbooks and ANA exemplars	<p>Monitor curriculum coverage and provide school based support.</p> <p>Teach at least one lesson on data handling per week.</p> <p>Integrate data handling activities using pictographs, bar graphs based on money, time, capacity, mass, length etc.</p>

FOUNDATION PHASE GRADES 1 TO 3		HOME LANGUAGES			
READING AND COMPREHENSION					
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY			
		DBE	PROVINCE	DISTRICT	SCHOOL
<p><b>Grades 2 and 3:</b> Responding to high order questions related to data in tables and graphs (making meaning of data and making inferences)</p> <p><b>Grades 1 and 2:</b> Sequence events in the correct order.</p> <p><b>Grade 2:</b> Responding to high order questions e.g. express an opinion, cause and effect</p>	<ul style="list-style-type: none"> <li>Utilise a variety of comprehension texts (narrative texts, pictographs, bar graphs, bus timetable, advertisement etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Enhance Reading Promotion and Library and Information Services interventions.</li> <li>Advocacy for Drop All and Read programme</li> <li>Advocacy for the utilization of reading norms</li> <li>Implementation of the Early Grade Reading Assessment (EGRA)</li> <li>Support and promote the development of quality reading resources in African languages.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor distribution and utilization of Workbooks.</li> <li>Implement quarterly controlled ANA type assessments.</li> <li>Resuscitate Drop All and Read programme.</li> <li>Implement EGRA in Grades 1-3.</li> <li>Implement reading norms.</li> <li>Provisioning of reading resources (Big Books, Graded Readers, Phonics programmes)</li> <li>Conduct reading workshops focusing on reading methodologies.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor the utilization of Workbooks</li> <li>Mediate the use of ANA exemplars</li> <li>Conduct school based reading workshops</li> <li>Monitor the utilization of reading resources</li> <li>Monitor curriculum coverage as per CAPS</li> </ul>	<ul style="list-style-type: none"> <li>Plan structured reading lessons for at least 1 hour every day focusing on: <ul style="list-style-type: none"> <li>Whole Class Shared Reading</li> <li>Group Guided Reading sessions (at least 2 groups everyday)</li> </ul> </li> <li>Follow up reading activities e.g. listening and speaking (role-play, miming, use puppets etc.), comprehension (cloze procedure, sequencing, high order questions)</li> <li>Integrated writing activities (make own story book, a poster etc.)</li> <li>Use DBE Workbook and previous ANA exemplars</li> <li>Reading norms</li> </ul> <p><b>Grade 1:</b> Read at least 1 book per week</p> <p><b>Grade 2:</b> Read 1-2 books per week</p> <p><b>Grade 3:</b> 2-3 books per week</p>

FOUNDATION PHASE GRADES 1 TO 3					HOME LANGUAGES				
WRITING									
IDENTIFIED WEAKNESSES		REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE		RESPONSIBILITY					
				DBE	PROVINCE	DISTRICT	SCHOOL		
<b>Grade 3:</b> <ul style="list-style-type: none"> <li>• Write 8 sentences on the topic "Friends"</li> <li>• Sentence construction</li> <li>• Lack of content and coherent ideas</li> <li>• Punctuation</li> <li>• Spelling</li> </ul> <b>Grade 2:</b> Write 5-8 sentences on a picture		Use reading texts to develop writing skills e.g. <ul style="list-style-type: none"> <li>• Use pictures from reading texts for writing</li> <li>• Use writing frames based on reading texts</li> <li>• Whole class shared writing activities (write about a picture, characters in a story, new beginning or ending)</li> <li>• Write a new title and cover for a book.</li> <li>• Write dialogues, poems, lists, messages, invitations etc.</li> </ul>		<ul style="list-style-type: none"> <li>• Make previous ANA papers and exemplars available</li> <li>• Advocacy for reading and writing norms.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor distribution and utilization of Workbooks.</li> <li>• Implement reading and writing norms.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor the utilization of Workbooks.</li> <li>• Mediate the use of ANA exemplars.</li> <li>• Monitor curriculum coverage as per CAPS and writing norms.</li> </ul>	<b>Written recording:</b> <b>Grade 1:</b> at least 1 writing activity per week <b>Grade 2:</b> 2-3 writing activities per week <b>Grade 3:</b> 3-4 writing activities per week <b>Writing activities</b> <ul style="list-style-type: none"> <li>• Comprehension activities</li> <li>• Phonic activities (word building and sentence construction)</li> <li>• Spelling and dictation</li> <li>• Creative writing</li> </ul>		

FOUNDATION PHASE GRADES 1 TO 3		HOME LANGUAGES			
PHONICS					
IDENTIFIED WEAKNESSES	REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE	RESPONSIBILITY			
		DBE	PROVINCE	DISTRICT	SCHOOL
<p><b>Grade 1:</b> Recognition of vowel blends</p> <p><b>Grade 2:</b> Recognition of vowel and consonant digraphs</p>	<ul style="list-style-type: none"> <li>Teach phonics as prescribed in CAPS (initial sounds, vowel and consonant blends and vowel and consonant digraphs) and</li> <li>Word building and sentence activities with phonic words.</li> </ul>	<ul style="list-style-type: none"> <li>Make previous ANA papers and exemplars available</li> <li>Provide Workbooks</li> <li>Advocacy for Spelling Bee Competitions</li> </ul>	<ul style="list-style-type: none"> <li>Provide ANA frameworks and ANA exemplars.</li> <li>Implement Spelling Bee Competitions in Grade 3.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor distribution and utilization of Workbooks</li> <li>Monitor curriculum coverage</li> </ul>	<ul style="list-style-type: none"> <li>Teach phonics Programme as prescribed in CAPS.</li> <li>Utilise Workbooks and previous ANA exemplars</li> <li>Word building and sentence activities with phonic words</li> <li>Spelling and dictation activities</li> <li>Word games and puzzles</li> <li>Dictionary skills</li> </ul>

FOUNDATION PHASE GRADES 1 TO 3					HOME LANGUAGES						
LANGUAGE USAGE											
IDENTIFIED WEAKNESSES		REMEDIAL MEASURES TO IMPROVE CLASSROOM PRACTICE		RESPONSIBILITY		PROVINCE		DISTRICT		SCHOOL	
				DBE							
<p><b>Grade 3: Past and present tense:</b> changing the verb in the past tense e.g. The monkeys <b>climbed</b> the tree.</p> <p>Changing verb in the present tense e.g. The lion <b>roars</b> at the mouse.</p> <p><b>Grade 3: Use of conjunctions</b> (and, but, because, if)</p> <p><b>Grade 2:</b> Use of present and past tense</p> <p><b>Grade 1-3</b></p> <p>Punctuation: use of comma, capital letters and question mark</p>		<p>Teaching of grammar skills:</p> <ul style="list-style-type: none"> <li>• Punctuation</li> <li>• Tenses</li> <li>• Parts of speech</li> <li>• Conjunctions</li> </ul>		<p>Make previous ANA papers and exemplars available</p>		<p>Provide ANA frameworks and ANA exemplars.</p>		<ul style="list-style-type: none"> <li>• Monitor distribution and utilization of Workbooks</li> <li>• Monitor curriculum coverage</li> </ul>		<ul style="list-style-type: none"> <li>• Teach grammar skills as prescribed in CAPS in Grades 1-3</li> <li>• Use DBE Workbooks and previous ANA exemplars</li> </ul>	



**PART C:  
DIAGNOSTIC ANALYSIS AT  
SCHOOL/DISTRICT LEVELS**



Assessment provides very useful information that must be used optimally to inform effective teaching and promote purposeful learning.

#### Purpose of assessment and analysis

The primary purpose of assessment should be to improve learning. Schools and districts must be able to do fairly detailed diagnostic analysis of the performance of their learners or schools to identify areas of strength and challenges. After administering a test the educator can do own diagnostic analysis to identify:-

- a) The overall level of performance of the class or school;
- b) Individual learners or schools that need special intervention;
- c) Groups of learners or schools who need special support and
- d) Subject content areas that require priority attention in teaching and learning.

#### Use of basic statistics for analysis

Basic statistics that can be used to summarize the data from a test include the following:-

- i. Mean (often called average) – calculated by adding the scores of all the learners and dividing the sum by the number of learners. The mean is one score that is used to summarize all the scores obtained by learners in a test. A high mean score represents high performance and a low mean score represents low performance. However, the mean score does not indicate how learner scores are spread from the highest to the lowest and thus is not adequate for identifying individuals who either over-perform or under-perform.
- ii. Median (or middle score) – calculated by first arranging the scores from the highest to the lowest and then determining the score that divides the data into two equal halves. Half of the learners who wrote a test will have scores above the median score and the other half will have scores below the median score. If the number of learners is an odd number the median will be a real score that sits half-way between the extreme scores, e.g. 76, 57, 49, 45 and 39 have 49 as the median score. However, if the number of learners is an even number the median will be a score that may not belong to any of the learners calculated by adding the two adjacent scores that are half-way between the extremes and dividing their sum by two (2), e.g. the median of 76, 57, 49 and 45 is calculated by adding 57 and 49 and dividing the sum by two –  $(57+49)/2=106/2=52$ . As can be observed, 52 is not one of the four given scores but it is the median score that sits half-way between the extreme scores, viz. 76 and 45.

The median does not show the extreme scores, i.e. the highest and the lowest scores.

- iii. Maximum is the highest score obtained by a learner in a test.
- iv. Minimum is the lowest score obtained by a learner in a test.
- v. Range is the difference between the maximum and the minimum scores. The larger the range, the more diverse the ability levels of the test takers while a relatively small range indicates that the class of test takers has a relatively homogeneous ability profile.

## Available tools for data analysis

Tools that are available for analysis of data include pre-programmed computer software such as the SA-SAMS in schools, the Microsoft Excel programme and even hand calculators. The Microsoft Excel programme, which comes with almost every computer software, is a powerful and reasonably easy-to-use tool for performing item-level diagnostic analysis of test data. An Excel spreadsheet is arranged in columns and rows.

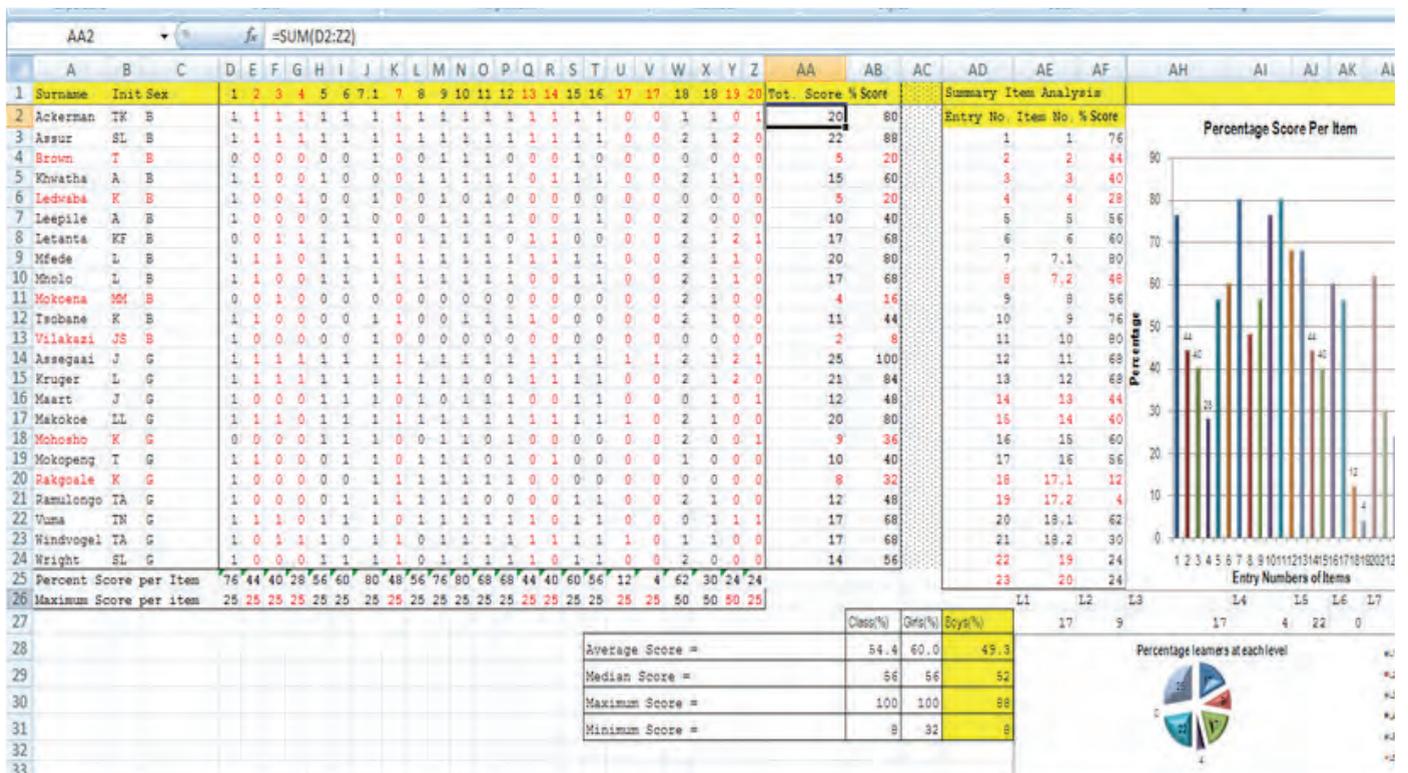
## Preparing data for analysis on Excel

To prepare for analysis of data from an administered test, do the following:-

1. Mark the test and write the scores obtained by each learner next to the relevant question/item number in their books or scripts;
2. Enter learner names and other particulars (e.g. the gender of each learner) in the rows, one after another;
3. Enter test item numbers in the columns, one after another;
4. Enter the score of each learner on each item in the correct cell (i.e. where the relevant column and row meet);
5. Check if all data has been entered correctly (i.e. do thorough data cleaning);
6. Use correct formulae to calculate the statistics that you want to use to summarize and analyze the test data; and,
7. Interpret the statistics in terms of what they suggest about performance of individuals in your class, performance of identifiable groups of learners (e.g. males and females) and performance in specific content areas.

An example of test data (Grade 3 Mathematics) in an Excel spreadsheet is shown below. The surnames of learners, their initials and sex were entered in Rows 2 to 24, meaning there were 23 learners who wrote the test in this class. The test item/question numbers appear in Columns D to Z, a total of 23 items.

Example: Data Analysis on Excel Spreadsheet



Excel makes available useful formulae to calculate basic statistics. To calculate any of the common statistics like the ones mentioned above, place the cursor in the relevant cell, enter the “=” sign followed by the first letter of the desired statistic. A menu of possible options appears and you must select the one that you want. For instance, in the spreadsheet above, to calculate the total score for the first learner in Row 2, Ackerman, TK, enter the “=” sign at the end of all the items in the test, Column AA, Cell AA2 as highlighted in the spreadsheet. Select “Sum” from the Menu, open the bracket, write D2 as the first cell with an item score, insert a colon (:) followed by the last cell with an item score for this learner, close the bracket and press “Enter”. Excel calculates the sum of all the item scores for Ackerman from D2 to Z2 (fx =SUM(D2:Z2)) and places it in Cell AA2. You can repeat this process for each of the learners but you can also use the computer mouse to hold the bottom right corner of the rectangle around Cell AA2 (a cross will appear when you have placed the mouse correctly) and drag the formula from AA2 to AA24 (Little bit of practice will be required here!).

To calculate the percentage score obtained by each learner (i.e. individual learner performance) start with the first learner in Row 2, insert the “=” sign in Cell AB2, type in “AA2/25\*100” to divide the score in Cell AA2 by the total score (25 in this case) and use “\*” to multiply, followed by 100 for percentage (fx =AA2/25\*100). You can also follow the same procedure to calculate the percentage score for each learner or you can use the “dragging” technique outlined above.

To calculate the percentage scores obtained on each item (i.e. performance of all learners on each item), start by typing in the maximum scores per item as in Row 26. To calculate the total score obtained by learners in Item 1 (Column D) type in the “=” sign in Cell D25 followed by “Sum(D2:D24)/25\*100”. Excel calculates the sum of learner scores in Item 1, divides it by the Maximum score for this item (25) and multiplies that by 100 to convert the answer to a percentage (76% in this case). Do the same for each of the following items or use the “dragging” technique described above. Note that for items that have a different total (e.g. 50 instead of 25) you must use the relevant total.

## Analysis and interpretation

To summarize the data calculate the average percentage score, the median, maximum and minimum score percentages also, do this separately for boys and girls.

To make sense of the analysis it is recommended that different colour codes be used to mark specific observations (Excel provides a wide range of colour codes) and also represent findings with appropriate graphs to enhance visual impressions to aid decision-making on where to focus improvement interventions. For instance, the following observations can be made from the analysis that has been done in the example spreadsheet above:

### a) Overall performance

Overall performance in this class, measured through the mean score, was 54,4% which was relatively acceptable but still leaves room for improvement. The median score for the class was 56% which means that half of the learners obtained scores above 56% and another half obtained scores below 56%.

### b) Performance spread

Although the mean and median scores were both above 50%, learner scores ranged between eight percent (8%) and 100% which is a fairly wide range that suggests diverse abilities in this class. This implies that intervention strategies will have to be diversified in order to meet the learning needs of different learners, i.e. a one-size-fits-all improvement strategy will not work in this class.

### c) Individual learner differences in performance

Individual learners who were identified to be particularly at risk have been indicated with red colour coding. They obtained scores below 40% and thus fall within the “Not achieved” and “Elementary achievement” levels. They require special attention in terms of teaching strategies and learning opportunities.

### d) Group differences in performance

Analysis was done at two group levels, viz. boys and girls. All the summary statistics indicate that the boys performed much lower than the girls. Their mean score was 49,3% against the 60% mean score obtained by girls. The median score for the boys was four percent (4%) lower than that of the girls, viz. 52% as against 56%. Boys’ scores ranged between eight percent (8%) and 88% while the lowest score for the girls was 32% and the highest was 100%. Boys need intervention to bring them to the level required for them to perform or excel, without neglecting the girls.

### e) Performance in specific content areas

The percentage scores per item indicate the items and, therefore, the content areas where interventions must focus.

The analysis and diagnosis (from a to e above) identify

- i. Which learners need special attention; and,
- ii. Which content areas require special focus.

The analysis also suggests materials required to improve on the identified areas, the extra support the teacher will need (if necessary), whether additional time will be required, who else should be involved in the interventions and a host of other possibilities that the data analyzer may see fit in their context.

## Summary

In summary diagnostic analysis of assessment data must be conducted regularly at all levels of the system, particularly at the classroom level. The purpose of the analysis and diagnosis is to assess whether learning goals are being achieved by all learners so that every learner has ample opportunity to succeed. Different tools are available for conducting an analysis. In particular, the use of Excel spreadsheets generates simple but powerful statistics for summarizing assessment data. The excel programme also provides graphs and other visual representations of data that enhance the quality of reports and thus aid data interpretation. All analysis needs to be followed by a plan of action on how the identified weaknesses will be addressed. The plan of action will include appropriate improvement plans at classroom, school and district levels.





Published by the Department of Basic Education

222 Struben Street

Private Bag X895, Pretoria, 0001

Telephone: 012 357 3000 Fax: 012 323 0601

ISBN: 978-1-4315-2046-6

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