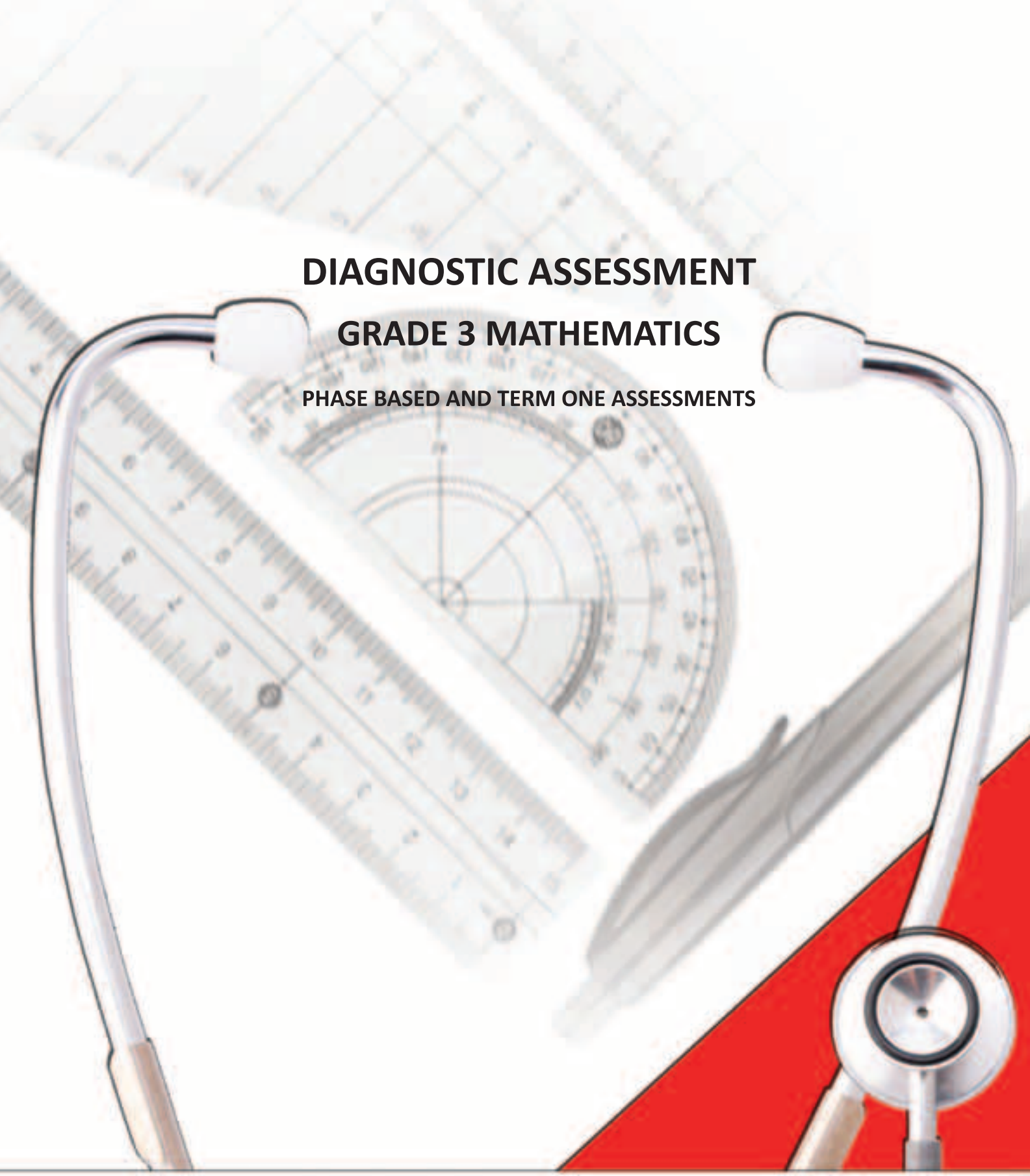
DIAGNOSTIC ASSESSMENT

GRADE 3 MATHEMATICS

PHASE BASED AND TERM ONE ASSESSMENTS



basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Read to Lead
A Reading Nation is a Leading Nation

2030 NDP

CONTENTS

PART ONE
UNDERSTANDING DIAGNOSTIC ASSESSMENTS

1. INTRODUCTION

The diagnostic resource bank aims to improve the relationship between assessment and classroom instruction. Assessment for learning is the process of gathering information about a learner's learning from a variety of sources, using a variety of approaches, or 'assessment tools', and interpreting that evidence to enable both the teacher and the learner to determine where the learner is in his or her learning; where the learner needs to go; and how best to get there. Teachers can adjust instructional strategies, resources, and environments effectively to help all learners achieve grade specific outcomes only if they have accurate and reliable information about what their learners know and are able to do at a given time.

When findings of assessment results are used to improve classroom practice, learner performance in general can improve. The diagnostic assessment tests/questions are designed to fulfil three purposes of assessment: namely to,

- reveal the misconceptions learners bring as prior knowledge to a class;
- measure the conceptual gains of a class as a whole; and
- identify concepts that are weak areas of understanding for the individual learner or as a class/grade.

A traditional multiple choice question (MCQ) provides little information about the learner's understanding of the concept/skill tested. The DBE has embarked on the design of diagnostic assessments using MCQs and assessment rubrics (for Languages) that are designed to assist teachers to diagnose learner misconceptions using the Pearson distractor rationale model as a basis for the classification of learner misconceptions. The diagnosis is also linked to the CAPS learning outcomes and skill acquisition.

MCQs designed for the diagnostic questions included in this package, include a breakdown of learners' understanding through the incorrect responses. All distractors are written not only to focus the attention of the teacher on those learners who are able to identify the correct response, but also to assist the teacher in identifying and understanding the misconceptions captured in the incorrect responses.

2. PURPOSE OF THE DIAGNOSTIC TEST ITEMS

This diagnostic resource should be used in conjunction with the requirements as stipulated in the CAPS document. It therefore does not replace the curriculum or the Annual Teaching Plan (ATP). The content therefore includes coverage from terms one to four. However, teachers may include questions from the resource bank into the ATP to facilitate assessment for learning.

These diagnostic assessments/questions are a phase based assessment. It also includes questions from four grades.

There are questions set on the critical skillsfrom the two earlier grades, the current grade and the next grade. The selection of questions from the four grades was done by looking at those concepts that were taught in the two earlier grades and were then extended in the next two grades as well. This would enable the teacher to identify at which specific grade the knowledge gap is.

The assessment guidelines per subject and grade have a detailed explanation of the topics/skills that are in this category. The spread of questions in the composite assessment is weighted to facilitate a phase based assessment and is broken down into the four composite grades as illustrated below:

Table 1: Percentage spread of questions (Languages and Mathematics)

Spread of Questions				
Weighting	±10%	±20%	±60%	±10%
Grade 3	1	2	3	4

The purpose of including the content of the other grades is to diagnose the skill/concept acquisition at the earlier grade, the current grade as well as to ascertain whether the learner is ready to make the transition to the next grade. Once the teacher has identified the gaps in the conceptual knowledge/ skill acquisition it would be easier to design targeted intervention programmes to bring learners on par for the transition to subsequent grades/ topics.

These diagnostic questions should be used as a tool for teachers to assess the strengths and weaknesses of learners for the purpose of designing teaching and learning strategies that will address the individual needs of the learner.

This assessment should not be used for grading a learner; as the intended purpose is to facilitate learning.

3. THE STRUCTURE OF THE DIAGNOSTIC TEST ITEMS

The diagnostic resource is divided into sections or questions. Questions are framed to direct teachers to possible misconceptions which could be as a result of an earlier grade knowledge deficit, erroneous conceptual knowledge or lack of comprehension. Each paper has a spread of the content areas and skills that span the entire phase and is extended into the next phase.

The texts/topics that have been selected for the Languages questions indicate the concept/skill progression from one grade to the next. The Mathematics questions are clustered according to content areas.

MCQs are constructed in such a way that each distractor provides information on whether the learner has mastered the skill/concept or whether there is a misconception. The distractors are graded according to four levels of understanding. Levels one, two and three enlighten the teacher about the nature of the misconception. Level four is the correct response, see Table 3 for further clarity.

Short questions are constructed to assess writing skills, mental computations, knowledge recall and application of rules or theorems.

Longer responses are constructed so that thought process, writing skills and consolidation and application of content areas and concepts across the subject are consolidated to arrive at the intended response.

4. PROPOSED USE OF THE MATHEMATICS ITEMS/QUESTIONS

4.1 Parts of the paper may be used independently at different intervals i.e. as a revision activity, formative task, etc.

4.2 Certain questions per topic or skill assessed may be selected from each section to compile a shorter testlet.

4.3 Questions may be selected according to levels of difficulty and can be used to support learning according to different cognitive demands or be used to support progressed learners. E.g. Levels of difficulty (easy, moderate & difficult)

Level of difficulty	**Blooms Taxonomy**	**Descriptors** (These are not limited to the ones listed below)
Easy	Remembering and Understanding	Complete, list, name, identify; recall, repeat, state, classify, re-group/group, rearrange/arrange, collect, categorise, select, recognize, supply, separate, isolate, draw etc.
Moderate	Application and Analysis	Predict, infer, interpret, understand, rewrite in a certain order, apply, demonstrate, illustrate, investigate, factorise, differentiate, similarities, solve etc.
Difficult	Evaluating and Creating	Analyse, evaluate, justify, provide a reason, criticize, judge, derive, combine, construct, synthesise; proof; etc.

4.4 Questions may also be used as a baseline assessment if administered prior to teaching a particular lesson. A teacher may want to establish whether learners meet the basic skills and knowledge acquired from the lower grades. This will assist the teacher to know learners' level of proficiency. A sample of questions for each grade is as follows:

4.5 Diagnostic questions can also be selected according to cognitive levels. A sample of questions for each grade is as follows:

4.6 The teacher should decide when, where and how the assessment may be used to enhance teaching and learning.

4.7 The questions may be used at the beginning of a phase to establish whether learners meet the conceptual knowledge for the new grade/phase.

5. DESIGN

The table below lists and describes the types of errors that correspond to each of the four levels of understanding encapsulated in the Mathematics MCQs. The distractor rationale as advocated by Pearson, 2004, forms the basis for diagnosing misconceptions. The taxonomies and cognitive levels as stipulated in CAPS (for Grades 4-9) are incorporated into the levels of understandings to provide the teacher with holistic information about the level of performance. The cognitive levels are now introduced in the Foundation Phase CAPS.

A more detailed unpacking of the nature of the misconceptions is addressed in the marking guidelines of each diagnostic question.

Table 3: Levels of understanding (thought process)

Levels of understanding	Descriptors for the levels of understanding.
Level 1	Learners demonstrate (i.e. a combination but may not be all of the following) that they: - have no understanding of the question or a conceptual misunderstanding; - are unfamiliar with operational procedures but can compute basic straight forward operations; - are not able to implement (un)related strategies to solve a problem; - excessive depend on the information that is provided in the question and is incorrectly used/duplicated; - utilise unrelated vocabulary to the question. - Etc.
Level 2	Learners demonstrate (i.e. a combination but may not be all of the following) that they: - can apply some computational ability that may not necessarily relate to the question or that demonstrate inadequate conceptual knowledge and flawed reasoning to support conclusions/ inferences; - can apply basic mathematical knowledge in straight forward situations; - demonstrate a limited knowledge of some concepts and some procedures; - Etc.
Level 3	Learners demonstrate (i.e. a combination but may not be all of the following) that they can: - apply some conceptual knowledge and ability to analyse but is inconsistent in computational and reasoning skills; - apply their knowledge and understanding to solve problems. - solve word problems involving operations with whole numbers and use division in a variety of problem solving situations. - interpret and use data to solve problems with minimal error of judgement; - use given information to complete various graphs; - Etc.

Level 4	Correct response. Learners demonstrate (i.e. a combination but may not be all of the following) that they: - consistently apply/demonstrate correct computational and reasoning skills required in the question; - apply their understanding and knowledge in a variety of relatively complex situations and explain their reasoning; - solve a variety of multi-step word problems; - apply geometric knowledge of a range of two-and three-dimensional shapes in a variety of situations; - draw a conclusion from given data and justify their conclusion. - Etc.

Each level of understanding is captured in the distractors of all the multiple-choice questions. A question will include distractors that correspond to each level of understanding set out in the table above.

When learner responses are analysed the diagnostic distractors will reveal patterns in a learner's understanding of the content being tested. The teacher is thus guided towards instruction that specifically addresses a learner's understanding of a concept in the specific content.

6. MARKING GUIDELINES:

6.1 Multiple Choice Questions (MCQs): Marks are allocated according to the cognitive demand of the question. However, the focus of these assessments is not on scoring the learner, but rather on what the learner is able to do or not do.

6.2 Section A and B are allocated a mark each per answer. Marks for Section C are allocated according to the demand of the question.

6.3 The marking guideline has columns indicating the number for each question, the expected answer per question, the level of understanding/error analysis (for Section A), the cognitive level, the level of difficulty, the grade level at which a question and its answer are pitched. The mark allocation is merely a guide for the learner's response and should not be the focus of the task.

6.4 The levels of difficulty indicate the cognitive demands of the question which are: Easy (E), Moderate (M) and difficult (D).

6.5 The Cognitive levels are as prescribed in the CAPS for the Intermediate and Senior Phases and will now be introduced in the Foundation Phase. The cognitive levels, their descriptors and examples are indicated in Table 5.

Table 4: Example of the Marking Guideline (for Mathematics)

1. Complete: 2 + 2 + 2 + 2 =

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
1	A	6	3	Added only the first 3 numbers	R	E	1
	B	4	2	Added the first two numbers only.			
	C	2	1	Thought it is a number pattern			
	D	8 ✓	4	Correct response			

In cases where learners are required to display multiple steps/procedures in order to solve a problem, apply the following techniques when marking:

a. Where there is clear evidence of a misread/misinterpretation, a penalty of 1 mark is generally appropriate. A learner should not be penalised for the same error throughout the assessment.
b. If a learner has knowledge of the method but could not get the final correct answer, award a method (M) mark but not an accuracy (A) mark. If the method is incorrect but the answer is correct, award a mark for the answer only.
c. Consistent Accuracy mark is applied when an answer is correctly followed through from an incorrect previous answer.

E.g. Grade 3 question
1. What is the number that is 5 more than 20?
1.1 Write the **number symbol** for the number.
1.2 Write the **number name** for the same number you wrote in 1.1 above.

Learner response

1.1 **205** (the answer is incorrect)
1.2 **Two hundred and five.** (The number name is correct according to the number symbol provided by the learner in number 1.1 even though it was not the expected answer.)

In this instance do not award a mark for the 1st answer (in 1.1) but do award a mark for the 2nd answer (in 1.2) because it was correctly followed through from an incorrect answer. This is how to apply **consistent accuracy** (CA) marking.

Table:5 Mathematics Cognitive levels

LEVEL 1:	LEVEL 2:
KNOWLEDGE (K)	**ROUTINE PROCEDURES (R)**
• **Knowing** • **Remember/Recall**	• **Applying routine procedures in familiar contexts** • **Understanding**
• Straight recall • Identification of correct formula • Know and use formulae such as the area of a rectangle, a triangle and a circle where each of the required dimensions is readily available. • Read information directly from a table (e.g. the time that bus number 1 234 departs • Use of mathematical facts • Appropriate use of mathematical vocabulary • Know appropriate vocabulary such as equa tion, formula, bar graph, pie chart, Carte sian plane, table of values, mean, median and mode. • Write the next three numbers in the sequence: 103; 105; 107… • Determine the factors of 64 • Write the prime numbers that are factors of 36	• Perform well-known procedures. • Learners know what procedure is required from the way the problem is posed. • Simple applications and calculations using the basic operations including: o algorithms for +, -, ×, and ÷ o calculating a percentage of a given amount • Calculations which might involve many steps • Derivation from given information may be involved • All of the information required to solve the problem is immediately available to the stu dent and where each of the required dimen sions is readily available. • Estimation and appropriate rounding off of numbers • Measure dimensions such as length, weight and time using appropriate measuring in struments sensitive to levels of accuracy. • Draw data graphs from provided data. • Solve equations by means of trial and im provement or algebraic processes • Determine the value for if x + 4 = 10. • Use three different techniques of calculating 488 + 16 • Calculate: 115 + 31 012.

LEVEL 3:	LEVEL 4:
COMPLEX PROCEDURES (C)	**PROBLEM-SOLVING (P)**
• Applying multi-step procedures in a variety of contexts (including word sums)	**• Reasoning and reflecting**
• Problems involving complex calculations and/or higher order reasoning • The required procedure is not immediately obvious from the way the problem is posed. • Learners will have to decide on the most ap propriate procedure to solve the solution to the question and may have to perform one or more preliminary calculations before determining a solution. • Investigations to describe rules and relationships • There is often not an obvious route to the solution • Problems not based on a real world context - could involve making significant connections between different representations • Conceptual understanding • One or more preliminary calculations and/or higher order reasoning • Solve equations by means of trial and improve ment or algebraic processes • Select the most appropriate data from options in a table of values to solve a problem. • Decide on the best way to represent data to create a particular impression. • Betty is 4 years old and Jabu is 8 years old. • Determine the ratio between their ages. Write the ratio in simplest fractional form. • Investigate the properties rectangles and squares to identify similarities and differences. • There were 20 sweets in the packet. William and his friend ate 2/5 of the sweets. How many sweets are left	• Unseen, non-routine problems (which are not necessarily difficult) • Higher order understanding and processes are often involved • Might require the ability to break the problem down into its constituent parts • Generalise patterns observed in situations, • Make predictions based on these patterns and/or other evidence and determine conditions that will lead to desired out comes. • Pose and answer questions about what mathematics they require to solve a problem and then to select and use that mathematical content. • The sum of three consecutive whole numbers is 27. Find the numbers. • Sarah divided a certain number by 16. She found an answer of 246 with a remainder of 4. • What is the number? • Busi has a bag containing three coloured balls: 1 blue, 2 red ball and 3 yellow balls. • She puts her hand in the bag and draws a ball. • What is the chance that she will draw a red ball? • Write the answer in simplest fractional form.

7. MODERATION

Internal moderation is important in assuring that the marking criteria/guideline is consistently applied, and that there is a shared understanding of the academic standards learners are expected to achieve. There should be processes in place for assuring comparability of marks for alternative assessments. Schools may therefore determine the format for moderation as a standardisation and quality-assurance measure.

8. DATA ANALYSIS AND UTILISATION

The teacher would be able to collect data on an individual learner, a class, a grade or for the entire grade and report at each level. Further data can be collected per topic/skill/ content area. The teacher is also able to use the phase test and identify at which grade the knowledge deficit is. Since this is an exercise in assessment for learning targeted interventions can be designed to address strengths and weaknesses. Teachers would be able to give feedback to parents on learning gaps, deficits and strengths per learner.

8.1 Purpose of the data analysis

After administering a test the teacher 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.

8.2 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, i.e. (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 what the extreme scores, i.e. the highest and the lowest scores, are.

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.

8.3 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 reasonably easy-to-use tool for performing item-level diagnostic analysis of test data. An Excel spreadsheet is arranged in columns and rows.

8.4 Preparing data for analysis on Excel

Excel makes available useful formulae to calculate basic statistics. To prepare for analysis of data from an administered test, do the following:-

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

8.5 Analysis and interpretation

To summarise the data calculate the average percentage score, the median, maximum and minimum score percentages and you may 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:

a) Overall performance

Overall performance in this class, measured through the mean score, may be e.g. 54,4% which is relatively acceptable but still leaves room for improvement. The median score for the class may be 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 may range 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 e.g. 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 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%. It is evident that in this class boys require a different or more focused intervention than the girls.

e) Performance in specific topics or skills

The percentage scores per item indicate the items and, therefore, the topic or skill where interventions must focus. The analysis and diagnosis (from ‘a’ to ‘e’ above) identifies:-

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

The analysis also suggests what materials will be required to improve on the identified areas, what 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 analyser may see fit in their context.

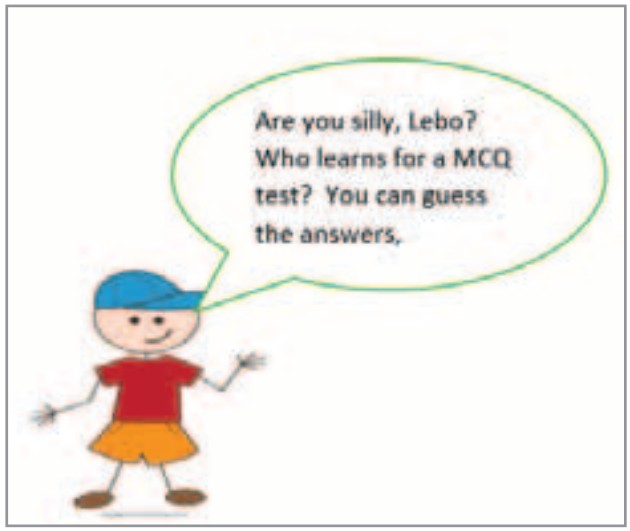
8.6 Diagnostic or error analysis

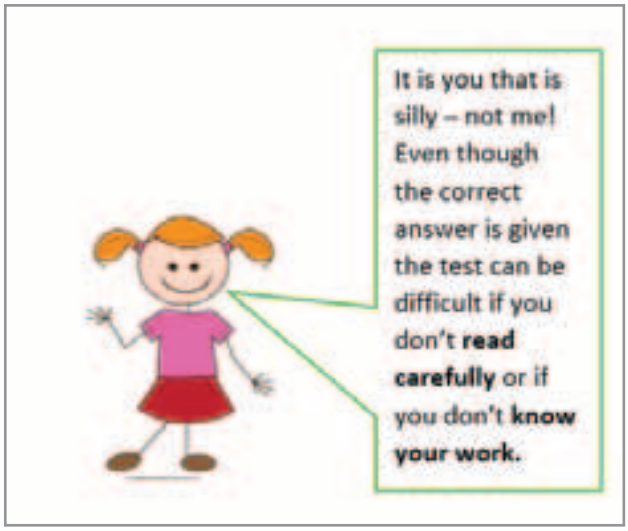
Error analysis is the study of errors in learners’ responses with a view to look for possible explanations for these errors. It provides specific information about the relative skill proficiency or misconception a learner has in his/her response, in order to understand what the learner can or cannot do. It is a multifaceted activity, for the teacher, because it involves analysis of the correct, partially correct and incorrect thought processes of the learners’ individual responses and thinking about possible remediating interventions that might work well.

Understanding the errors a learner or a group of learners make will determine how learners are grouped in a certain subjects to enhance effective teaching.

PART TWO
ANSWERING MULTIPLE CHOICE QUESTIONS

ANSWERING MULTIPLE CHOICE QUESTIONS (MCQ'S)





HOW TO ANSWER MULTIPLE CHOICE QUESTIONS (MCQs)

NOTE TO THE TEACHER:

1. The Structure of a MCQ

Example:

What is the number symbol for six hundred and ninety-eight? STEM

A	60 098	DISTRACTORS
B	6 098	
C	968	
D	698	KEY

EXPLANATION:	
STEM	QUESTION
DISTRACTORS	INCORRECT OPTIONS
KEY	ANSWER

2. Strategies for answering MCQs

2.1 Read the question carefully. Understand the question and be sure of what is expected of you. Underline the key words in the question. You may need to read the question more than once.

2.2 Try to answer the question before you check out the options. You may be required to work out the answer before you are able to choose the correct option.

2.3 Read each option cautiously. Delete the options that you are sure is incorrect, until you are left with the correct option.

2.4 Make sure that the option you have chosen matches what the question requires.

2.5 Most often there will be an option that will be obviously wrong. Eliminate this option.

2.6 Two options may sound alike. However, one of the options may be partially correct; it may be a partial answer to the question. Reread the question to make sure that the option fully answers the question.

2.7 If you are unsure of which options are incorrect, leave the question and move to the questions you are sure of. However, make sure that you come back to the question. Don't leave blanks. CHOOSE AN OPTION FOR EVERY QUESTION.

2.8 There will be only ONE correct option.

NOTE TO THE LEARNER:

1. **There is no pattern in which the answers are arranged.**
2. **Check your work. If you make a mistake, strike out the incorrect option and circle the correct answer.**
3. **Do not leave any question unanswered.**

PART THREE
PHASED BASED DIAGNOSTIC ITEMS

Please note the following keys:

Explanation		Levels of dificulty	Cognitive levels
NOR	1. Numbers, Operations and Relation ships	E: easy	K: knowledge
PFA	2. Patterns, Functions and Algebra	M: moderate	R: routine procedure
SS	3. Space and Shape (Geometry)	D: difficult	C: complex procedure
M	4. Measurement		P: problem solving
DH	5. Data Handling		
G(3)	Grade 3		

Please note that the tag above each question, as shown below, provides the following information in this order: content area, topic, grade level of the question, cognitive level and difficulty level e.g.:

Content area	Topic	Grade level	Cognitive level	Level of difficulty
NOR	repeated addition	G1 (Grade one)	R	E

It is thereafter written above each question in the format:

NOR/repeated addition/G1/R/E

SECTION A

Circle the letter of the correct answer for Question 1 to Question 15.

	NOR/Repeated addition/GI/R/E

1. Complete: 2 + 2 + 2 + 2 =

   A 6

   B 4

   C 2

   D 8

	NOR/Addition/G2/R/E

2. Add 50 and 5

   A 250

   B 505

   C 10

   D 55

	NOR/Problem Solving addition/G2/R/M

3. There are 18 apples, 11 pears and 5 bananas in a box. How many fruits are there altogether in the box?

   A 34

   B 29

   C 43

   D 3

NOR/Counting/G3/K/E

4. Count forwards in 10s from 100.

A 100, 105, 110, 115

B 130, 120, 110, 100

C 100, 110, 120, 130

D 110, 120, 130, 140

NOR/ Number symbol/G3/K/M

5. What is the number symbol for six hundred and ninety-eight?

A 60 098

B 6 098

C 968

D 698

NOR/Fractions/G3/K/M

6. In which one of the following diagrams has 2 quarters of the diagram been shaded?

A 

B 

C 

D 

NOR/Subtraction/G3/R/E

7. Complete: 236 – 136 =

A 136

B 100

C 172

D 472

NOR/Division/G3/P/M

8. What is the missing operation sign in the number sentence below?

40 ☐ 5 = 8

A –

B ×

C +

D ÷

PFA/Geometric Patterns/G2/K/E

9. Which are the next correct shapes in the geometric pattern?

△ ○ □ △ ○ □ △ ○ □

A △ △ □

B ○ △ □

C □ △ ○

D △ □ ○

PFA/Number Patterns/G3/K/M

10. Which numbers are missing in the number pattern?

___; ___; 12; 16; 20

A 10; 11

B 8; 10

C 4; 8

D 6; 9

SS/3-D Objects/G2/K/E

11. Which one of the objects listed below can slide?

A A marble

B A ball

C A tray

D An orange

SS/2-D shapes/G3/K/M

12. Which 2-D shape has no straight sides?

A Rectangle

B Triangle

C Square

D Circle

M/Mass/G2/K/E

13. Which one of the following objects is the heaviest?

A 

B 

C 

D 

M/Time/G3/K/M

14. How many weeks are there in 28 days?

A 4 weeks

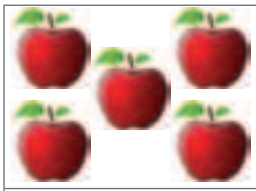
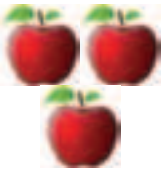
B 3 weeks

C 5 weeks

D 6 weeks

DH/Analyse and interpret data/G3/P/D

15.

		
Jack	Nicole	Lize

Look at graph to find how many more apples Jack has than Lize?

A 3 and a half

B 5

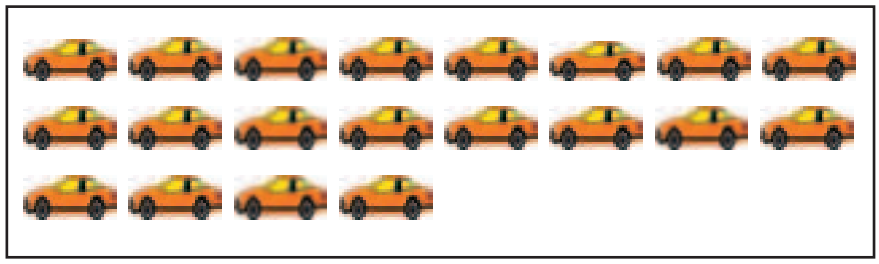
C 8 and a half

D 1 and a half

SECTION B

NOR/Counting and number name/G2/R/K/E

16. Count the pictures of the cars and write your answer in words.



NOR/Place Value/G3/K/E

17. Write the value of the underlined digit in 1<u>5</u>6.

NOR/Describes, compares and orders numbers/G3/R/M

18. Arrange the given numbers from the greatest to the smallest.

391, 193, 913, 931, 139, 319

NOR/Division/G3/R/D

19. Complete: 72 ÷ 3 = ☐

NOR/Money/G3/R/M

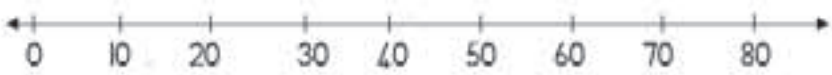
20. Complete each conversion:

a. 135c = R_____

b. R1,60 = _____c

NOR/Multiplication/G3/R/M

21. Use the number line to show that 4 × 10 = 40



NOR/Subtraction on the Number Line/G3/R/D

22. Draw jump(s) on the number line to show that 125 - 50 = 75.

PFA/Geometric Patterns/G3/R/E

23. Extend the geometric pattern only once.

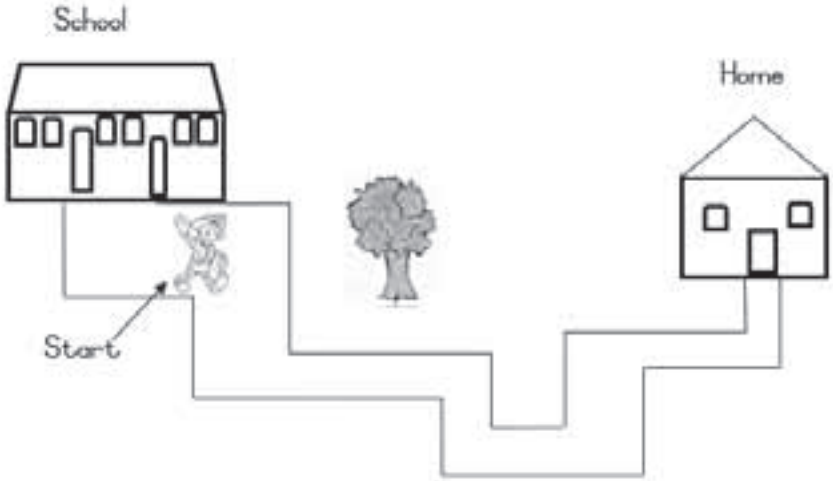
PFA/Number Patterns/G3/R/M

24. Write the rule used for the number pattern below.

380; 384; 388; 392

SS/Position, orientation and views/G3/R&K/M

25. Look at the picture and answer the questions below.

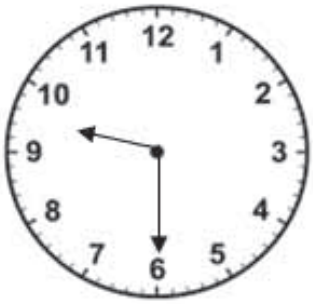


a. How many turns does Tom take to walk from school to home?

b. Will the tree be on his left or right when Tom walks from school?

M/Time/G3/K/M

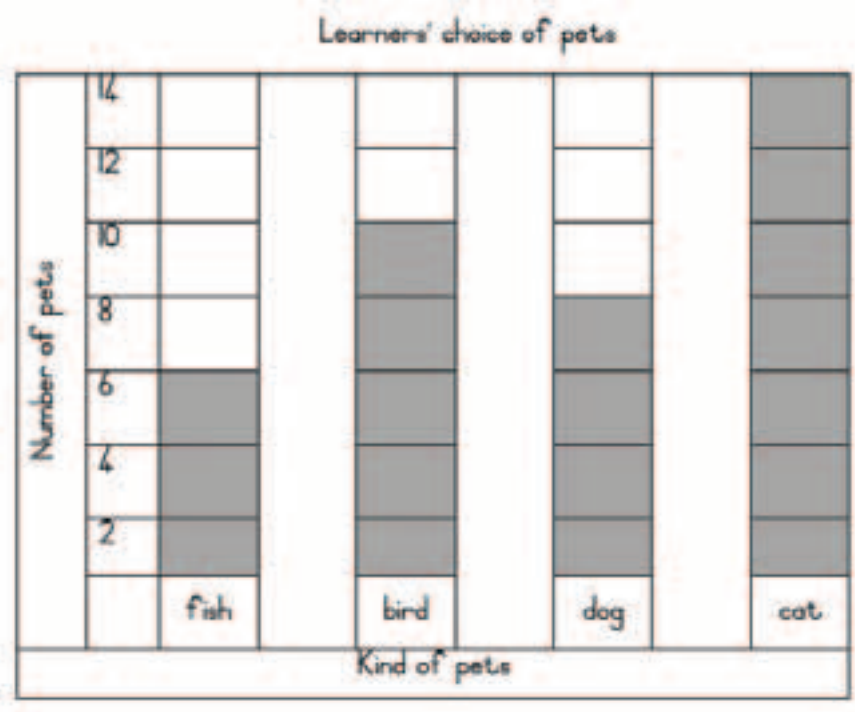
26. Read the time on the clock face and complete the sentence below.



The time on the analogue clock reads ...

DH/Analyse and interpret/G3/R/M

27. Study the bar graph and answer the question that follows.



Which is the most popular kind of pet?

SECTION C

Show all calculations.

NOR/Problem Solving, Money/G3/P/D

28. Eric has R32. Azwi has three times as much as Eric. How much money does Azwi have?

NOR/Problem Solving, Halving/G4/C/D

29. There are 490 people in a soccer stadium. One half of them are children and the other half are parents. How many children are there in the stadium?

M/Time/G3/C/M

30. Thuli gets up at 5 o'clock every morning. Her school starts at quarter past 7. How much time does she have before the school starts?

M/Mass/G3/C/D

31. Mary collected 700g of strawberries and Ann collected 360g of strawberries. How many grams less than Mary did Ann collect?

M/Length/G3/C/D

32. The distance around a square camp is 48m. What is the length of each side of the camp?

MARKING GUIDELINES

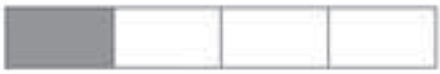
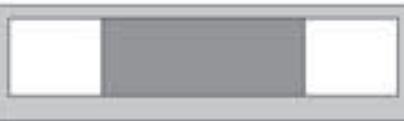
Levels of difficulty	Cognitive levels
E: easy	**K: knowledge**
M: moderate	**R: routine procedure**
D: difficult	**C: complex procedure**
	P: problem solving

Levels of understanding
1: There are unrelated strategies or excessive dependence on the information that is provided in the question and is incorrectly used/is duplicated.
2: There is some computational ability that **may** not relate to the question/topic.
3: There is some conceptual knowledge and ability to analyse but is inconsistent in computational and/reasoning skills.
4: correct response. The learner is able to consistently apply/demonstrate correct computational and reasoning skills required in the question.

SECTION A

- **One mark per answer.**
- **Do not allocate a mark if there are more than one responses selected. learners.**

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
1.	A	6	3	Added only the first 3 numbers	R	E	1
	B	4	2	Added the first two numbers only.			
	C	2	1	Thought it is a number pattern			
	D	8 ✓	4	Correct response			
2.	A	250	2	Multiplied 50 by 5 and does not understand the word "add"	R	E	2
	B	505	1	Copied/transcribed 50 and 5			

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	C	10	2	Divided 50 by 5			
	D	55✓	4	Correct response			
3.	A	34✓	4	Correct response	R	M	2
	B	29	2	Only added two numbers			
	C	43	1	Reversed the digits			
	D	3	1	Ignored the quantities and concentrated on the types			
4.	A	100, 105, 110, 115	1	Counted in 5s	K	E	3
	B	130, 120, 110, 100	3	Counted in 10s backwards			
	C	100, 110, 120, 130 ✓	4	Correct response			
	D	110, 120, 130, 140	3	Counted in 10s from 110			
5.	A	60098	1	No understanding of place value.	K	M	3
	B	6098	1	No understanding of place value.			
	C	968	2	Confused six hundred with nine tens.			
	D	698 ✓	4	Correct response			
6.	A		1	Confused the 2 quarters and 3 quarters	K	M	3
	B		2	Just read the word 'a quarter' and identified it			
	C	 ✓	4	Correct response			
	D		1	Cannot divide the whole into fractions			
7.	A	136	1	Subtracted the hundreds only	R	E	3

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	B	100 ✓	4	Correct response			
	C	172	1	Subtracted the Hundreds and added Tens and Units			
	D	472	2	Added instead of subtracting. Confused the operational sign.			
8.	A	–	1	Guessed and no knowledge division	P	M	3
	B	×	1	Guessed and no knowledge division			
	C	+	1	Guessed and no knowledge division			
	D	÷ ✓	4	Correct response			
9.	A	△○□ ✓	4	Correct response	K	E	2
	B	○△□	1	Cannot recognise the correct sequence			
	C	□△○	1	Cannot recognise the correct sequence.			
	D	△□○	1	Cannot recognise the correct sequence.			
10.	A	10; 11	1	Counted in 1s and ignored the last two numbers.	K	M	3
	B	8; 10	2	Counted in 2s and could not identify the pattern.			
	C	4; 8 ✓	4	Correct Response			
	D	6; 9	1	Counted in 3s and could not identify the pattern.			
11.	A	A marble	1	Does not know the concept 'slide'.	K	E	2
	B	A ball	1	Does not know the concept 'slide'			

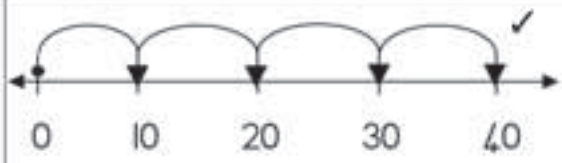
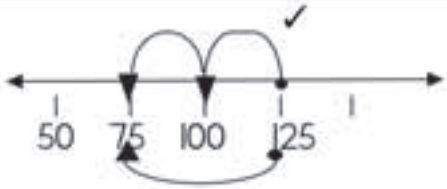
No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	C	A tray ✓	4	Correct response			
	D	An orange	1	Does not know the concept 'slide'			
12.	A	Rectangle	1	Could not identify shapes with no straight sides/lack of vocabulary 'no'	K	M	3
	B	Triangle	1	Could not identify shapes with no straight sides/lack of vocabulary 'no'			
	C	Square	1	Could not identify shapes with no straight sides/lack of vocabulary 'no'			
	D	Circle ✓	4	Correct response.			
13.	A		1	Does not understand the meaning of 'heaviest'.	K	E	2
	B		4	Does not understand the meaning of 'heaviest'			
	C		1	Does not understand the meaning of 'heaviest'.			
	D	✓ 	2	Correct response			
14.	A	4 weeks ✓	4	Correct response	K	M	3
	B	3 weeks	2	Could not apply knowledge of number of days in a week and/or apply the basic operation			

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	C	5 weeks	1	Could not apply knowledge of number of days in a week and/or apply the basic operation			
	D	6 weeks	1	Could not apply knowledge of number of days in a week and/or apply the basic operation			
15.	A	3 and a half	1	Counted Lize's apples only.	P	D	3
	B	5	1	Counted Jack's apples only.			
	C	8 and a half	1	Added Jack's and Lize's apples			
	D	1 and a half ✓	4	Correct response			

SECTION B

- **Accept any alternative correct solution that may not be included in the memorandum.**
- **Ignore spelling errors.**
- **Accept answers that may be in any official language i.e. if it is a word.**
- **No half marks**

No.		Expected answer	Clarification	Mark	Cognitive level	Level of difficulty	Grade
16.		twenty ✓	• Give a mark only for the number name.	1	K&R	E	2
17.		50 or 5 Tens ✓	• Give a mark only for the value and not a place value.	1	K	E	3
18.		931, 913, 391, 319, 193, 139 ✓	• Give a mark if all numbers are in a correct order.	1	R	M	3
19.		24✓		1	R	D	3
20.	a.	R1, 35 ✓		1	R	M	3

No.		Expected answer	Clarification	Mark	Cognitive level	Level of difficulty	Grade
	b.	160c ✓		1	R	M	3
21.		 ✓	• Give a mark where all four jumps are correctly indicated.	1	R	M	3
22.		 ✓	• Accept both illustrations	1	R	D	3
23.		 ✓	• Give a mark if all three are in a correct order.	1	R	E	3
24.		plus 4 **or** + 4 **or** add 4 **or** pattern of 4 **or** counting forwards in 4s **or** increase by 4✓		1	R	M	3
25.	a.	7/seven ✓		1	R	M	3
	b.	Left ✓		1	K	M	1
26.		Half past nine **or** 30 minutes after 9 **or** 30 minutes before 10 ✓		1	K	M	3
27.		Cat ✓		1	R	M	2

SECTION C

- **This is a marking guideline. In instances where learners have shown different but mathematically sound strategies to solve the problems they (learners) should be credited.**
- **The implementation of this marking guideline (memoranda) seeks to ensure that the marking yields accurate, consistent, reliable and fair feedback to learners.**

No.	Expected answer	Clarification	Mark	Cognitive level	Level of difficulty	Grade
28.	Azwi's amount = 3 x R32 = R30 + R30 + R30 + R2 + R2 + R2 ✓ = R90+ R6 = R96 ✓	• 1 mark for any correct method and 1 mark for the correct answer. • All calculations must be shown.	2	P	D	3
29.	Number of children = 490 ÷ 2 = (400 + 80 + 10) ÷ 2 ✓ = 200 + 40 + 5 = 245 ✓		2	C	D	4
30.	7:15 – 5:00 ✓ = 2h:15 min ✓ **or** 2 and a quarter hours ✓ ✓		2	C	M	3
31.	Number of grams = 700g - 360g ✓ = 340g ✓		2	C	D	3
32.	Length in metres = 48 ÷ 4 ✓ = (40 + 8) ÷ 4 = 10 + 2 = 12m ✓		2	C	D	3

PART FOUR
PHASED BASED DIAGNOSTIC ITEMS

Please note the following keys:

Explanation		Levels of dificulty	Cognitive levels
NOR	1. Numbers, Operations and Relation ships	E: easy	K: knowledge
PFA	2. Patterns, Functions and Algebra	M: moderate	R: routine procedure
SS	3. Space and Shape (Geometry)	D: difficult	C: complex procedure
M	4. Measurement		P: problem solving
DH	5. Data Handling		
G(3)	Grade 3		

Please note that the tag above each question, as shown below, provides the following information in this order: content area, topic, grade level of the question, cognitive level and difficulty level e.g.:

Content area	Topic	Grade level	Cognitive level	Level of difficulty
NOR	repeated addition	G1 (Grade one)	R	E

It is thereafter written in the format: **NOR/Repeated addition/G3/R/E** above each question.

SECTION A

Circle the letter next to the correct answer for question 1 to question 25.

NOR/Place value/G3/K/E

1. Which one of the following numbers has 6 tens?

A 56

B 46

C 66

D 16

NOR/Number name/G3/K/M

2. What is the number name for 217?

A Two hundred and seven

B Two hundred and one

C Two hundred and ten

D Two hundred and seventeen

NOR/Ordering numbers/G3/R/M

3. Arrange 89, 86, 98, 68 from the smallest to the greatest.

A 68, 86, 89, 98

B 68, 86, 98, 89

C 68, 89, 86, 98

D 98, 89, 86, 68

NOR/Doubling/G3/R/E

4. Complete: Double 23 is equal to ...

A 23.

B 46.

C 64.

D 13.

NOR/Addition/G3/R/M

5. Complete: 74 + ___ = 99

A 20

B 23

C 25

D 52

NOR/Repeated addition/G3/R/M

6. One horse has 4 legs. How many legs do 6 horses have?

A 24

B 10

C 2

D 42

NOR/Sharing/G3/R/M

7. Share 35 marbles equally among 7 children.

A 6

B 42

C 28

D 5

NOR/Money/G3/R/M

8. Busi has one R1 coin, two 20c coins and a 5c coin. How much does she have altogether?

A R1,25

B R1,15

C R1,45

D R1,52

NOR/Subtraction/G3/R/M

9. Calculate: _____ – 19 = 15

A 44

B 24

C 14

D 34

PFA/Number patterns/G3/R/M

10. Which numbers in the given number sequence are missing?

_____; _____; 24; 21; 18

A 26; 25

B 30; 27

C 28; 26

D 32; 28

NOR/Building up of numbers/G3/R/M

11. Complete: 70 + 300 + 9 can be written as ...

A 739

B 397

C 937

D 379

NOR/Multiplication/G3/R/M

12. Which one of the operation signs is missing in the number sentence

10 ☐ 5 = 50?

A -

B ×

C ÷

D +

PFA/Number patterns/G3/K/M

13. Which number is incorrect in the given number sequence?

19; 22; 25; 29

A 19

B 22

C 25

D 29

NOR/Halving/G3/R/E

14. Complete: 18 is half of ...

A 9.

B 18.

C 36.

D 63.

NOR/Fractions/G3/K/E

15. What fraction of the diagram below is shaded?

A 1 half

B 1 fifth

C 1 quarter

D 1 third

PFA/Geometric patterns/G3/K/M

16. Which one of the following describes the given diagram pattern?

A Repeating

B Increasing

C Rotating

D Decreasing

PFA/Number patterns/G3/K/E

17. Complete the number sequence below.

150; 148; ___; 144

A 64

B 46

C 164

D 146

PFA/Number patterns/G3/K/M

18. Which one of the following list of numbers is in the correct sequence when counting in 100s?

A 131; 231; 331; 431

B 130; 131; 132; 133

C 100; 150; 200; 250

D 130; 140; 150; 160

SS/2-D shapes/G3/K/E

19. Complete: A triangle has ... straight sides.

A 1

B 2

C 4

D 3

SS/2-D shapes/G3/K/E

20. A rectangle has ... opposite equal sides.

A 2

B 3

C 4

D 5

SS/2-D shapes/G3/K/M

21. How many triangles and rectangles are there in the diagram shown below?

SS/2-D shapes/G3/K/E

22. What is the shape of the book shown below?

A A triangle

B A square

C A circle

D A rectangle

SS/2-D shapes/G3/K/E

23. Which 2-D shape does not have corners?

A A triangle

B A square

C A circle

D A rectangle

M/Capacity/G3/R/M

24. A cup holds 250ml of water. How many cups of water are needed to fill a 2 litre container?

A 2

B 4

C 6

D 8

SS/2-D shapes/G3/K/E

25. Which one of the 2-D shapes has 4 equal sides?

A A triangle

B A square

C A circle

D A rectangle

SECTION B

M/Problem solving involving time/G3/R/M

26. Look at the calendar and answer the questions that follow.

JULY 2017

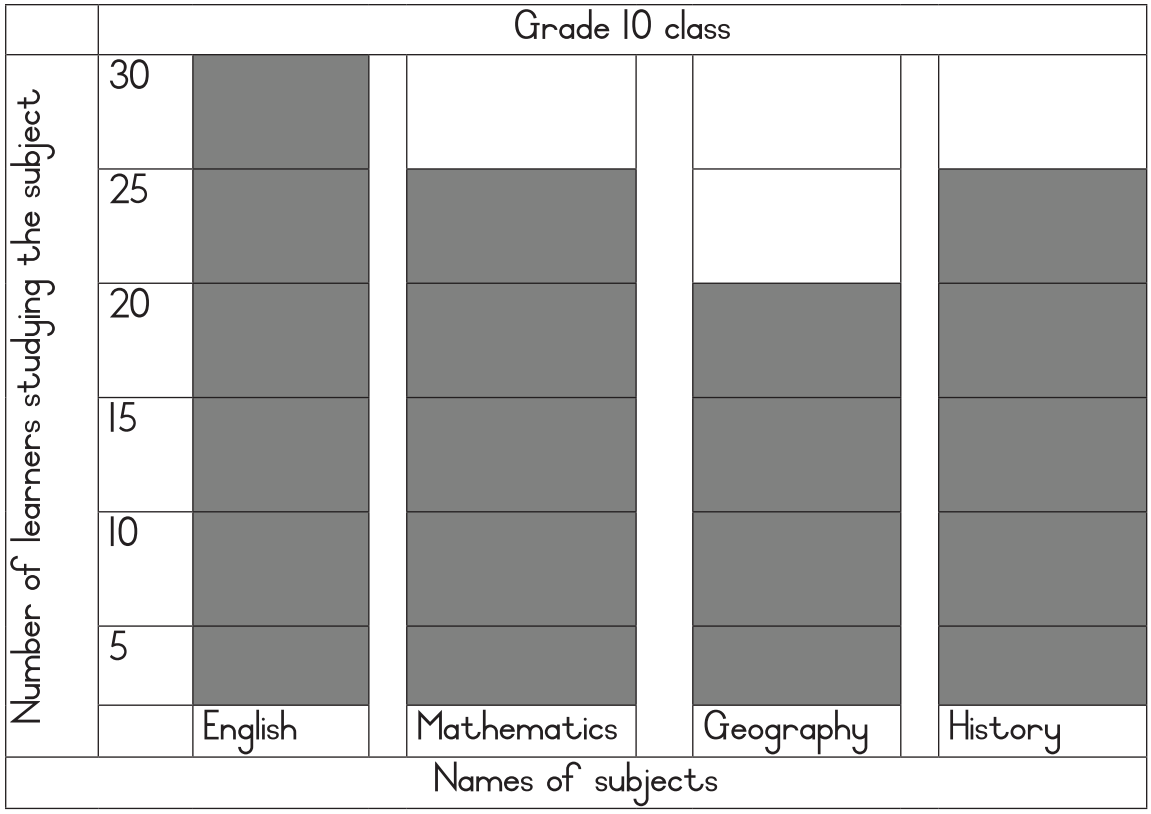
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

The Smith family went on holiday which started on the 3rd of July 2017 and ended on the 22nd of July 2017.

a. How many Mondays are there in July?

b. For how many days were the Smith family on holiday?

27. Study the bar graph and answer the questions that follow.



Use tally marks to show your answer.

a. How many learners are studying the least popular subject?

b. How many more learners are studying English than History?

c. What is the difference between the most popular subject and the least popular subject?

SECTION C

Show all calculations.

NOR/Problem solving involving addition/G3/C/D

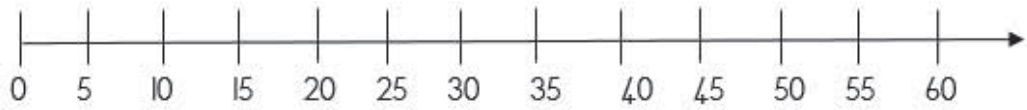
28. There are 49 people in the blue bus and 18 more in the yellow bus. How many people are there in the yellow bus?

NOR/Problem solving involving subtraction/G3/C/M

29. 79 adults attended a concert. If 35 were women, how many men were there?

NOR/Problem solving involving multiplication/G3/R/D

30. a. Draw jumps on the number line to calculate 9 x 5.



b. Complete: 9 x 5 = _____

NOR/Problem solving involving sharing/G3/C/M

31. The clown shares 30 balloons equally among 10 children. How many balloons should each child get?

NOR/Problem solving involving money/G3/P/D

32. Ben has a R50 bank note. He buys a pizza for R23 and a juice for R9. How much money does he have left?

NOR/Problem solving involving fractions/G3/P/M

33. A baker baked 16 loaves of bread. A quarter of the loaves were sold. How many loaves of bread were left?

NOR/Problem solving involving repeated addition/G3/R/M

34. Karabo saved R18 every day. How much did he save in 5 days?

M/Problem solving involving time/G3/P/D

35. Thandi takes 35 minutes to do her homework. Thabo takes twice as long as Thandi. How long does Thabo take to do his homework?

M/Problem solving involving capacity/G3/C/M

36. A teaspoon holds 5 ml of milk. The baker used 13 teaspoons of milk for the scones. How many ml of milk did he use?

NOR/Problem solving involving division/G3/C/M

37. 45 plants were planted in rows in a vegetable garden. There are 5 plants in each row. How many rows are there?

MARKING GUIDELINES

Cognitive levels	Levels of difficulty
K: knowledge	E: easy
R: routine procedure	M: moderate
C: complex procedure	D: difficult
P: problem solving	

Levels of understanding
1: There are unrelated strategies or excessive dependence on the information that is provided in the question and is incorrectly used/is duplicated.
2: There is some computational ability that may not relate to the question/topic.
3: There is some conceptual knowledge and ability to analyse but is inconsistent in computational and/reasoning skills.
4: correct response. The learner is able to consistently apply/demonstrate correct computational and reasoning skills required in the question.

No half marks are allocated.

SECTION A

- **One mark per answer.**
- **Do not allocate a mark if there are more than one responses selected.**

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
1.	A	56	3	Limited knowledge of place value	K	E	3
	B	46	2	Limited knowledge of place value			
	C	66 ✓	4	Correct response.			
	D	16	1	Limited knowledge of place value			
2.	A	Two hundred and seven	2	Left out the 10	K	M	3
	B	Two hundred and one	1	Omitted tens			
	C	Two hundred and ten	2	Omitted units			
	D	Two hundred and seventeen ✓	4	Correct response			
3.	A	68, 86, 89, 98 ✓	4	Correct response	R	M	3
	B	68, 86, 98, 89	2	Confused the last two numbers			
	C	68, 89, 86, 98	1	No understanding			
	D	98, 89, 86, 68	3	Arranged from the greatest to the smallest			
4.	A	23	1	Wrote the same number	R	E	3
	B	46 ✓	4	Correct response			
	C	64	3	Reversed the digits			
	D	13	1	No understanding			
5.	A	20	2	Added the tens	R	M	3
	B	23	1	No understanding			
	C	25 ✓	4	Correct response.			
	D	52	3	Reversed the digits			
6.	A	24 ✓	4	Correct response	R	M	3
	B	10	2	Added the two given numbers			

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	C	2	2	Subtracted 4 from 6			
	D	42	3	Reversed the answer			
7.	A	6	1	Miscalculated	R	M	3
	B	42	1	Added the two given numbers			
	C	28	1	Subtracted the two given numbers			
	D	5 ✓	4	Correct response			
8.	A	R1,25	2	Forgot to count the second 20c	R	M	3
	B	R1,15	1	Miscalculated			
	C	R1,45 ✓	4	Correct response			
	D	R1,52	1	Misread the amounts			
9.	A	44	1	Miscalculated	R	M	3
	B	24	1	Miscalculated			
	C	14	1	Miscalculated			
	D	34 ✓	4	Correct response			
10.	A	26; 25	1	No knowledge of number patterns	R	M	3
	B	30; 27 ✓	4	Correct Response			
	C	28; 26	1	No knowledge of number patterns			
	D	32; 28	1	No knowledge of number patterns			
11.	A	739	3	Copied the numbers	R	M	3
	B	397	2	Reversed the tens and units			
	C	937	1	No understanding			
	D	379 ✓	4	Correct response			
12.	A	–	1	No understanding	R	M	3

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
	B	× ✓	4	Correct response			
	C	÷	1	No understanding			
	D	+	1	No understanding			
13.	A	19	1	No understanding of number sequencing	K	M	3
	B	22	1	No understanding of number sequencing			
	C	25	1	No understanding of number sequencing			
	D	29 ✓	4	Correct response			
14.	A	9	3	Halved the 18	R	E	3
	B	18	1	No understanding of the concept half.			
	C	36 ✓	4	Correct response			
	D	63	2	Reversed the digits			
15.	A	1 half	1	No understanding of fractions	K	E	3
	B	1 fifth	1	No understanding of fractions			
	C	1 quarter	2	No understanding of fractions			
	D	1 third ✓	4	Correct response			
16.	A	Repeating	2	Did not consider the number of shapes	K	M	3
	B	Increasing	2	Read from right to left			
	C	Rotating	1	No knowledge of patterns			
	D	Decreasing ✓	4	Correct response			
17.	A	64	1	No understanding of number patterns	K	E	3
	B	46	2	Ignored the 100			
	C	164	3	Reversed the digits			
	D	146 ✓	4	Correct response			

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
18.	A	131; 231; 331; 431 ✓	4	Correct response	K	M	3
	B	130; 131; 132; 133	2	Counted in 1s			
	C	100; 150; 200; 250	2	Counted in 50s			
	D	130; 140; 150; 160	2	Counted in 10s			
19.	A	1	1	No understanding of shapes	K	E	3
	B	2	1	No understanding of shapes			
	C	4	2	Confused between rectangle and triangle			
	D	3 ✓	4	Correct response			
20.	A	2 ✓	4	Correct response	K	E	3
	B	3	1	No knowledge of the properties of the 2-D shapes			
	C	4	1	No knowledge of the properties of the 2-D shapes			
	D	5	1	No knowledge of the properties of the 2-D shapes			
21.	A	5 triangles and 6 rectangles	2	Confused the number of triangles with the number rectangles	K	M	3
	B	6 triangles and 5 rectangles ✓	4	Correct response			
	C	7 triangles and 4 rectangles	1	No understanding of 2-D shapes			
	D	4 triangles and 7 rectangles	1	No understanding of 2-D shapes			
22.	A	A triangle	1	No understanding of 2-D shapes	K	E	3
	B	A square	2	Confused a rectangle and a square			
	C	A circle	1	No understanding of 2-D shapes			
	D	A rectangle ✓	4	Correct response			

No.		Expected answer	Level of understanding or error analysis		Cognitive level	Level of difficulty	Grade level
23.	A	A triangle	1	No understanding of 2-D shapes	K	E	3
	B	A square	1	No understanding of 2-D shapes			
	C	A circle ✓	4	Correct response			
	D	A rectangle	1	No understanding of 2-D shapes			
24.	A	2	1	No understanding of capacity	R	M	3
	B	4	2	Filled 1 litre			
	C	6	1	Miscalculated			
	D	8 ✓	4	Correct response			
25.	A	A triangle	1	No understanding of 2-D shapes	K	E	3
	B	A square ✓	4	Correct response			
	C	A circle	1	No understanding of 2-D shapes			
	D	A rectangle	2	Limited knowledge about the features of a square			

SECTION B

- Accept any alternative correct solution that may not be included in the mem orandum unless otherwise stated.
- Penalise only once for the same error where applicable.
- Ignore minor spelling errors.
- Accept answers that may be in any official language i.e. if it is a word

No.		Expected answer	Clarification	Mark	Cognitive level	Level of difficulty
26.	a.	5 Mondays ✓		1	R	M
	b.	20 days ✓		1	R	M
27.	a.	 ✓		1	R	M
	b.	✓ 		1	R	M
	c.	 ✓		1	R	M

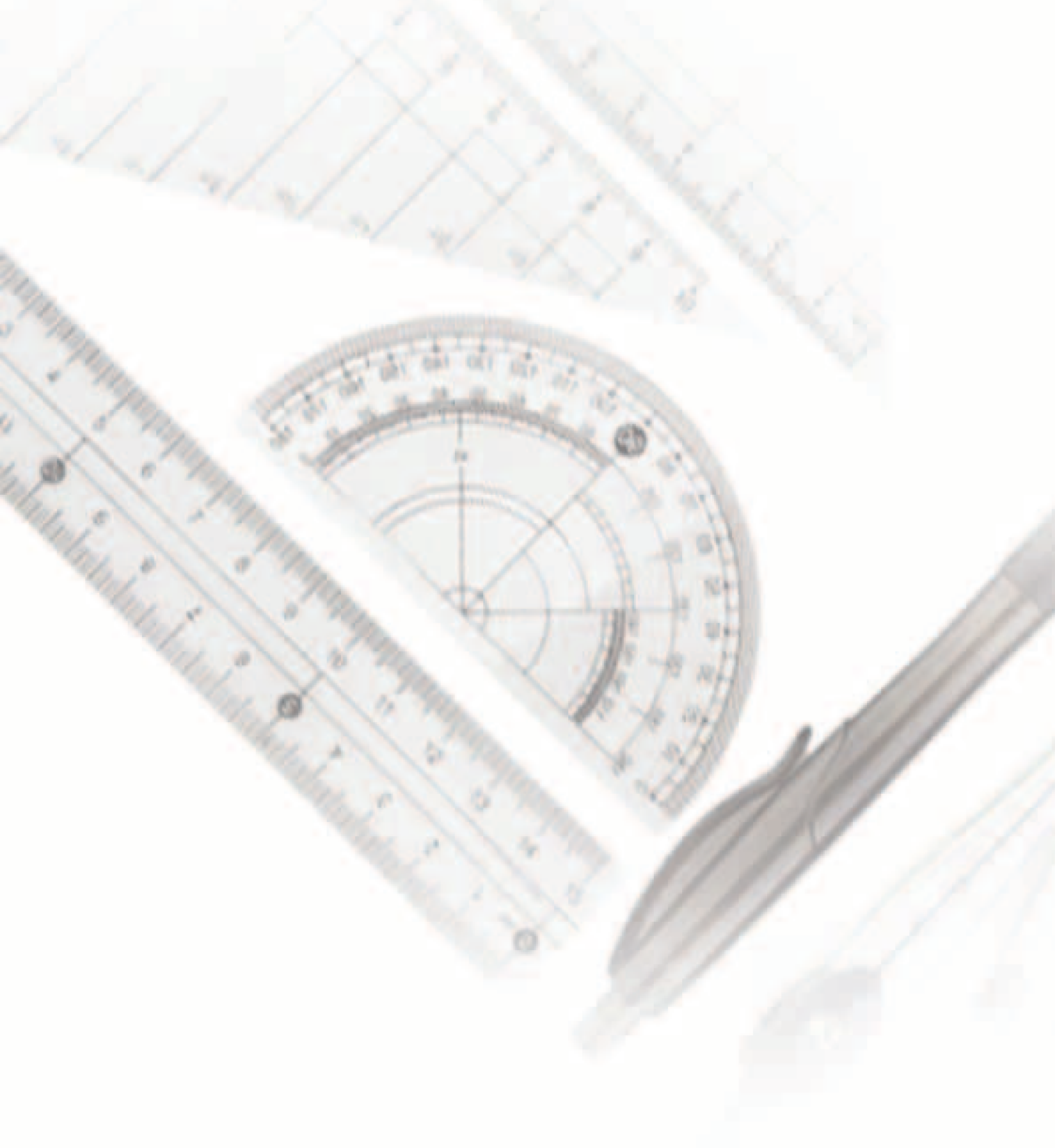
SECTION C

- This is a marking guideline. In instances where learners have shown different but mathematically sound strategies to solve the problems they (learners) should be credited.
- The implementation of this marking guideline (memoranda) seeks to ensure that the marking yields accurate, consistent, reliable and fair feedback to learners.

No.		Expected answer	Clarification	Mark	Cognitive level	Level of difficulty
28.		Number of people = 49 + 18 = 40 + 10 + 9 + 8 = 50 + 10 + 7 = 60 + 7 ✓ = 67✓	1 mark for any correct method and 1 mark for the correct answer.	2	C	D
29.		Number of men = 79 − 35 ✓ = 70 − 30 + 9 − 5 = 40 + 4 = 44✓		2	C	M

30.		9 x 5 = 45 ✓✓  0 5 10 15 20 25 30 35 40 45		2	R	D
31.		Number of balloons 30 ÷ 10✓ = 3 ✓		2	C	M
32.		Amount left = R50 - R23 - R9 ✓ = R50 - R20 - R3 - R9 = R30 - R3 - R9 = R18 ✓		2	P	D
33.		Number of loaves sold = 16 ÷ 4 ✓ = 4 Number of loaves left = 4 + 4 + 4 = 12 ✓ **or** Loaves of bread left 16 – 4 = 12✓ ✓		2	P	M
34.		Amount saved = R18 x 5 ✓ = R(18 + 18 + 18 + 18 + 18) = R(10 +10 +10 +10 +10 + 8 + 8 + 8+ 8+ 8) = R50 + R40 = R90 ✓		2	R	M
35.		Time for homework = 35min + 35min ✓ = 30min + 30min + 5min +5min = 60min +10min = 70min **or** Time taken = 1 hour 10min ✓	1 mark for any correct method and 1 mark for the correct answer.	2	P	D

36.		Total ml of milk = 13 × 5 ✓ = (10 + 3) × 5 = 50 + 15 = 65 ✓ **or** ✓ 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 65✓		2	C	M
37.		Number of rows = 45 ÷ 5 = (40 + 5) ÷ 5 = 8 + 1 = 9 ✓ **or** 45 – 5– 5– 5– 5– 5– 5–5–5– 5 –= 0 ✓		2	C	M



DIAGNOSTIC ASSESMENT TOOL GRADE 3 PHASE BASED AND TERM ONE ASSESSMENTS

MATHEMATICS

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