



Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

CERTIFICATE IN BASIC PRE-VOCATIONAL SKILLS

FUNCTIONAL NUMERACY SYLLABUS

For implementation in 2024

Ministry of Education, Arts and Culture
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Certificate in Basic Pre-vocational skills, Functional Numeracy Syllabus

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1. Introduction

This syllabus describes the intended learning and assessment for Functional Numeracy as a supplementary subject in the Certificate in Basic Pre-vocational skills. The mathematics learning area consists of Preparatory Mathematics (Pre-Primary) and Mathematics (Grades 1-12) and has thematic links to other subjects across the curriculum.

The aims and learning objectives, which overlap between subjects, are amongst the essential competencies within the curriculum as a whole.

2. Rationale

Functional Numeracy plays a key role in everyday life as a communication tool that makes extensive use of symbolic notation for describing numeric, geometric and graphic relations. Functional Numeracy helps to develop mental processes that enhance logical and critical thinking, accuracy, and problem-solving which are important processes in decision-making. It is a discipline that is not value-free or culturally neutral. Its knowledge is part of culture and we need this knowledge and these skills in order to solve many everyday tasks, and to take care of personal interests and duties.

Numeracy is one of the two core features of primary education, the other being literacy. Mathematics and the languages are thus the most important subjects in the curriculum in this phase. Therefore, the syllabus extends the basic competencies in computation with whole numbers to computation with common and decimal fractions. Measurement, time, and money and finance relate to the learner's everyday situation. Geometry is the mathematical understanding of space and shapes. The themes of problem-solving, number patterns and data-handling are ways of working with, understanding and communicating about and through Mathematics.

3. Aims

Functional Numeracy promotes the following aims in the curriculum:

- the learner's ability to think logically, work systematically and accurately and solve day-to-day problems specifically related to their job environment;
- their numerical skills and knowledge;
- their ability to apply numeracy in the context of everyday situations and their work environment;
- their ability to analyse problems logically;
- the numerical background necessary for the work environment.

4. Inclusive education

Inclusive education is the right of every learner and promotes access to and participation in the full range of educational programmes and services offered by the education system in mainstream schools. This is based on the principle of supporting and celebrating the diversity found among all learners and removing all barriers to learning. The mathematics teacher in the Basic Pre-vocational Skills phase should therefore accommodate learners with special educational needs by adapting this syllabus to the needs of the learner through differentiation of teaching methods and material as indicated in the *Curriculum Framework for Inclusive Education: A Supplement to the National Curriculum for Basic Education* (2023).

The adaptation for assessment of learners with special educational needs must be done as prescribed in the *Handbook for Centres* by the Directorate of National Examinations and Assessment (DNEA). The accommodations prescribed in this handbook are not only for external examinations, but apply to learners from Grade 1 to 12.

Functional Numeracy demands for adapted programmes, learning environments, equipment, and materials to support learners with learning and help them participate meaningful in education. This subject will mainly be offered in Resource Schools and Units in Inclusive Schools, adapted teaching approaches will enable all the learners to achieve the competencies.

Male and female learners should be able to take the Basic Pre-vocational Skills courses. Themes and topics in the Functional Numeracy syllabus should raise awareness of gender stereotyping, limitations set on gender equality and the promotion of gender equality in all spheres of life. In the planned activities, it is important that both genders feel confident and comfortable in all topics and themes.

5. Links to other subjects and cross-curricular issues

The themes and topics contained in the Functional Numeracy syllabus should be extended across the curriculum to other subjects. The main cross-curricular themes that are integrated throughout the National Curriculum for Basic Education (NCBE) and in Basic Pre-Vocational Skills Training are Environmental Learning, HIV and AIDS, Population Education, Education for Human Rights and Democracy (EHRD) and Entrepreneurship Education. In order for learners to experience the inter-relatedness of different subject disciplines in the understanding of such issues, aspects from different subjects should be co-ordinated into lesson plans.

A good example will be the incorporation of HIV and AIDS into the Functional Numeracy syllabus. Information and Communication Technology is dealt with over the entire spectrum of the syllabus.

Cross-curricular issues	Skills area
Environmental Learning	Problem solving, Measurement, Money and Finances
HIV and AIDS	Problem solving, Percentages, Measurement, Graphs and Tables
ICT	Problem solving, Percentages, Measurement, Graphs and Tables, Money and Finances (Covering the entire spectrum of the syllabus)
EHRD	Problem solving, Numbers
Entrepreneurship Education	Problem solving, Measurement, Money and Finances
Population education	Problem solving, Percentages, Measurement, Graphs and Tables
Road safety	Problem solving, Percentages, Measurement, Graphs and Tables, Money and Finances

General awareness of the HIV and AIDS pandemic should be created and acknowledged through using topical material for skills evaluation, e.g. speaking, listening, writing, critical thinking skills, relationships, making sense of given information, etc.

6. Approach to teaching and learning

The approach to teaching and learning is based on a paradigm of learner-centred education described in ministerial policy documents and the Learner-centred Education conceptual framework. This approach ensures optimal quality of learning when these principles are put into practice.

The aim is to develop learning with understanding and the knowledge, skills and attitudes to contribute to the development of society. The starting point for teaching and learning is the fact that the learner brings to the school a wealth of knowledge and social experience gained continually from the family, the community and through interaction with the environment. Learning in school must involve, build on, extend and challenge the learner's prior knowledge and experience.

Learners learn best when they are actively involved in the learning process through a high degree of participation, contribution and production. At the same time, each learner is an individual with his/her own needs, pace of learning, experiences and abilities. The teacher must be able to sense the needs of the learners, the nature of the learning to be done, and how to shape learning experiences accordingly. Teaching strategies must therefore be varied but flexible within well-structured sequences of lessons.

Working in groups, in pairs, individually or as a whole class must therefore be organised appropriately and be fitting to the task. Co-operative and collaborative learning should be encouraged wherever possible. In such cases, tasks must be designed so that pair- or group work is needed to complete it,

otherwise the learners will not see any relevance in carrying out tasks together. Learners should develop personal, social and communication skills under the teacher's guidance.

7. End-of-phase competencies

On completion of the Certificate in Basic Pre-vocational skills, all learners in Functional Numeracy are expected to be able to demonstrate the following skills:

Skills Area	Area of Learning
Numbers	demonstrate an understanding of numbers and be able to use mental and paper-and-pencil methods sensibly and appropriately. Use a variety of processes, e.g. comparison, classification, problem-solving, abstraction and generalisation, approximation and estimation
Computation	apply four operations on whole numbers, e.g. addition, subtraction, multiplication and division. Select and use appropriate strategies and methods to conduct four operations within the required number range
Problem-solving	discover and apply a variety of problem-solving strategies such as using concrete objects; acting out; diagramming; organising the approach into appropriate steps and sequences; discuss and share ideas in small groups; explain the method used verbally and in writing to the group; listen to other learner's explanations of their methods; compare different methods for the same problem; identify errors they may have made; etc.
Fractions	demonstrate understanding of fractions. Recognise, identify and classify common, proper, equivalent fractions with same and mixed denominators. Solve problems and calculations involving fractions
Money and finance	use Namibian currency in entrepreneurial activities. Understand currencies of SADC countries
Percentages	compute and use percentages to solve simple word problems
Measurements: length, mass, capacity, temperature and time	demonstrate and understand the use of units of length, capacity, mass, temperature and time, and solve relevant problems in theoretical situations and in applications to everyday life
Decimal numbers	demonstrate understanding of comparing and ordering of decimal numbers. Apply four operations in decimal numbers
Data-handling	show understanding of data gathering, organising, analysing and graphing as well as interpret graphs and tables in meaningful ways
Geometry	understand the properties of shapes in two- and three-dimensional space. Classify and draw lines and angles and determine position and movement
Algebra	generalise number relationships and number patterns; Generate and solve simple equations and understand that in algebra letters are used as a placeholders for numbers
Calculator skills	demonstrate the appropriate use of a scientific calculator, perform various task with a scientific calculator such as verification of results through estimating the digit size

8. Summary of learning content

Topics	Learning Content	
	Year 1	Year 2
1. Numbers	<ul style="list-style-type: none"> • read, write and recognise numbers up to 1000 • order, compare, round, estimate and classify sets of numbers using numbers from 0 to 1000 • classify whole numbers as odd, even and prime • use symbols: $<$, $>$, $=$ to compare up to 1 000 • estimate up to 50 • round off to the nearest 10, 100, 1000 	<ul style="list-style-type: none"> • order, compare, round, estimate and classify sets of numbers using numbers from 0 to 10 000 • denote place value up to 10 000 <ul style="list-style-type: none"> • apply relationship signs $<$, $>$, $=$ to compare up to 10 000 • estimate up to 100 • round up to 1000
2. Computations	<ul style="list-style-type: none"> • apply four operations on whole numbers up to 1 000 • recognise and use number relationships for the four operations 	<ul style="list-style-type: none"> • select and apply appropriate strategies and methods to the four operations
3. Problem-solving	<ul style="list-style-type: none"> • acquire problem-solving skills • acquire a process skills to carry out investigations • solve two-step problems involving numbers in the range 	<ul style="list-style-type: none"> • acquire knowledge, skills and process in problem-solving • develop skills to carry out investigations and solve problem-solving activities • solve three-step problems within the range of 0 to 1000
4. Fractions	<ul style="list-style-type: none"> • use terminologies for common fractions • classify fractions as proper and improper fractions and mixed numbers • establish the equivalence of common fraction families • compare and order unit fractions and common fractions with the same denominators of up to 10 • solve problems involving fractions 	<ul style="list-style-type: none"> • compare and order common fractions with the same and different denominators up to tenths and mixed numbers • recognise equivalence of fractions within fraction families • perform simple calculations with fractions and solve problems • apply relationship signs to compare proper fractions with the same denominators or numerators
5. Money and finance	<ul style="list-style-type: none"> • apply the four basic operations on money • solve problems involving change, cost price, selling price, profit, loss and discount up to N\$1000 • apply simple budget calculations • apply ordering and comparing 	<ul style="list-style-type: none"> • apply the four basic operations on money • solve problems involving selling price, cost price, profit, loss and discount using percentages • completing forms (receipts, deposit, withdrawal slips) • discuss SADC currencies

Topics	Learning Content	
	Year 1	Year 2
6. Percentages	<ul style="list-style-type: none"> • compute percentages • calculate the percentage of a given quantity; express one quantity as a percentage of another • solve simple word problems involving percentages 	<ul style="list-style-type: none"> • use percentage notation correctly • convert between common fractions, decimal fractions and percentages • solve word problems involving percentages
7. Measurements	<ul style="list-style-type: none"> • understand expressions for measures of length, mass, capacity and temperature • use correct vocabulary for measurement of time • express metric units of length (<i>km, m, cm</i> and <i>mm</i>), mass (<i>t, kg, g</i> and <i>mg</i>) and capacity (<i>kℓ, ℓ, mℓ</i>) • correctly read and record time on different time instruments • acquire more knowledge on time • convert between different units of time • apply the four basic operations to problems in context 	<ul style="list-style-type: none"> • demonstrate understanding of and ability to apply measurement units of length • apply knowledge on measurement of mass • apply the four basic operations to problems in context • understand timetables and calendars • calculate perimeter (circumference), area and volume • record and apply appropriate units of measurement
8. Decimal numbers	<ul style="list-style-type: none"> • compare and order decimal numbers • compute decimals 	<ul style="list-style-type: none"> • convert between decimal numbers and common fractions • compare and order decimal numbers • round off • compute the four basic operations
9. Data-handling	<ul style="list-style-type: none"> • show understanding of displaying data • know different types of graphs • apply manipulative skills to collect and analyse data • read, analyse and interpret graphs and tables (train/bus schedules) 	<ul style="list-style-type: none"> • acquire knowledge on data display and interpretation • develop manipulative skills on collecting, recording, displaying and analysing data • interpret graphs and data and summarise and report
10. Geometry	<ul style="list-style-type: none"> • develop understanding of lines • construct complex shape, circles and arcs • develop terminology of two and three-dimensional shapes • acquire knowledge on angles • measure lines and angles • develop knowledge on quadrilaterals 	<ul style="list-style-type: none"> • develop skills on measuring and constructing angles • two and three-dimensional shapes and properties of the circle • lines of symmetry • acquire knowledge on position and direction of objects/points on a grid

Topics	Learning Content	
	Year 1	Year 2
11.Algebra	<ul style="list-style-type: none"> • understand number patterns • generate number patterns • complete and describe number patterns 	<ul style="list-style-type: none"> • construct and solve simple number sentences • translate simple statements into algebraic equations
12.Calculator skills	<ul style="list-style-type: none"> • use the scientific calculator whenever appropriate 	<ul style="list-style-type: none"> • use the scientific calculator whenever appropriate • execute verification of result through estimating the digit size

9. Learning content

9.1 Numbers

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
1.1 Numeration		
know how to read and write numbers in words and as numerals	<ul style="list-style-type: none">• recognise and count numbers up to 1 000• read, pronounce and identify numbers up to 1 000• write and recognise numbers up to 1 000	<ul style="list-style-type: none">• recognise numbers up to 10 000• read, pronounce and identify numbers up to 10 000• write numbers up to 10 000
1.2 Place value		
understand the significance of digits position in a numeral	<ul style="list-style-type: none">• recognise the importance of the position of digits in numbers 1 to 100• recognise the value of a digit in a number• recognise that digit positions in two-digit numbers shows quantity• write numbers in expanded form up to 5000• identify tens, units and hundreds• identify different types of numbers: odd and even	<ul style="list-style-type: none">• recognise that digit positions in, three-digit numbers shows quantity• identify thousands, hundreds, tens and units• read, pronounce and write any number up to 10 000• identify place value up to 10 000
1.3 Rounding and estimation		
understand rounding and estimation	<ul style="list-style-type: none">• round off to nearest 10, 100• estimate up to 50	<ul style="list-style-type: none">• round off up to the nearest 1000• estimate up to 100
1.4 Comparing and ordering		
understand comparing and ordering	<ul style="list-style-type: none">• order and compare numbers 1 to 1000• identify relationship signs < ; > ; =• explore numbers up to 5 000• name, read and order numbers or objects up to 5000	<ul style="list-style-type: none">• order and compare numbers 1 to 10 000• apply relationship signs < ; > ; =• explore numbers up to 10 000• name, read and order numbers or objects

9.2 Computation

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
2.1 Addition		
apply basic addition up to 1000	<ul style="list-style-type: none"> • use the following terminologies in context: more, increase, total, sum , • estimate sum of given numbers • add two to three numbers of up to three-digits up to 1 000 	<ul style="list-style-type: none"> • add two to three numbers of up to four digits, sum up to 10 000
2. 2 Subtraction		
apply basic subtractions up to 1000	<ul style="list-style-type: none"> • use the following terminologies in context: less, lose, decrease, total, sum, difference • estimate difference of given numbers • subtract up to three-digits numbers within 1000 	<ul style="list-style-type: none"> • subtract two– or three-digit numbers from a three-digit number between 500 – 1 000 • subtract up to four-digits numbers within 1000
2.3 Multiplication		
apply basic multiplications with one and two digits up to 500	<ul style="list-style-type: none"> • use the following terminologies in context: times, multiplied by, product and quotient • multiply any two-digit number up to 50 • find factors of numbers up to fifty • double and halve numbers from 0 up to 200 • multiply whole numbers by multiples of ten • recite multiplication up to 12 	<ul style="list-style-type: none"> • multiply any two-digit number up to 50 by any number between 1 and 10 • solve problems involving multiplication • recite multiplication up to 12
2.4 Division		
understand basic divisions	<ul style="list-style-type: none"> • use the following terminologies in context: equal sharing, divided by, product and quotient • divide any two-digit number from 10 to 100 by a number from 1-5 • divide whole numbers by 10, 100 and 1000 	<ul style="list-style-type: none"> • divide up to three-digit number by a one-digit number with remainder • use estimation to check division • solve problems involving division

9.3 Problem solving

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	Year 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
3.1 Games and puzzles		
acquire problem-solving skills	<ul style="list-style-type: none">• solve story problems• apply the correct order of operations BODMAS in addition and subtraction• play mathematical games• solve mathematical puzzles	<ul style="list-style-type: none">• solve three-step word problems involving four operations• play mathematical games that require problem solving processes• solve mathematical puzzle that require problem-solving process• design mathematical games and puzzles
3.2 Investigation		
acquire process skills to carry out mathematical investigation	<ul style="list-style-type: none">• carry out simple investigations involving numbers, geometry, measures and algebra• conduct mathematical investigative project	<ul style="list-style-type: none">• discuss different problem-solving strategies to use in order to solve a problem• solve non-routine real-life problems• use problem-solving strategies to solve problems involving numbers and operations

9.4 Fractions

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
4. 1 Fraction vocabulary, counting and conversion		
develop understanding of fractions	<ul style="list-style-type: none"> recognise, name and write common fractions with denominators up to 10 identify equivalent fractions count in fractions along the number line 	<ul style="list-style-type: none"> recognise, name and write common fractions with denominators up to 10 count backward and forward in fractions (with denominators up to 10) beyond 1, e.g. $\frac{1}{4}; \frac{2}{4}; \frac{3}{4}; \frac{4}{4}; \frac{5}{4}; \frac{6}{4} \dots$
4.2 Compare and order		
know how to compare and order common fractions and mixed numbers with easy and commonly used denominators up to 10	<ul style="list-style-type: none"> compare and arrange fractions with same and different denominators convert fractions to equivalent fractions write fractions in simplest form recognise and use the equivalence order common fractions with the same and different denominators in ascending and descending order 	<ul style="list-style-type: none"> apply relationship signs to compare proper fractions with the same denominators or numerators recognise and use the equivalence of fractions where one denominator is a multiple of another <ul style="list-style-type: none"> halves, quarters and eighths fifths, tenths and hundredths thirds, sixths and twelfths
4. 3 Classification of fractions		
understand converting between proper fractions and mixed numbers	<ul style="list-style-type: none"> identify proper fractions, improper fractions and mixed numbers convert between mixed numbers and improper fractions 	<ul style="list-style-type: none"> add and subtract fractions where one denominator is a multiple of the other, e.g. $\frac{1}{6} + \frac{2}{3}$ compare and order mixed numbers and improper fractions
4. 4 Fractional parts of quantities		
know how to perform simple calculations with fractional quantities	<ul style="list-style-type: none"> calculate fractional parts of given quantities solve word problems of fractional quantities 	<ul style="list-style-type: none"> calculate the fractional parts of a quantity

9.5 Money and finance

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
5.1 Coins and notes		
demonstrate understanding of Namibian coins and notes	<ul style="list-style-type: none"> • read and write money in dollar and cents • convert dollars to cent and vice versa • add and subtract money up to N\$ 500 • make purchases of and change for items up to N\$ 500 	<ul style="list-style-type: none"> • make up an amount using different combinations of coins and/or notes not exceeding N\$1000 • discuss different SADC currencies and exchange rates
5.2 Cost price, selling price, profit and loss		
understand the basic nature of entrepreneurial activities	<ul style="list-style-type: none"> • distinguish between cost and selling price and profit and loss • calculate profit or loss and selling or cost price for items and services up to N\$1000 • solve two-step context problems including cost and selling price and profit and loss • read and identify simple bills 	<ul style="list-style-type: none"> • express profit, loss and discount as percentages (%) of the cost price • calculate profit and loss and discount for items and services where profit, loss and discount is expressed as percentages • solve context problems involving percentages, cost, selling price, profit, loss and discount • calculate interest earned or interest paid on an amount of money, given the rate of interest and the time (in full years and/or months)
5.3 Application and problem solving		
know how to fill in forms for administrative purposes and draw up a budget	<ul style="list-style-type: none"> • complete forms • do simple budget calculations • interpret telephone bills and calculate the cost of telephone calls, including the cell phone 	<ul style="list-style-type: none"> • fill in receipts, deposit and withdrawal slips • buy and sell items and work out change • draw up a simple budget • calculate personal income through wages, salaries, piece-work and commission

9.6 Percentages

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
6. 1 Percentages		
understand and use percentages	<ul style="list-style-type: none">• use percentages notation correctly• express percentages as proper fractions• express percentages as decimals• calculate the percentage of a quantity• express one quantity as a percentage of another	<ul style="list-style-type: none">• calculate simple percentages• use percentages to make comparisons• discuss percentages in everyday life
6. 2 Conversion		
convert fractions and decimals to percentages	<ul style="list-style-type: none">• interpret proper fractions with denominators of 100 as per hundred or percentage (%)• convert between common fractions, decimal numbers and percentages	<ul style="list-style-type: none">• express percentages as decimal and proper fractions• express proper fractions as decimals and percentages
6.3 Word problems		
solve and interpret word problems	<ul style="list-style-type: none">• calculate a percentage of a given quantity• solve problems involving the everyday use of percentages	<ul style="list-style-type: none">• find percentages of given quantities• solve problems involving the everyday use of percentages

9.7 Measurements

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
7.1 Length demonstrate an understanding of and ability to apply measurement units of length		
	<ul style="list-style-type: none"> • recognise and use standard units of length as <i>mm</i>, <i>cm</i> and <i>m</i> • select appropriate instruments and units to measure linear dimensions • measure perimeters of circle and irregular shapes using strings and rulers • measure boundaries and diagonal shapes and objects in <i>mm</i>, <i>cm</i> and <i>m</i> • use abbreviation: <i>cm</i>, <i>m</i>, <i>mm</i> • use the following terminology associated with length: long/-er/-est, short/-er/est, breadth, width, height, distance 	<ul style="list-style-type: none"> • measure a variety of distance between two objects/points up to a kilometre • estimate distances up to two kilometres • select the most appropriate standard unit to measure linear dimensions: <i>mm</i>, <i>cm</i>, <i>m</i> and <i>km</i> • measure perimeters of objects in the surroundings
7.2 Mass demonstrate an understanding of and ability to apply measurement units of mass		
	<ul style="list-style-type: none"> • select appropriate standard units to measure mass • use the correct abbreviations for kilogram (<i>kg</i>) and gram (<i>g</i>) • use the following terminology associated with mass: the same mass, heavy/light; heavier/lighter, heaviest/lightest • measure accurately mass of objects in the environment using appropriate measuring units and devices • convert kilograms to grams • convert grams to kilograms • solve word problems on mass involving four operations 	<ul style="list-style-type: none"> • record measurements in grams and kilograms using decimal notation • convert kilograms to grams • convert grams to kilograms • solve word problems on mass

9.7 Measurement (continued)

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
7.3 Capacity		
demonstrate understanding of measurement of capacity	<ul style="list-style-type: none"> • use the unit symbols for capacities ($m\ell$, ℓ) • estimate to the nearest litre • measure to the nearest litre • solve word problems using four basic operations involving capacity 	<ul style="list-style-type: none"> • convert $m\ell$ to ℓ • convert ℓ to $m\ell$ • add and subtract capacities including measurements given in up to 1 decimal places • apply the four basic operations to problems in context
7.4 Time		
develop understanding of time	<ul style="list-style-type: none"> • read, write and tell time in 24-hour notation • write analogue time as digital time and vice versa • identify time span in year, decade, century, millennium • calculate duration of time • identify differences in time for places with reference to the Greenwich Meridian • solve word problems involving time by applying four basic operations 	<ul style="list-style-type: none"> • interpret data on calendars and timetables to solve problems • identify time differences of places using their respective local times • solve word problems on time • calculate distance, time and speed • interpret distance-time graphs • convert between 12-hour and 24-hour notations
7.5 Temperature		
understand measurements of temperature	<ul style="list-style-type: none"> • read a thermometer • list displayed results of thermometer measuring weather/air temperature and maintain a list of a day (e.g. outside temperature at 8am, 10am, 12am) 	<ul style="list-style-type: none"> • read various temperature displays (e.g. oven temperature, engine temperature, water boiler temperature, fridge temperature, etc.) • state why water cooks at 100°C and freezes at 0°C • discuss the different melting temperatures of materials and the different reactions of liquids to temperature

9.8 Decimal numbers

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
8. 1 Compare and order decimals		
compute decimals	<ul style="list-style-type: none">• use place value to represent decimals up to 100• read and write decimal numbers in numerals and words up to 100• order decimals in descending numbers up to 2 decimal places• use the symbols =, <, > to compare decimals	<ul style="list-style-type: none">• use the symbols =, <, > to compare decimals with whole numbers• use the symbols =, <,> to compare decimals with fractions
8. 2 Conversion		
convert between decimal numbers and common fractions	<ul style="list-style-type: none">• convert common fractions with denominators that are factors of 10, 100 and 1 000 to decimals	<ul style="list-style-type: none">• convert decimal numbers to common fractions in their simplest form
round off	<ul style="list-style-type: none">• round off decimal numbers to the first, second and third decimal place or to the nearest whole number	<ul style="list-style-type: none">• round off decimals to specified numbers of decimal places

9.9 Data handling

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
9.1 Graphs		
develop an understanding of collecting, organising, representing and interpreting data	<ul style="list-style-type: none">• collect discrete data from local sources e.g. shoe sizes, ages, colour of cars• organise data in tally forms and tables• display data in pictographs using two or more symbols• show data on bar graphs• display data on line graphs• read and analyse information given in a graph (e.g. in newspapers, bus schedules, etc.)	<ul style="list-style-type: none">• read and interpret line graph representing information on everyday life• display data in pictographs using two or more symbols• show data on bar graphs• display data on line graphs
9. 2 Measures of central tendency		
acquire skills to summarise data	<ul style="list-style-type: none">• find the mode in distribution of not more than 10 numbers• find median in a distribution of not more than 10 numbers• calculate the range of a given distribution• show how the mode, median and range can be used to interpret data	<ul style="list-style-type: none">• find mean, mode, median and range in a distribution of not more than 10 numbers• solve problems involving mode, median and mean
9.3 Data collection analysis		
develop manipulative skills on collecting, recording, displaying and analysing data	<ul style="list-style-type: none">• collect and record data in tabular form• identify an appropriate graph to display data• make conclusions about the findings of the data collected	<ul style="list-style-type: none">• read and interpret information from different graphs and tables• design surveys, collect data and record, involving cross-curricular issues in tabular form• identify appropriate graph displayed data• make conclusions about the findings of the investigation

9.10 Geometry

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
10.1 Point and lines		
know how to use the terminology of points and lines appropriately	<ul style="list-style-type: none"> • use and interpret the following geometrical terms: point, line, diagonal, parallel, perpendicular, vertical, horizontal • differentiate types of lines • indicate positions with a point on a graph • draw and identify straight, vertical, horizontal, perpendicular and parallel lines 	<ul style="list-style-type: none"> • combine different types of lines to make shapes • draw patterns (lines/shapes) in parallel and vertical congruency
10. 2 Angles, triangles and quadrilaterals		
know how to measure, classify and draw	<ul style="list-style-type: none"> • identify and name acute, right, obtuse, straight, reflex angles and the revolution • use a protractor to draw and measure angles up to 360° • identify, name and draw isosceles, equilateral and scalene triangles • identify, name and draw different kinds of quadrilaterals (square, rectangle, rhombus, parallelogram, trapezium and kite) 	<ul style="list-style-type: none"> • construct angles accurately given their sizes • use a protractor to draw and measure angles up to 360° • draw different kinds of quadrilaterals (square, rectangle, rhombus, parallelogram, trapezium and kite)
10. 3 Three-dimensional shapes and circles		
know and understand terminology related to different kinds of three-dimensional shapes	<ul style="list-style-type: none"> • identify different kinds of three-dimensional (3-D) shapes (cube, cuboid, pyramid, sphere and cylinder) • correctly use the terminology: • centre, radius, diameter, chord, sector, circumference 	<ul style="list-style-type: none"> • identify and sketch shapes of faces in three dimensional figures • colour designs of balls giving them a 3-D appearance • discuss how to determine position and direction of objects
10. 4 Lines of symmetry		
know the line of symmetry in plane figures	<ul style="list-style-type: none"> • identify and draw lines of symmetry • create/complete shapes that have line symmetry 	<ul style="list-style-type: none"> • construct other simple geometrical plane figures from given data

9.11 Algebra and calculator skills

GENERAL OBJECTIVES <i>Learners will:</i>	YEAR 1 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>	YEAR 2 SPECIFIC OBJECTIVES <i>Learners should be able to:</i>
11. 1 Algebra		
acquire knowledge on algebra	<ul style="list-style-type: none"> • generate number patterns • complete a linear sequence given at least four consecutive terms • identify rules for linear geometric patterns • map arrow diagrams using two or more operations • replace missing number in sentences involving addition and subtraction with alphabets and solve inspection : e.g. $3 + \Delta = 7 \rightarrow 3 + a = 10$ • give a story form of a number sentence involving two terms 	<ul style="list-style-type: none"> • translate simple statements into algebraic expressions • translate simple statements into algebraic equations
11.2 Applying of calculator		
know how to use the scientific calculator whenever it is appropriate	<ul style="list-style-type: none"> • switch on and off a calculator and describe how to care for it • perform calculations on a mobile phone • type additions and subtractions correctly 	<ul style="list-style-type: none"> • use the calculator whenever it is appropriate • estimate the results (the digit) through habituation before using the calculator (as a form of verification) • calculate percentages on a calculator

10. Subject management

10.1 Timetabling

Timetabling should provide opportunities for longer teaching and learning sequences, cross-curricular teaching, and project work. Timetabling can be as flexible as possible, if the total time allocation is adhere to. The elective skills subject learning content covers 65% of time allocation to theoretical and practical activities of the syllabus. This will allow the learners to review and practice essential information and skills that will ensure that the learner maintains competence over time.

The compulsory supplementary subjects of the course are considered essential for all learners. The knowledge and skills that the learner will acquire in these subjects provides a foundation for effective performance in the workplace. These subjects take all together 35% of the time allocation in the course delivery. Under optimal circumstances, the Certificate in Basic Pre-vocational skills are timetabled as follows:

Key Learning Area	Subject	% Time	7- Day cycle	% Time	5- Day cycle
Supplementary subjects	Communication	11%	6	10%	5
	Functional Numeracy	9%	5	10%	5
	Work orientation	5%	3	4%	2
	Fundamental ICT	5%	3	6%	3
	Entrepreneurship	5%	3	4%	2
Basic Pre-vocational Skills subjects*	Elective s kills Subject	65%	36	65%	32
	TOTAL %	100%	56 periods of 40 mins per cycle		49 periods of 45 mins per cycle
	TOTAL TIME		37 hours 30 mins per cycle		36 hours per cycle

**Blocked lessons are required for most practical sessions.*

10.2 Application of generic syllabus content

The Functional Numeracy syllabus is generic (a basic, broad and common syllabus) and should be offered applicable to the Basic Pre-vocational skills area of each group, e.g. use content, vocabulary, examples and assessment applied to Woodwork, Hairdressing, Food Preparation, Auto Mechanics, etc. to the relevant topics in this syllabus.

10.3 Resources and materials

Good management of resources, especially at school level can support curriculum intentions and ensure that learners benefit from effective, all-round education. It is expected that Functional Numeracy will be offered in a realistic and conducive environment. Successful training depends on the availability of appropriate and up-to-date resources and materials.

10.4 Delivery considerations

This course is underpinned by learner-centred approaches regarding the course design, delivery and evaluation. Certificate in Basic Pre-vocational skills allows for a range of delivery modes in a variety of settings. Safe working procedures and practices should be applied in any vocational course. Teachers in vocational education should be aware of current health and safety requirements and adopt their teaching practices that reflect these requirements. Learners in this course require support and reasonable adjustment to achieve necessary level of competence.

This should be determined on an individual basis through the collaborative planning process. Collaborative relationships should be developed between the skills teacher and the supplementary Certificate in Basic Pre-vocational skills, Functional Numeracy Syllabus, NIED 2023

subject teacher to assist in learner-centred instruction and assessment and in arranging effective delivery of the course.

11. Assessment

A learner-centred curriculum and learner-centred teaching use a broad range of knowledge and skills which are relevant to the knowledge-based society. The specific objectives in the syllabus state what understanding and skills a learner must demonstrate as a result of a teaching-learning process, and which will be assessed. However, it is intended that the curriculum be learning-driven, not assessment and examination driven. Assessment should be primarily used to aid the teacher to determine the mastery level achieved by learners and to give them feedback to meet specific objectives in the various skills areas. Assessment and examination are to support learning.

This syllabus is grounded on the principle of inclusivity. Special arrangements, reasonable adjustments, accommodations and modifications must be visible in both continuous and summative assessment to enable each learner to access assessment.

11.1 Purpose of assessment

Assessment is intended to get a reliable picture of progress of the learner in terms of achieving the competencies of the syllabus. Ongoing assessment is necessary to monitor whether the learner is developing competence and to identify areas that will need more structured teaching and/or further practice. In learner-centered education, assessing the progress and achievements of each learner continuously is an integral part of the teaching and learning process. Assessment is used as a tool to provide information to:

The learner

The information gathered about the learners' progress and achievement should be used to give feedback to the learners. It should highlight their strong and weak points providing suitable solutions.

The parents/guardians, and

The parents/guardians should be regularly informed about the progress of their child, be encouraged to reward achievements and be given suggestions as how they can support the learner's activities.

Evaluation of the teaching/learning process

The progress and achievements of the learner can be used by the trainer/teacher to evaluate the teaching and learning process in terms of the:

- relevance of content
- learner participation
- optimal use of group work
- individual work

Evidence of learner competence is reflected in specific knowledge and skills, and the application of that knowledge and skills. As this is a skills-oriented subject, evaluation should focus mainly on practical application.

11.2 Types of assessment

Continuous assessment

Continuous assessment should be planned and programme in the beginning of the course. It may also be adjusted or restructured during the progression of the course as need arises. In order to capture the full range and levels of competence, a variety of formal and informal continuous assessment situations is needed to give a complete picture of the learner's progress and achievements in all subjects. Continuous assessment must be clear, simple and manageable, and explicitly anchored in a learner-centred principles and practice. Teachers must elicit reliable and valid information of the learner's performance in the competencies. .

As this course focuses on skills training, the majority of the assignments should reflect practical application. The continuous assessment must reflect 70% practical skills and 30% theoretical knowledge.

The information gathered about the learners' progress and achievements should be used to give feedback to the learners about their strong and weak points, where they are doing well and why, where and how they need to try more.

Formative assessment

Formative assessment is any assessment made during the school year in order to improve learning and to help shape and direct the teaching-learning process. Assessment has a formative role for learners if and when:

- it is used to motivate them to extend their knowledge and skills, establish sound values, and to promote healthy habits of study
- assessment tasks help learners to solve problems intelligently by using what they have learned
- the teacher uses the information to improve teaching methods and learning materials.

Possible formative assessment methods:

- observations recorded on checklist
- diagnostic interviews
- group/peer assessment
- self-assessment
- paper-and-pencil tasks
- learner journal

Summative assessment

Summative assessment determines the overall achievement of a learner and learning success. It takes place at the end of a learning cycle, programme or phase and is primarily used for assigning marks. Summative assessment may take many forms, e.g., paper and pencil tasks, interviews, performance tasks, journal entries, etc.

At the end of the Certificate in Basic Pre-vocational skills the progress and achievements of the learner is summed up. The summative assessment will consist of continuous assessment accumulated in the portfolio and a final assessment. This totals to the final course mark. On the basis of this, decisions have to be made as to whether or not a learner achieved all the, or enough, specific objectives to be certified.

Differentiated assessment

Differentiated assessment is based on the concept that learners differ in the way they process new learning. It is a continuous process whereby the teacher gathers information about the learner, before and after instruction through multiple sources to identify the learner's needs and strengths. Differentiated assessment indicates:

- a need for additional learning support individually or in a small group;
- adjustment of the assessment domains following the educational, psychological and social intervention;
- an adjustment or deviation of the assessment domain from the traditional assessment applicable to all learners.

Diagnostic assessment

Barriers to learning, strengths, learning difficulties and gaps in learning can be determined through diagnostic assessment, which takes place at any time during the learning process. Diagnostic assessment should include inputs from the multi-disciplinary support team. It directs lesson planning and which learning and teaching methods should be used to support the learners.

Evaluation

Information from informal and formal continuous assessment is to be used by the teacher to know where it is necessary to adapt methods and materials to the individual progress and needs of each learner. At the end of each main unit of teaching, and at the end of each term, the teacher, together with the learners, should evaluate the process in terms of tasks completed, participation, what the learners have learnt, and what can be done to improve the working atmosphere and achievements of the class.

Informal methods

The teacher must assess how well each learner masters the competencies described in the subject syllabus and from this gain a picture of the all-round progress of the learner. In the Certificate in Basic Pre-vocational skills this is done to a large extent in an informal way through observation of each learner's progress in learning and in practical application while they are:

- communicating
- applying knowledge
- identifying and using materials and equipment
- role-playing
- interpreting, unravelling and evaluating case studies
- going on excursions
- investigating situations/scenarios
- making judgements
- working in a team, and
- in their general participation in and contribution to activities.

Formal methods

The use of formal written tests can only assess a limited range of specific objectives expected in Functional Numeracy and should therefore not take up a lot of time. It should take place occasionally and be limited to the time of one-lesson period. As the Functional Numeracy syllabus is skills-orientated, formal assessment should make out not more than 10% of the final mark.

11.3 Alternative assessment

Alternative assessment is the utilisation of non-traditional approaches in judging learner performance. It is used to determine what the learner can do and cannot do, in contrast to what they do or do not know. Alternative assessment involves performance or tasks relating to real-life situations and is process-oriented. The outcomes of the alternative assessment will enable learners who are not academically strong to progress and develop their potentials and talents to the maximum. These types of assessments formats may include:

- on-the-job or off-the-job practical assessments
- role-plays or simulations
- open-ended questions
- writing samples
- story or text re-telling
- case studies
- small projects or assignments
- self and peer assessment
- teacher observations
- journals and learning logs
- interviews.

Reasonable adjustments to assessment procedures and materials might be required to allow some learners to demonstrate competence. The degree to which a learner's special needs affect their demonstration of competence will vary from learner to learner and might vary from task to task. Adjustments will be required where learners experience difficulty with language, reading and/or writing. Assessments for these learners should be structured to allow the learner to demonstrate their

knowledge regardless of any reading, writing and language difficulties. The key principle of validity, reliability, fairness and flexibility should be considered when providing reasonable adjustments in assessment procedures and material.

When selecting the format of assessment teachers should consider the context in which the knowledge will be applied. The type of assessment format selected should reflect consideration of the way in which the information will be used in practical application.

Various categories of alternative assessment involve:

(i) Authentic assessment

Authentic assessment integrates the assessment of traditional academic content with the knowledge and skills important to lifelong learning using a variety of techniques, including “real world” situations. The learner uses their understanding of the subject to solve real world situations and problems. For an assessment to be authentic, the context, purpose, audience and constraints of the test should connect in some way to real world situations and problems.

(ii) Oral-based assessment

The oral-based assessment assesses the learner’s competencies without lowering the content, depth or level of the competencies. It is an oral assessment of the outcomes of teaching and learning of learners who might have mastered the competencies taught but is not able to demonstrate these competencies due to literacy and numeric difficulties they are experiencing. A checklist of appropriate questions should be developed with reference to the topic and specific objectives to be mastered.

(iii) Performance-based assessment

Performance-based assessment requires the learner to construct a response, create a product, or demonstrate application of knowledge in authentic context. Performance-based assessment requires the development of new assessment tools and scoring rubrics.

Performance-based alternative assessments may include portfolios, checklists, rating scales and rubrics. These are explained further as follow:

Portfolio

Portfolio assessment is an evaluation tool used to document learner knowledge and learning through series of learner-developed artefacts. Portfolio is kept in a folder or file and contains a collection of evidence of the achievements of a learner throughout the course. Portfolios may include:

- a selection of learner work, e.g. photographs, projects, reference materials, video or audiotapes and final product.
- guidelines for content selection
- criteria for evaluating process and product
- evidence of learner reflection

The portfolio contains the learners’ practical work throughout Year 1 and 2. A minimum number of practical exercises will have to be done continuously throughout the three terms in Year 1 and the two terms in Year 2. Each practical exercise will be weighted to a mark out of 10 marks, while projects will be weighted to mark out of 15. All the learners’ practical activities and project marks will contribute towards promotion in Year 1 and Year 2. Therefore all Year 1 and 2 marks need to be kept in a portfolio file and the processed mark will have to send to DNEA at the beginning of term 3 of Year 2.

Portfolio reflects the actual day to day learning activities of learners. Each learner should build up a portfolio during the course. The portfolio is kept in a folder, file or/and work books. The portfolio supports assessment and can aid the curriculum vitae of the job-seeker. Some portfolios are designed to present the learner’s best work, others are designed to show how the learner’s work has evolved

over time, and still others are comprehensive repositories for the entire learner's work. The portfolio must be made available to the verifier / moderator on request at any given time. More guidelines on the portfolio is found in the assessment manual.

A portfolio comprises of:

1. Content sheet
2. Identification of learner (ID and/or Birth Certificate)
3. Résumé
4. Transcript of results
5. Portfolio evaluation form (completed per term)
6. Job attachment feedback/reports
7. Continuous assessment mark sheets
8. Assignments, models/projects, photos of work in progress or completed work, checklists topic tests, etc. - proof of work contributing to the continuous assessment marks
9. Reports on excursions
10. Proof of group (team) work (with clear assessing criteria)
11. Teacher's report (Narrative report)
12. Moderator's report

The Skills Subject teacher administers the 'main' Portfolios – it stays in the classroom or workshop for the duration of the course. The Skills Training teacher starts to build up the portfolio's content, as stated above, adding the learners' work as referred to in number 8. By the end of the course, **the Supplementary Subject teachers send in evidence of learners' course work to be added to the main portfolio** – this then forms one portfolio with evidence of all the work done by the learner.

Checklists, rating scales, and rubrics

Checklists, rating scales and rubrics are tools that state specific objectives and allow teachers and learners to gather information and to make judgements about what learners know and can do in relation to the specific objectives. They offer systematic ways of collecting data about specific behaviours, knowledge and skills.

Checklists usually offer a yes/no format in relation to student demonstration of specific criteria. These are lists of objectives or behaviours to be observed. This is similar to a light switch; the light is either on or off. They may be used to record observations of an individual, a group or a whole class.

A tick-off checklist is used to assess whether all required specific objectives of a topic have been mastered. Relevant grade descriptors in this document should be applied. The assessment of skills is done by:

- informally collecting information from parents on what is taking place at home;
- check-listing the skills demonstrated;
- narration of the learner's potentials;
- developing an assessment tool (portfolio, checklists, oral assessment, etc.) and used as the tool for assessing and monitoring the skills development.

Rating scales allow teachers to indicate the degree or frequency of the behaviours, skills and strategies displayed by the learner. To continue the light switch analogy, a rating scale is like a dimmer switch that provides for a range of performance levels. Rating scales state the criteria and provide three or four response selections to describe the quality or frequency of learners work.

Rubrics use a set of criteria to evaluate a learner's performance. They consist of a fixed measurement scale and detailed description of the characteristics for each level of performance. These descriptions focus on the quality of the product or performance and not the quantity; e.g., not the number of paragraphs, examples to support an idea, or spelling errors. Rubrics are commonly used to evaluate

learner performance with the intention of including the result in a grade for reporting purposes. Rubrics can increase the consistency and reliability of scoring.

Examples of checklists, rating scales and rubrics are given at the end of the syllabus.

Recording progress

The progress made by learners through continuous assessment and formal assessment must be recorded throughout the course to inform parents/guardians of the progress and achievements of their children (an end-of-term report to parents). This will also help to determine learning support, not only during lesson presentation, but extended to after school hours sessions.

Criterion-referenced grades

When grades are awarded in continuous assessment, it is essential that they reflect the learner's actual level of achievement in the competencies, and are not related to how well other learners are achieving or to the idea that a fixed percentage of the learners must always be awarded a Grade A, B, C, and so on (norm-referencing).

In criterion-referenced assessment, each letter grade must have a descriptor for what the learner must demonstrate in order to be awarded the grade. Grade descriptors must be developed for each subject for each year. It is important that teachers in each department/section work together to have a shared understanding of what the grade descriptors mean, and how to apply them in continuous assessment, so that grades are awarded correctly and consistently across subjects. Only then will the assessment results be reliable.

11.4 Grade descriptors

The learner's level of achievement in relation to the specific objectives in the subject syllabus is shown in letter grades. When letter grades are awarded, it is essential that they reflect the learner's actual level of achievement in relation to the specific objectives. The relation between the grades awarded and specific objectives are shown below.

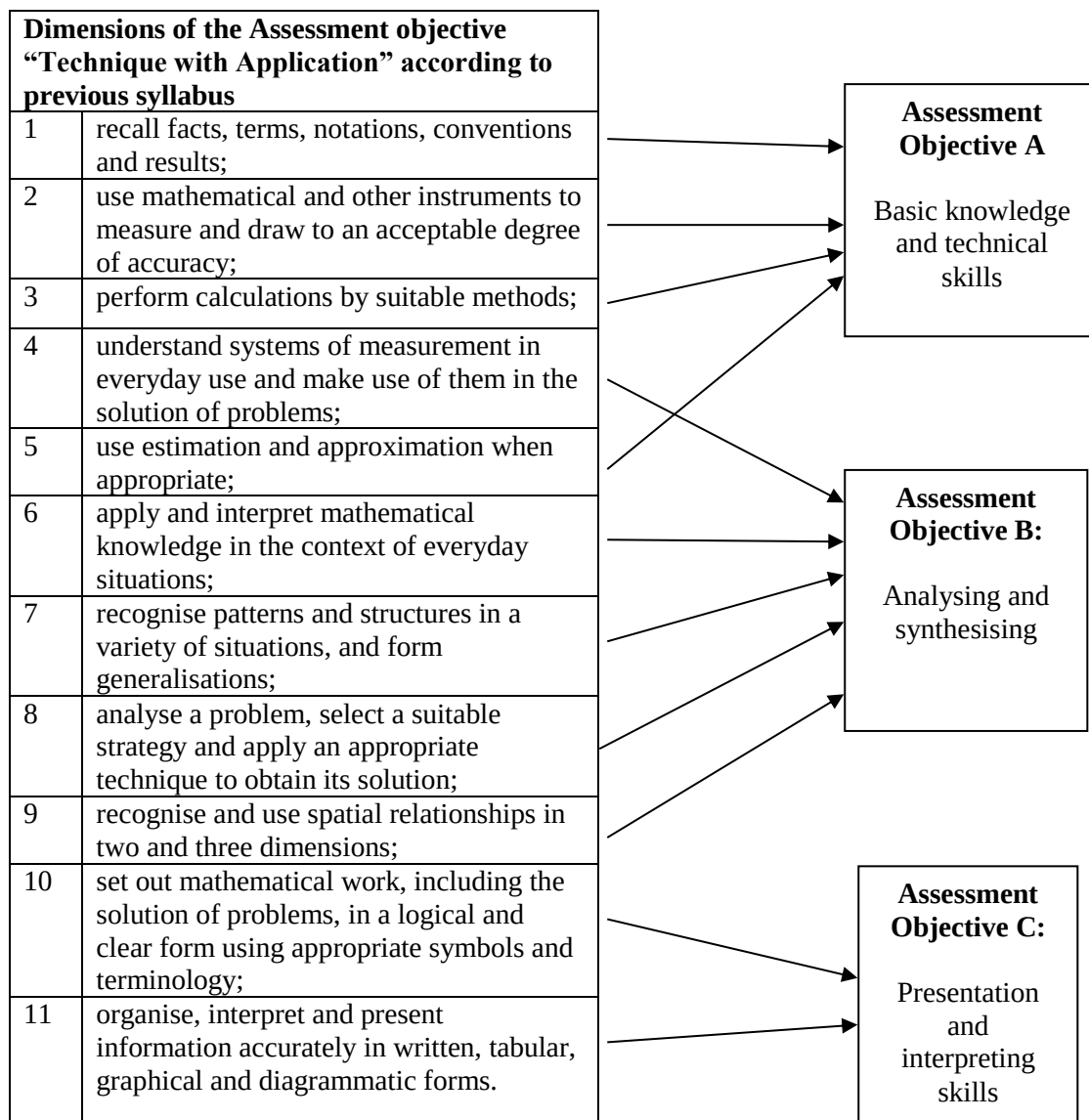
Grade	% Range	Competencies descriptors
A	80%+	Achieved objectives exceptionally well. The learner is outstanding in all areas of competency.
B	70-79%	Achieved objectives very well. The learner's achievement lies substantially above average requirements and the learner is highly proficient in most areas of competency.
C	60-69%	Achieved objectives well. The learner has mastered the specific objectives and can apply them in unknown situations and contexts.
D	50-59%	Achieved objectives satisfactorily. The learner's achievement corresponds to average requirements. The learner may be in need of learning support in some areas.
E	40-49%	Achieved the minimum number of objectives to be considered competent. The learner may not have achieved all the specific objectives, but the learner's achievement is sufficient to exceed the minimum competency level. The learner is in need of learning support in most areas.
U	0-39%	Ungraded. The learner has not been able to reach a minimum level of competency in the objectives, even with extensive help from the teacher. The learner is seriously in need of learning support.

11.5 Assessment objectives

The assessment will include, wherever appropriate, personal, social, environmental, economic and technological applications of Functional Numeracy. The assessment must take into account the learner's ability to communicate clearly and logically and apply conventions where appropriate.

Assessment objective A Basic knowledge and technical skills	Numeracy and algebraic skills	Place value, +, -, *, /, and order of operation, number sense and approximation, operations with fractions and decimals and conversions, percentages, handling algebraic expressions, solving equations, functions
	Mental arithmetic skills	Multiplication tables, simple +, -, *, / exercises
	Measuring skills	Using measuring instruments (i.e., length, mass, capacity, time) estimating, accuracy
	Drawing skills	Using drawing instruments, i.e., ruler, compass, protractor, accuracy 1 mm, 1°
	Sketching skills (spatial perception)	Recognising and representing key features, i.e., right angles, equi-distance, parallel, proportionality
	Maths language skills	Key words (sum, product, ..., more, less, equal, large, small), correct use of symbol notations, conventions
	Knowledge of key concepts of Maths in life	Special concepts from money, time and measurements used in real-world problems
Assessment objective B: Analysing, and synthesising skills	Problem-analysis skills	Identify relevant and irrelevant elements, recognise the problem
		Analyse real-world situations, connect correctly to mathematical concepts and translate into mathematical language
	Data analysis skills	Recognise patterns and algebraic relationships, make logical deductions
		Recognise and use spatial relationships in two- and three dimensions
	Strategy-finding skills	Use exploration strategies, like brain-storming, visualisation, exploring examples, testing and identifying steps
Assessment objective C: Presentation and interpreting skills	Combination skills and transfer skills	Combine a variety of appropriate mathematical concepts in solving problems
	Formal presentation skills	Write mathematical work in a clear form using appropriate symbols and terminology
	Logical presentation skills	Organise information, document steps and present problem solutions clearly
	Logical argumentation skills	Judge outcomes of investigations supported by convincing reasons

The three Assessment objectives are further outlined as follows:



11.6 Continuous assessment: detailed guidelines

A specified number of continuous assessment activities per term should be selected, graded and recorded. Not more than two assessments per term are to be topic tests. These continuous assessments must be carefully planned and marked according to a marking scheme, marking criteria or memorandum. The criteria used to assess activities other than tests should be given to the learner before the assessment activity. Evidence of the work produced by good, average and low-achieving learners, as well as the written assignment and marking scheme, have to be kept at school until the end of the next year. Teachers can choose to grade and/or record more than the required continuous assessments if it is necessary for formative purposes. An end-of-year summative grade will be based only on the assessment tasks described in the syllabus. Not more than 30% of the continuous assessment may be based on tests, which include topic tests and end-of-term tests.

Types of continuous assessment

Continuous assessment should be planned and programmed at the beginning of the year, and kept as simple as possible. Marks given for class and homework activities may be recorded for continuous assessment. In Functional Numeracy in the Certificate in Basic Pre-vocational skills, the continuous assessment tasks are as follows:

Practical investigations: These assess the learners' ability to think and reason independently and to reflect critically on their own thinking.

Projects: A project is a longer assignment than a topic task, and gives learners an opportunity to complete an investigation into one of the themes/topics (e.g., money and finance) outlined in the syllabus. This type of investigation will enable the teacher and learner to pursue a topic in greater depth and in a more lively and creative way than possible with short discrete topic tasks or investigations. Projects assess the ability of learners to solve problems and apply mathematics processes to everyday life.

Topic tasks: These are activities that most teachers already use in their day-to-day teaching. These are recorded, assessed activities that could introduce a topic, be used during the teaching of a topic and/or revision of a topic. They may well include assessment involving competencies to do with locating information, conducting surveys, analysing information or presenting information.

Topic tests: Completed topics should be concluded with a test indicating the achievements of the learners in these topics. Written tests are specifically set by the teacher to assess the learners' achievements in relation to objectives specified in the syllabus and should consist of both short questions and more structured questions.

End-of-term tests: This will be a more comprehensive topic test of the term's work and should be skills-orientated. No homework should be assigned during the time of writing the end-of-term tests. End-of-term tests should not consist of more than 30 marks, whether the special arrangements and considerations were applied. The tests may be a written or oral test, taking the ability of the individual learner into consideration. Learners who need special arrangements such as extra time, a scribe, a transcriber or a reader should be accommodated for formal assessment and arrangements should be made throughout the course.

Summary of formal continuous assessment tasks (reflected in the portfolio)

Continuous Assessment Year 1				
Components	Term 1		Term 2	
	Number & Marks	Total CA	Number & Marks	Total CA
Practical Investigations	1x10	10	1x10	10
Projects	2x10	20	2x10	20
Topic Tasks	3x10	30	3x10	30
Topic Tests	2x10	20	2x10	20
End-of-term tests	1x20	20	1x20	20
Term Mark		100		100

Continuous Assessment Year 2				
Components	Term 1		Term 2	
	Number & Marks	Total CA	Number & Marks	Total CA
Job Attachment				
Practical Investigations	1x15	15	1x15	15
Projects	1x15	15	1x15	15
Topic Tasks	2x10	20	2x10	20
Topic Tests	2x10	20	2x10	20
End-of-term test	1x30	30	1x30*	30
Term Mark		100		100

**The end of term test for the second year, second semester should cover the work of the whole year. The test may be out of 60 marks and may be converted to 30.*

End-of-term test: detailed guidelines

At the end of each trimester there will be internal end-of-term test. The purpose of this test is to focus on how well learners can demonstrate their thinking, communication, and problem-solving skills related to the areas of the syllabus which are most essential for continuing in the next trimester. The test will also guide to evaluate which learners might need more learning support. The end-of-term test should apply special arrangements and considerations that are responsive to the special education needs of all learners.

Preparing for and conducting this examination should not take up more than two weeks altogether right at the end of the year.

11.7 Promotion marks

For Functional Numeracy in Year 1 and Year 2, both continuous assessment and end-of-term test contributes 100% towards the final promotion mark. The promotion marks are calculated as follows:

Promotion mark Year 1 and 2			
	Term 1	Term 2	Total
Weighted term mark	100	100	200
CA mark	$200 \div 2$		100
Promotion mark	CA Mark Term 1 + CA Mark Term 2 $\div 200 \times 100$		

The certification marks are calculated as follows:

Certification Mark			
	Year 1 CA Mark	Year 2 CA Mark	Total
Term mark	100	100	200
Promotion mark	$(\text{Year 1} + \text{Year 2}) \div 200$		100

11.8 Specification grid

The specification grid below is for general guidance only and illustrates where particular objectives might receive most emphasis on the various components for both the end-of-term test and for continuous assessment.

The specification grid below indicates the weighting allocated to each objective for both Continuous Assessment and for the Written Test.

Assessment objectives for written test	
Components	Weighting
Objective A Basic knowledge and technical skills	60%
Objective B Analysing, abstraction and synthesising skills	40%
Total	100%
Assessment objectives for continuous assessment	
Components	Weighting
Assessment objective A Basic knowledge and technical skills	60%
Assessment objective B Analysing, abstraction and synthesising skills	20%
Assessment objective C Presentation and interpreting skills	20%
Total	100%

11.9 Assessment rubrics/criteria

Rubrics use a set of criteria to evaluate a learner's performance. They consist of a fixed measurement scale and detailed descriptions of the characteristics for each level of performance. The marking rubrics should ideally be less than one page altogether and will meet the following criteria:

For a topic task:

- There must be an Objective A rubric
- There must be an Objective B rubric
- There is **NO** Objective C rubric

For an investigation:

- There must be an Objective A rubric
- There must be an Objective B rubric
- There may be an Objective C rubric – this is optional and will not happen often

For a project:

- There must be an Objective A rubric
- There must be an Objective B rubric
- There must be an Objective C rubric

Each of the Assessment objective A, B and C rubrics must meet the following criteria:

- Each rubric must address at least one skill (see 10.5)
- Each Assessment objective A and B rubrics should ideally address more than one skill.
- A particular skill on a rubric may be assessed more than once
- The maximum marks allocated to each Assessment objective rubric must be a multiple of 5 (5, 10, 15, etc. marks)
- Each rubric should independently assess the whole task. For example, if a topic task has a rubric A and rubric B, then both rubrics should allocate marks to all the questions in the task (Remember: this is because only one might be used in a particular year).

Example of an Assessment rubric: Whole numbers

Assessment Objective A Basic Knowledge and Technical Skills	Numeracy and algebraic skills. (Q1; Q2)	7 All answers are correct	6 - 4 Most answers are correct	3 - 0 Few or no answers are correct
	Mental arithmetic skills (Q3.1)	2 All answers are correct	1 2 answers are correct	0 One or none of the answers are correct
	Maths language skills (Q3.2)	2 All answers are correct	1 1 answer is correct	0 None of the answers are correct
	Numeracy and algebraic skills (Q3.3)	3 All answers are correct	1 Most answers are correct	0 Few or none of the answers are correct
	Mental arithmetic skills (Q4)	3 Correct answer with a correct method shown	2 - 1 Correct answer without a method shown or incorrect (part) answer with correct method	0 Wrong answer
	Numeracy and algebraic skills (Q5)	3 All answers are correct	1 Most answers are correct	0 Few or none of the answers are correct

11.10 Assessment checklist and evaluation grids

A checklist is a focussed diagnostic tool listing performance criteria, which can be used to plan learner progress over time. It can list actions, descriptions, skills, concepts, processes, and/or attitudes that a teacher checks off as he or she observes them. It can be used to assess written work or other products such as oral presentations, art and media works, and models.

The teacher may work from the prepared checklist or marks to check each element as it occurs. The score is the total number of items that are checked. Various gradations in quality are not recognised unless the checklist specifies that something should be done "exceptionally," "very well" "satisfactorily," or in some other way that brings quality into question.

A topic task, investigation, observation or a project

General objectives are used to plan instruction and to evaluate learner's performance on the same objectives. After the planned activities, learners are assessed to determine how well they learned. Evaluation is achieved through observation during the activities, and through specific assessment tasks.

Steps to develop a checklist:

1. Identify the general objective
2. List target behaviours, skills or specific learning objectives separately
3. Organise the checklist sequentially
4. Determine how record keeping will be done

Guidelines on the checklist:

- 1 Teachers may adjust these example grids to the needs of their learners.
- 2 The application of checklists and marking grids are compulsory.
- 3 The format is just a recommendation, it is not prescribed.
- 4 These checklists and evaluation grids should form part of the portfolio
- 5 The checklists and evaluation grids in the syllabus do not cover all the topics. It is expected of teachers to use these as examples and create their own as needed.
- 6 Each topic should have at least one checklist or evaluation grids, but may have more than one depending on the specific learning objectives expected to be achieved.

Annexe 1: Checklist for evaluating An assignment on fractions

Functional Numeracy Assignment: <i>Create a Fraction Chart</i>								
Learner Name:					Date:			
No.	Learning outcomes	Achieved objectives exceptional well	Achieved objectives very well	Achieved objectives well	Achieved objectives satisfactory	Achieved the minimum number of objectives to be considered competent	Ungraded	TOTAL
1	Understood the content of the assignment	6	5	4	3	2	1	
2	Used correct type of material	6	5	4	3	2	1	
3	Fractions divided equally	6	5	4	3	2	1	
4	Used different colours correctly	6	5	4	3	2	1	
5	Different fractional parts divided correctly e.g. $\left(\frac{2}{3}\right)$	6	5	4	3	2	1	
6	Neatness	6	5	4	3	2	1	
7	Handed in on time	6	5	4	3	2	1	
							TOTAL: 42	
% Range		80% +	70-79%	60-69%	50-59%	40-49%	0-39%	
Grade		A	B	C	D	E	U	

Teacher:_____

Date:_____

Head of Department:_____

Date:_____

Annexe 2: Checklist for functional numeracy

Learners Name: _____

Date: _____

TOPIC: GRAPHS								
SKILLS: Reading/Analysing and interpreting								
Learning outcomes		Achieved objectives exceptionally well	Achieved objectives very well	Achieved objectives well	Achieved objectives satisfactorily	Achieved the minimum number of objectives to be considered competent	Ungraded	Total
1	Identify different graphs							
2	Reading information from graphs							
3	Interpreting data correctly							
4	Comparing information from tables							
							TOTAL	
% Range		80%+	70-79%	60-69%	50-59%	40-49%	0-39%	
Grade		A	B	C	D	E	U	

Teacher: _____

Date: _____

Head of Department: _____

Date: _____

Annexe 3: Glossary of terms

Angle	The space between two converging straight lines. Types of angles include: a) acute angle which is less than 90° , b) obtuse angle which is more than 90° . c) right angle which is 90° and straight angle which is 180°
Angle of depression and elevation	Angles measured from a horizontal line downwards (depression) and upwards (elevation)
Approximate Approximation Approximately	Giving the number which is nearest in value. Giving the distance, mass or volume to the nearest round number
Arc	A part of the circumference of a circle or any curved line
Area	A two dimensional measure of the surface covered measured in square units
Ascending Order	Placing things in order from the smallest to the largest
Average	Average is found by taking the sum of a group of numbers and then dividing by the total number of items
Base (Of A Shape)	The side which is at the bottom of a two – dimensional shape or a three – dimensional object
Bearings	Angles measured in degrees from North, turning clockwise direction
BODMAS/ BEDMAS	<p>BODMAS and BEDMAS describe the order in which arithmetic operations must be carried out. This technique helps us to complete calculations involving more than two operations in a way that makes the solution the same for everyone.</p> <p>NOTE: Multiplication and division should be performed first before addition and subtraction but in their order of appearance from left to right and addition and subtraction should also be performed in their order of appearance from left to right.</p>
Capacity	The amount something can hold
Circle	A round figure, every point on the edge (circumference) of which is the same distance from the centre.
Comma	Punctuation mark used in Southern Africa to indicate the slight separation between whole numbers and decimal fractions. A full stop is used for the same purpose in Europe and America
Circumference	The perimeter or the distance around the circle
Common Denominator	A number divisible (without leaving a remainder) by all the denominators involved
Cone	A three – dimensional figure like a pyramid but with a circular base
Congruent	Exactly alike or equal
Continuous (data)	Data that has an infinite value. e.g. the weight of a tomato can be 1.38726 grams or the length of a tea spoon can be 14.37291 cm
Criterion, Criteria	Standards, rules or tests by which something can be judged
Cube	A three – dimensional shape with six congruent faces. The six faces are congruent squares
Cylinder	A three – dimensional shape which is bounded by a circular surface and whose end faces are parallel circles
Data	Information in the form of facts or statistics which can be analysed
Decimal	A fraction with a denominator of ten, or some power of ten, shown by a comma. (see also comma)
Denominator	The number indicated below the line in a fraction. It tells a number of parts into which the whole has been divided
Descending Order	Placing things in order from the biggest first to the smallest. Counting downwards too.
Diagonal, Diagonally	A slanting line from the top corner to the bottom corner in a rectangle for instance

Diagram	A sketch, plan, graph that explains something
Diameter	A straight line which joins two points on the circumference of a circle and passes through the centre
Difference	The amount by which one numbers differs from another or the answer you get when you subtract two numbers
Digit	The written symbol for any of the numbers
Dimension	The measurable part of the shape. Length, breadth, width, height, depth are the main measures of dimension
Direct proportion	Refers to a relationship between two variables where in a given context all quantities either increase or decrease
Discrete (data)	Data that has finite values. e.g. the number of cars a person has can be 2 cars but can never be 2. 345 cars
Edge	The line where two surfaces of a solid shape meet
Equilateral	Having all sides equal. An equilateral triangle has three sides that are equal
Equivalent	The same according to a given criterion
Face	Each individual surface that make up a solid shape
Factor	One of the numbers to be multiplied in multiplication
Fraction	A quantity less than a whole or a small amount or proportion of something
Graph	A picture used to illustrate a given collection of data
Height	The distance from the bottom to the top
Hexagon	A two-dimensional shape with six straight sides
Horizontal	Parallel to the base or to the ground
Indirect/inverse proportion	Refers to a relationship between two variables where in a given context some of the quantities increase while others decrease.
Length	The distance along the longest side of an object
Lowest Term	A fraction with its numerator and denominator not having a common factor greater than 1
Net	A 3D net is a pictorial representation of a three-dimensional figure on a two dimensional plane so that each and every edge and face is in front of us. A 3D net has no height or width. It only has length and breadth. With the help of a 3D net, a three-dimensional shape is converted into a two-dimensional diagram. It can be given to us with an easy way to analyse the different bases, edges, faces and even dimensions of any space figure.
Notation	A system of recording numbers by using symbols
Numerical	A symbol used to stand for a number
Octagon	A two-dimensional figure that has eight sides
Ordinal Numbers	Numbers used to indicate the order of objects
Parallelogram	A four – sided figure whose pairs of opposite sides are parallel, and equal in length
Pattern	A model or plan identified in a mathematical situation
Pentagon	A two-dimensional shape that has five sides
Perimeter	The distance around an object
Prime Number	A whole number greater than 1 that has exactly two factors – the number itself and one

Prism	A three-dimensional shape whose cross sections are all the same and parallel
Pyramid	A three-dimensional figure with triangular faces meeting at a single point whose base is two-dimensional
Quadrilateral	A two-dimensional figure that has four sides
Radius	A straight line from the centre of any circle to the point on the circumference of that circle
Reverse percentages	<p>Sometimes a question will ask you to work backwards and find the original price of something after the price has increased. If you are given a quantity after a percentage increase or decrease, and you need to find the original amount, use this method:</p> <p><i>Example 1</i></p> <p>A radio sells for N\$659, after a 40% increase in the cost price. Find the cost price.</p>
Sphere	A round three-dimensional shape whose surface is at every point an equal distance from a point called the centre of the sphere
Tessellate	Lay out in a mosaic pattern of small patterned blocks
Three-Dimensional	Having measurable dimensions in three independent directions (height, width, length)
Two-Dimensional	Having measurable dimensions in two independent directions (length and width)
Variable	The number or numbers indicated by a placeholder in the form of a letters
Vertex/Vertices	The point where lines , or edges, meet to form an angle
Width	The distance something measures from one side to the other side

Annexe 4: Metric and si units

Quantity	Metric units	SI unit
Length	<i>mm, cm, dm, m, km</i>	Metre (m)
Mass	<i>mg, g, kg, ton</i>	Kilogram (kg)
Time	<i>ms, s, min, hr, d, wk, mo, yr</i>	Second (s)
Area	<i>mm², cm², m², ha, km²</i>	m ²
Volume	<i>mm³, cm³, dm³, m³</i>	m ³

Annexe 5: International system prefixes

Factor	Factor in words
1 000 000 000 000 or 10 ¹²	trillion
1 000 000 000 or 10 ⁹	billion
1 000 000 or 10 ⁶	million
1 000 or 10 ³	thousand

Annexe 6: Miscellaneous symbols

=	Is equal to
≠	Is not equal to
≡	Is identical or is congruent to
≈	Is approximately equal to
∞	Is proportional to
<	Is strictly less than
≤	Is less than or equal to
>	Is strictly greater than
≥	Is greater than or equal to

Annexe 7: Assessment harvest record form

[illegible]

Subject Teacher: _____

Date: _____

Head Of Department: _____

Date:_____

Annexe 8: Assessment record form year 1

School:																
Teacher:																
Year:.....																
Functional Numeracy																
	Term	Practical Investigations	Project 1	Project 2	TOTAL (CA1)	Topic Task 1	Topic Task 2	Topic Task 3	TOTAL (CA2)	Topic Test 1	Topic Test 2	TOTAL (CA3)	End-of-term Evaluation (ETE)	CA1+CA2+CA3 +ETE / 100	Term Mark (in %)	Promotion Mark (In %)
Name of the learner		10	10	10	30	10	10	10	30	10	10	20	20		100	100
1.	1															
	2															
2.	1															
	2															
3.	1															
	2															
4.	1															
	2															
5.	1															
	2															
6.	1															
	2															
7.	1															
	2															

Subject Teacher:.....

Date:.....

Head of Department:.....

Date:.....

CBPVS Co-ordinator:

Date:.....

Principal:.....

Date:.....

Annexe 9: Assessment record form year 2

School:																	
Teacher:																	
Year:																	
Functional Numeracy	Term	Practical Investigations	Project 1	TOTAL	Topic Task 1	Topic Task 2	TOTAL	Topic Test 1	Topic Test 2	TOTAL	End-of-term Evaluation ETE)	Term Mark	PROMOTION CA Term Mark	Promotion Mark (in %)	CERTIFICATION MARK		TOTAL
Name of the learner		15	15	30	10	10	20	10	10	20	30	CA / 100	CA / 200	100	Y1	Y2	%
1.	1																
	2																
2.	1																
	2																
3.	1																
	2																
4.	1																
	2																
5.	1																
	2																
6.	1																
	2																
7.	1																
	2																

Subject Teacher:.....

Date:.....

Head of Department:.....

Date:.....

CBPVS Co-ordinator:

Date:.....

Principal:.....

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