



Republic of Malawi

Syllabus for

Initial Primary Teacher Education

Mathematics

Ministry of Education, Science and Technology

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Prepared and published by

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Foreword

Education is the lifeblood of the nation. It is a prerequisite for individual, community and national development. Education prepares learners to play their roles effectively in efforts to promote and sustain a country's socio-economic development. Parents or guardians desire that their children develop into adults with sound minds and healthy bodies, through the acquisition of appropriate knowledge, skills and desirable attitudes to enable them to live productive and happy lives.

Education should, therefore, help learners to develop high standards of conduct, attitudes, judgment and a sense of responsibility. Student teachers have to be well prepared in order to be able to take this responsibility of teaching children effectively.

The provision of quality education is based on many factors and a good quality of teachers is one of them. Teachers play a central role because they are the key source of knowledge, responsible for facilitating the learning process and act as role models for the learners.

The function of initial teacher education in Malawi is to prepare student teachers in their aspiration of becoming teachers of high quality. This is achieved by helping the student teachers to acquire the right knowledge, skills and competences to enable them to effectively teach children. In view of this, the Initial Teacher Education curriculum has been reviewed to ensure that student teachers who graduate from this programme are well trained and prepared for their profession.

The process and implementation of this review has been guided by the Teacher Education Philosophy which states as follows:

‘To produce a reflective, autonomous, lifelong learning teacher, able to display moral values and embrace learners’ diversity.’

It is therefore hoped that Teacher Training Colleges will find this curriculum effective in helping the student teachers to build a solid foundation in their teaching profession.

Secretary for Education
Ministry of Education, Science and Technology

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Introduction

The purpose of primary teacher education is to produce and continually develop competent and responsive teachers who effectively deliver quality education to all learners under prevailing conditions and demands in primary schools and promote their desire for life-long learning. IPTE endeavors to educate teachers in sufficient numbers, continually develop their professionalism so that they are able to effectively and efficiently deliver quality and relevant education to primary school learners.

National goals for primary teacher education

The national goals of primary teacher education in Malawi are to produce teachers who are:

- academically well-grounded and professionally competent
- flexible and capable of adapting to the changing needs and environment of the Malawian society
- capable of adhering to and maintaining the ethics of the teaching profession imaginative in adapting, creating and utilising locally available resources suitable for the needs of their learners

Rationale

Mathematics education aims at developing student's critical awareness of mathematical concepts and their relationships and how these are used for solving practical problems in a social, environmental, cultural and economic context.

At an early stage, the learners will be able to count and carry out basic mathematical operations. At a later stage, the learners will be able to make inferences using manipulated data and to apply mathematics for solving practical problems in daily their life.

Teacher education philosophy

The following has been the guiding principle during the design, development and implementation of the IPTE curriculum.

To produce a reflective, autonomous, lifelong learning teacher, able to display moral values and embrace learners' diversity.

IPTE programme structure

The duration of the teacher education is two years. The general outlook of the two years is as follows:

Year 1			Year 2		
Term 1	Term 2	Term 3	Term 1	Term 2	Term 3
In college, learning subject content with a special focus on methods for lower classes	In college, learning subject content with special focus on methods for upper classes	Out in teaching practice schools, practising teaching mainly in the lower classes	Out in teaching practise schools, practising teaching mainly in the upper classes	In college, with special emphasis on reflection, inclusion and further practice on teaching methods	In college, with special emphasis on subject content, policies and frameworks

Unique features

The features of the reviewed curriculum are as follows:

- The curriculum design is based on reflective and practice principles.
- Early grade teaching methodologies are distinct.
- The delivery of the subject content follows the modular approach.
- Student teachers will be allowed to practise teaching both in the lower classes (Standards 1 to 4) as well as in upper classes (Standards 5-8).
- Cross cutting issues such as Assessment for Learning, ICT, IE and CT are integrated.

IPTE subject matrix

The new curriculum has adopted the reflective practitioner model of teacher education which connects practice and theory and integrates content and pedagogy in teaching and learning. In this structure, student-teachers will be in college for two terms of year 1 and be in primary schools for teaching practice in the third term of first year and first term of the second year. Student teachers will be back to colleges in terms 2 and 3 of year 2 to continue learning subject content, reflecting on their experiences of teaching practice and then wind up their studies.

This curriculum is designed in a modular structure and contains eleven subjects. These are Chichewa, English, Mathematics, Education Foundation Studies, Agriculture, Social Studies, Life Skills, Science and Technology, Expressive Arts, Religious Studies and Human Ecology. In this modular design, a set of topics forms a module in a subject. A module consists of 40 hours contact time.

IPTE outcomes based curriculum

This outcomes-based curriculum is focused on student teachers' achievements. These achievements are teaching competences.

The teaching competences student teachers develop from the IPTE programme will be seen when student teachers are able to transfer the knowledge and skills directly in primary schools.

Subject and core elements

The IPTE curriculum comprises of eleven subjects namely Agriculture, Science and Technology, Mathematics, Expressive arts, Chichewa, English, Education Foundation studies, Social studies, Life skills, Religious studies and Human ecology. Each subject has a rationale from which core elements are derived.

Teacher education core element outcomes

Teacher education core element outcomes are descriptions of the competences to be acquired by the student teacher for successful teaching.

IPTE assessment procedures

In Outcomes-Based Education (OBE), assessment is a significant part of the teaching and learning process. The main purpose of assessment is to facilitate learning by constant monitoring of the progress of individual student teachers. The process is on-going and it uses clearly defined criteria with a variety of tools, methods and techniques in different situations and contexts. This helps to gather valid and reliable information on the student teachers' achievement of outcomes.

Assessment in initial primary teacher education in Malawi comprises two major components: continuous and summative assessment. Both modes involve assessment tasks that measure the student teachers' achievement of knowledge, skills, values and attitudes. These tasks include oral presentations, practical and reflective tasks, reports, researches, tests and examinations.

In the reviewed curriculum, the weighting of continuous assessment in the final grade will be *60% continuous assessment* and *40% summative assessment*.

The continuous assessment will comprise:

- two grades based on each module
- end of module examinations for terms 1 and 3 of year 1
- teaching practice grades
- school experience journal grade

While the summative assessment will comprise:

- moderated grade from teaching practice in term 1 of year 2
- national examinations to be administered in term 3 of year 2 based on the modules of terms 2 and 3 of year 2.

Core elements and their outcomes

Theories, concepts and issues in the teaching and learning of mathematics

The student teachers will be able to demonstrate an understanding of theories, concepts and issues in the teaching and learning of mathematics and how they will apply these to their teaching of mathematics in primary school.

Number concepts and operations

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of number concepts and operations to enable primary school learners use numbers and their relationships in everyday life

Measurement

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of measurement to enable primary school learners apply appropriate measurement skills in everyday life.

Data handling

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of data handling to enable the primary school learner to analyze and interpret data for decision making by using graphs and tables in relation to everyday life.

Space and shape

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of space and shape to enable primary school learners use skills of space and shape in everyday life.

Accounting and business studies

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of accounting and business studies to enable primary school learner acquire basic knowledge and skills on financial management.

Patterns, functions and algebra

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of patterns, functions and algebra to enable the primary school learner use algebraic language and develop skills to solve textual problems

Scope and sequence chart

	Year 1		Year 2	
Core element	Term 1 (40hrs)	Term 2 (40hrs)	Term 2 (40hrs)	Term 3 (40hrs)
Theories, concepts and issues in teaching and learning mathematics	• Aims of teaching mathematics (2hrs) • Teaching for mathematical proficiency (2hrs) • Problem solving in mathematics teaching (3hr) • Knowledge for teaching mathematics (3hrs) • Issues of language, inclusion and large classes in mathematics teaching (3hrs)			

	Year 1		Year 2	
Core element	Term 1 (40hrs)	Term 2 (40hrs)	Term 2 (40hrs)	Term 3 (40hrs)
Number concepts and operations	• Teaching numbers in standards 1 to 4 (6hrs) • Teaching place value in standards 1 to 4 (2hrs) • Schemes, records of work and lesson plans for mathematics (4hrs) • Teaching equal sign (2hr) • Teaching addition of whole numbers in standards 1 to 4 (4hrs) • Teaching subtraction of whole numbers in standards 1 to 4 (3hrs) • Teaching multiplication of whole numbers in standards 1 to 4 (3hrs) • Teaching division of whole numbers (3hrs)	• Teaching HCF and LCM (4hrs) • Teaching fractions (12hrs) • Teaching decimals – self study (1hr) • Teaching approximation and estimation (2hrs) • Teaching rate, ratio and proportion (10hrs)		

	Year 1		Year 2	
Core element	Term 1 (40hrs)	Term 2 (40hrs)	Term 2 (40hrs)	Term 3 (40hrs)
Accounting and business studies				• Teaching postal and bank services (2hrs) • Teaching money (6hrs) • Teaching commission and discount (4hr) • Teaching taxes and premiums (3hrs) • Teaching simple and compound interest (4hrs) • Teaching simple accounts – self-study (1hr)

	Year 1		Year 2	
Core element	Term 1 (40hrs)	Term 2 (40hrs)	Term 2 (40hrs)	Term 3 (40hrs)
Space and shapes			• Teaching 3-D and 2-D shapes (4hrs) • Teaching scale drawing (4hrs) • Teaching bearing (4hrs) • Teaching lines, angles and triangles (8hrs) • Teaching quadrilaterals and circles (5hrs)	
Measurement		• Teaching capacity and volume (5hrs)	• Teaching mass (4hrs) • Teaching time (5hrs) • Teaching perimeter and area (6hrs)	

	Year 1		Year 2	
Core element	Term 1 (40hrs)	Term 2 (40hrs)	Term 2 (40hrs)	Term 3 (40hrs)
Patterns, functions and algebra				• Teaching inequalities (4hrs) • Teaching patterns (6hrs) • Teaching algebraic expressions (4hrs) • Teaching equations (6hrs)
Data handling		• Teaching processing data (4hrs) • Teaching measures of central tendency (2hrs)		

Teaching syllabus for mathematics

Term 1 of year 1

Core element Theories, concepts and issues in the teaching and learning of mathematics

Outcome The student teachers will be able to demonstrate an understanding of theories, concepts and issues in the teaching and learning of mathematics and how they will apply these to their teaching of mathematics in primary school.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate an understanding of the aims of teaching mathematics in schools	Student teachers must be able to: 1 explain why mathematics is taught in schools 2 discuss why mathematics is core and compulsory to all learners	Aims of teaching mathematics (2hrs)	• discussing uses of mathematics in story day life • discussing aims of teaching mathematics • discussing why mathematics should be core and compulsory • analysing usefulness of mathematics to all	• direct teaching • discussion • pair work • group work • written exercise • oral questions	• charts • mathematics education books • mathematics education articles • news papers • video clips

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate an understanding of knowledge for teaching mathematics	Student teachers must be able to: 1 distinguish types of knowledge for teaching 2 apply pedagogical content knowledge (PCK) in teaching mathematics	Mathematical knowledge for teaching (2hrs)	• discussing types of knowledge for teaching • discussing PCK in mathematics teaching • analysing PCK in mathematics teaching • exploring ways of developing PCK for teaching	• direct teaching • discussion • written exercise • oral questions • projects • card collection and clustering	• charts • mathematics education books • mathematics education articles • mathematics books • videos

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate an understanding of issues of language, inclusion and large classes	Student teachers must be able to: 1 apply their understanding of issues of language in teaching of mathematics 2 apply their knowledge of inclusiveness in teaching of mathematics 3 apply effective ways of teaching mathematics in large classes	Issues of language, inclusion and large classes in mathematics teaching (3hrs)	• analysing teaching mathematics in local languages • discussing issues of mathematics and language • importance of language in mathematics • teaching mathematics in English as a second language	• group work • know, want to know, learnt (KWL) • discussion • written exercise • oral questions • card collection and clustering	• charts • mathematics education books • mathematics education articles • mathematics books

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate an understanding of mathematical proficiency	Student teachers must be able to: 1 distinguish different strands of mathematical proficiency 2 apply all strands of mathematical proficiency to teaching school mathematics	Teaching for mathematical proficiency (3hrs)	• discussing the five Strands of mathematical proficiency • comparing the five Strands of mathematical proficiency • identifying the five Strands of mathematical proficiency in school mathematics • analysing ways of developing all strands in learners when teaching mathematics	• direct teaching • group work • discussion • written exercise • oral questions • projects • card collection and clustering	• mathematics education books • mathematics education articles • mathematics books • primary school syllabus • charts

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate problem solving skills	Student teachers must be able to: 1 apply different problem solving strategies and skills to different problems 2 demonstrate use of problem solving as an approach to teaching mathematics	Problem solving in mathematics teaching (3hrs)	• using problem solving as an approach to teaching mathematics • discussing problem solving in mathematics • practicing problem solving strategies • applying problem solving strategies to teaching mathematics in primary school • Relating problem solving to the strands of mathematical proficiency	• direct teaching • group work • know, want to know, learnt (KWL) • discussion • written exercise • oral questions • project	• charts • mathematics education books • mathematics education articles • mathematics books • computers • calculators • video clips

**Core element
Outcome**

Number concepts and operations

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of number concepts and operations to enable primary school learners use numbers and their relationships in everyday life

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective, teaching, learning and assessment methodologies when teaching numbers in standards 1 to 4	Student teachers must be able to: 1 analyse how children develop number concepts in the early years 2 apply appropriate methodologies when teaching numbers to standards 1 to 4	Teaching numbers in standards 1 to 4 (6hrs)	• eliciting learners' prior knowledge of numbers • discussing the importance of teaching pre-number activities • discussing history of numbers • exploring activities in teaching pre-number and numbers (<i>such as sorting, classifying, counting up, counting down, counting things, matching objects to numbers, responding to</i>	• critical thinking methods (<i>such as hot seat, ball game and pens on the middle</i>) • direct teaching • investigation • demonstration • group assessment • self-assessment • written exercise	• calculator • ICT resources (<i>such as video-clips of pre-number and number activities, online articles</i>) • objects for counting (<i>such as seeds, bottle tops, leaves and stones</i>) • representational resources (<i>such as dice, number charts, number cards, number line, number clock, abacus and ruler</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies when teaching numbers to standard 1 to 4		<i>spoken random numbers, recognising missing number and writing numbers)</i> - analysing change from concrete thinking (one-to-one correspondence) to abstract - determining primary school curriculum expectations for introducing numbers in each standard, 1 to 4 - responding to errors that learners make when learning pre-numbers and numbers - modifying activities on the teaching of pre-numbers and numbers to suit learners' abilities develop appropriate ways of assessing the learning of numbers (<i>such as observation and oral questioning</i>)	micro-teaching	- braille number charts - instructional materials for Standards 1 to 4 (<i>such as teacher's guides, syllabuses, learners' books</i>) - assessment resources (<i>such as rubric, checklist and portfolios</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective, teaching, learning and assessment methodologies when teaching place value of numbers in standards 1 to 4	Student teachers must be able to: 1 explore how children develop the concept of place value 2 develop competences for teaching place value	Teaching place value in standards 1 to 4 (6hrs)	• eliciting learners' prior knowledge of the concept of place value of numbers • analysing learners transition from concrete, semi-concrete to abstract • determining primary school curriculum expectations for introducing place value in standards 1 to 4 • exploring activities in teaching place value of numbers (<i>such as meaning of place value, units of place value, modelling place value using different resources, zero as place value holder</i>)	• brainstorming • discussion • critical thinking methods (<i>such as think-ink-pair-share, hot seat, ball game and pens in the middle</i>) • direct teaching • investigation • demonstration • group assessment • self-assessment • written exercise • micro-teaching	• ICT resources (<i>such as video-clips of place value of numbers, online articles</i>) • objects for counting (<i>such as, bottle tops, beads, string, sticks and discs</i>) • representational resources (<i>such as, number charts, number cards, place value box and abacus</i>) • braille number charts • instructional materials for standards 1 to 4 (<i>such as teacher's guides, syllabuses learners' books</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate assessment methodologies when teaching place value		• responding to errors that learners make when learning place value of numbers • modifying activities on the teaching of place value of numbers to suit learners' abilities • developing appropriate ways of assessing the learning of place value (<i>such as observation and oral questioning</i>)		• assessment resources (<i>such as rubric, checklist and portfolio</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • demonstrate an understanding of schemes and records of work and lesson plan for mathematics	Student teachers must be able to: 1 develop sample schemes of work for teaching mathematics 2 design sample lesson plans for teaching mathematics 3 evaluate mathematics lessons 4 complete records of work after teaching mathematics	Schemes, records of work and lesson plans for mathematics (4hrs)	• developing schemes of work • developing lesson plans • evaluating video lessons • analysing lesson plans • completing records of work • analysing schemes and records of work	• brainstorming • discussion • critical thinking methods (<i>such as think-ink-pair-share, tree diagram, author's chair, ball game and pens in the middle and gallery walk</i>) • direct teaching • investigation • demonstration • group assessment • self-assessment • written exercise	• teacher's guides, syllabuses, learners' books, school and annual calendar • ICT resources (<i>such as videos, online samples of lesson plans and schemes, articles</i>) • objects for counting • representational resources (<i>such as templates of schemes of work and lesson plans</i>) • assessment resources (<i>such as rubric, checklist and portfolio</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching numbers	Student teachers must be able to: 1 analyse learners' understanding of equal sign 2 explore appropriate methodologies for teaching equal sign 3 use appropriate assessment methodologies in the teaching and learning of equal sign	Teaching equal sign (2hrs)	• analysing misconceptions and errors on the use of the equal sign • exploring the use of the equal sign in everyday life • exploring activities in teaching equal sign (<i>such as meaning and use</i>) • teaching the equal sign • discussing appropriate ways of assessing proper use of equal sign	• brainstorming • discussion • critical thinking methods (<i>such as think-ink-pair-share, tree diagram</i>) • direct teaching • investigation • demonstration • group assessment • self-assessment • oral questions • written exercises	• instructional materials for primary mathematics (<i>such as teacher's guides</i>) • ICT resources (<i>such as videos of lessons, online samples of lesson plans and schemes, articles</i>) • objects for counting (<i>such as, bottle tops, beads, and discs</i>) • assessment resources (<i>such as rubric, checklist and portfolio</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching addition of whole numbers	Student teachers must be able to: 1 analyse how learners develop the concept of addition of whole numbers 2 use appropriate methodologies when teaching addition of whole numbers	Teaching addition of whole numbers in standards 1 to 4 (4hrs)	• eliciting learners' prior knowledge on addition of numbers • discussing importance of addition and its application in everyday life • determining primary school curriculum expectations on addition of whole numbers in standards 1 to 4 • exploring activities in teaching addition of numbers (<i>modelling the concept of addition, developing basic facts, properties of addition,</i>	• critical thinking methods (<i>such as think-pair-share, ball game and pens on the middle</i>) • direct teaching • investigation • demonstration • student generated questions • group assessment • self-assessment • written exercise • micro-teaching	• objects for counting (<i>such as seeds, bottle tops, leaves and stones</i>) • representational resources (<i>such as dice, number charts, number cards, number line, abacus and place value box</i>) • braille addition charts • instructional materials for Standards 1 to 4 (<i>such as teacher's guides, syllabuses learners' books</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of addition of whole numbers		<i>addition without and with regrouping</i>) - analysing learners' strategies, misconceptions and errors on addition of numbers - exploring techniques of adding numbers e.g., decomposition, complementary and extended notations - modifying activities on of addition of whole numbers to suit learners' abilities - discussing ways of assessing learners on addition of whole numbers (<i>such as observation, and oral questioning</i>) developing tools for assessing learners on addition of whole numbers (<i>such as checklist and rubric</i>)		basic addition facts tables

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching subtraction of whole numbers	Student teachers must be able to: 1 analyse how learners develop the concept of subtraction of whole numbers	Teaching subtraction of whole numbers in standards 1 to 4 (3hrs)	• eliciting learners' prior knowledge on subtraction of numbers • discussing the importance of subtraction and its application in everyday life • determining primary school curriculum expectations on subtraction of whole numbers in each standard, 1 to 4	• critical thinking methods (<i>such as think-pair-share, ball game and pens on the middle</i>) • direct teaching • investigation • demonstration • student generated questions • group assessment • self-assessment • written exercise • micro-teaching	• objects for counting (<i>such as seeds, bottle tops, leaves and stones</i>) • representational resources (<i>such as dice, number charts, number cards, number line, abacus and place value box</i>) • braille subtraction charts

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 use appropriate methodologies when teaching subtraction of numbers		• exploring activities in teaching subtraction of numbers (<i>such as modelling the concept of subtraction, types of subtraction, developing basic facts, properties of subtraction, subtraction without and with regrouping</i>) • exploring techniques of subtracting numbers e.g., complementary addition, equal addition, and decomposition • analysing learners' strategies, misconceptions and errors on subtraction of numbers		• instructional materials for standards 1 to 4 (<i>such as teacher's guides, syllabuses learners' books</i>) • basic facts of subtraction tables

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of subtraction of whole numbers		• modifying activities on the teaching of subtraction of whole numbers to suit learners' abilities • discussing various ways of assessing learners on subtraction of whole numbers (<i>such as observation and oral questioning</i>) • developing various tools for assessing learners on subtraction of whole numbers (<i>such as checklist and rubric</i>)		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching multiplication of whole numbers	Student teachers must be able to: 1 analyse how learners develop the concept of multiplication of whole numbers	Teaching multiplication of whole numbers in standards 1 to 4 (3hrs)	• eliciting learners' prior knowledge on multiplication of numbers • discussing importance of multiplication and its application in everyday life • determining primary school curriculum expectations on multiplication of whole numbers	• critical thinking methods (<i>such as think-pair-share, ball game and pens on the middle</i>) • direct teaching • investigation • demonstration • student generated questions • group assessment	• objects for counting (<i>such as seeds, bottle tops, leaves and stones</i>) • representational resources (<i>such as dice, number charts, number cards, number line, abacus and place value box</i>) • braille subtraction charts

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 apply appropriate methodologies when teaching multiplication of numbers 3 apply appropriate assessment methodologies in the teaching and learning of multiplication of whole numbers		• exploring activities in teaching multiplication of numbers • analysing learners' strategies, misconceptions and errors on multiplication of numbers • discussing ways of assessing learners on multiplication of whole numbers • modifying activities on the teaching of multiplication of whole numbers to suit learners' abilities	• self-assessment • written exercise • micro-teaching • investigation • discussion • pens in the middle	• instructional materials for standards 1 to 4 (<i>such as teacher's guides, syllabuses learners' books</i>) • basic facts of subtraction tables

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching division of whole numbers	Student teachers must be able to: 1 analyse how learners develop the concept of division of whole numbers 2 use appropriate methodologies when teaching division of numbers	Teaching division of whole numbers (3hrs)	• eliciting learners' prior knowledge on division of numbers • discussing importance of division and its application in everyday life • determining primary school curriculum expectations on division of whole numbers in standards • exploring activities in teaching division of numbers (<i>such as modelling the concept of division, developing basic facts of division, properties of division</i>)	• investigation • discussion • pens in the middle • ball game • walk around talk around • student generated questions • think-pair-share • give one take one • group assessment • self-assessment • group work • role-play	• abacus • place value box • braille division charts • braille multiplication charts • number charts • number cards • counters (seed, bottle tops, leaves, stones) • cuberithem board • teacher's guide • learners' book • basic division facts tables • number line model

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of division of whole numbers		• analysing learners' strategies on division of numbers • discussing learners' misconceptions and errors on division • modifying activities on the teaching of division of whole numbers to suit learners' abilities • discussing various ways of assessing learners on division of whole numbers (<i>such as observation, written work, and developing assessment items,</i>) • developing various tools for assessing learners on division of whole numbers (<i>such as checklist and rubric</i>) • practicing teaching of division of numbers		

Syllabus for term 2 of year 1

Core element Data handling

Outcome The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of data handling to enable the primary school learner to analyze and interpret data for decision making by using graphs and tables in relation to everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching processing data	Student teachers must be able to: 1 analyse how learners develop the concept of processing data 2 apply appropriate methodologies in teaching and learning of processing data	The teaching processing data (4hrs)	• eliciting learners' prior knowledge on processing data • discussing the importance of processing data and its application in everyday life • determining primary school curriculum expectations on processing data • exploring activities in teaching of processing data (such as data, sources of data, organising data, drawing physical graphs, drawing picture, bar, line and pie	• question and answer • direct teaching • investigation • demonstration • student generated questions	• representation resources (such as graph paper, charts, newspaper, grid boards) • instructional materials (such as teacher's guides, syllabuses and learners' books) • mathematical instruments • assessment resources (such as rubric, checklist and portfolio)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate assessment methodologies in the teaching and learning of processing data		<i>graphs and interpreting picture, bar, line and pie graphs)</i> • using technology in the teaching and learning of processing data eg calculations on calculators and drawing charts on computers • analysing learners misconceptions, and errors on processing data • modifying activities on the teaching of processing data to suit learners ability • discussing ways of assessing learners on processing data • developing various tools for assessing learners on processing data	• critical thinking methods (such as baobab tree competition, pens in the middle, give one take one, think-ink-pair-share, quick write, pens in the middle, walk around talk around, card collection and clustering) • group assessment • self-assessment • written exercise • micro-teaching	• ICT resources (such as calculators, computers, projectors, spreadsheet software and cellphones) • stop watch • stones

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching measures of central tendency	Student teachers must be able to: 1 analyse how learners develop the concept of measures of central tendency 2 apply appropriate methodologies in the teaching and learning of measures of central tendency	Teaching measures of central tendency (2hrs)	• eliciting learners' prior knowledge on measures of central tendency • discussing the importance of measures of central tendency and its application in everyday life • determining primary school curriculum expectations on measures of central tendency • exploring activities in teaching measures of central tendency (<i>such as differences between mean, mode and median; calculating mean, mode and median from everyday life situations</i>)	• question and answer • direct teaching • investigation • demonstration • student generated questions	• instructional materials for standards 5 to 8 (<i>such as teacher's guides, syllabuses learners' books</i>) • assessment resources (<i>such as rubric, checklist and portfolio</i>) • ICT resources (<i>such as calculators, computers, projector, spreadsheet software and cellphones</i>) • stop watch • data

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of measures of central tendency		• analysing learners strategies on measures of central tendency • analysing learners misconceptions and errors on measures of central tendency • modifying activities on the teaching of measures of central tendency to suit learners' ability • discussing suitable ways of assessing learners on the measures of central tendency • developing various tools for assessing learners on measures of central tendency (<i>such as checklist</i>)	• critical thinking methods (<i>such as hot seat, pens in the middle, gallery walk, mix freeze pair, think-ink-pair-share, quick write, pens in the middle, walk around talk around, excursion, card collection and clustering</i>) • group assessment • self-assessment • written exercise • micro-teaching	

Core element Number concepts and operations

Outcome The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of number concepts and operations to enable primary school learners use numbers and their relationships in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching HCF and LCM	Student teachers must be able to: 1 analyse how learners develop the concept of HCF and LCM 2 use appropriate methodologies when teaching and learning HCF and LCM	Teaching HCF and LCM in standards 5 to 8 (4hrs)	• eliciting learners prior knowledge on HCF • discussing importance of the concept of HCF and its application in everyday life • determining primary school curriculum expectations on HCF in each standard, 5 to 8 • exploring activities in teaching HCF (<i>such as modeling factors, finding HCF using different strategies, working out word problems involving HCF</i>)	• direct teaching • investigation • demonstration • student generated questions • critical thinking methods (<i>such as walk around talk around, ball game, give one take one and pens on the middle</i>) • group assessment • self-assessment • written exercise • micro-teaching	• objects for counting (<i>such as seeds, leaves, bottle tops, and stones</i>) • representational resources (<i>such as number charts, number cards, number line, abacus and tree charts</i>) • instructional materials for standards 5 to 8 (<i>such as teacher's guides, syllabuses learners' books</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
			• eliciting learners prior knowledge on LCM • discussing importance of the concept of LCM and its application in everyday life • determining primary school curriculum expectations on LCM in each Standard, 5 to 8 • exploring activities in teaching LCM (<i>such as modeling factors, finding LCM using different meaning, working out word problems involving LCM</i>) • analysing learners' strategies on HCF and LCM		• strings • assessment tools (<i>such as rubric, checklist and portfolio</i>) • ICT resources (<i>such as calculators and cellphones</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of HCF and LCM		• analysing learners' misconceptions, and errors on HCF and LCM • modifying activities on the teaching of HCF and LCM to suit learners' ability • applying various ways of assessing learners on HCF and LCM (<i>such as observation and written work</i>)		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching the concept of fractions	Student teachers must be able to: 1 analyse how learners develop concepts of fraction 2 apply appropriate methodologies in teaching and learning of the concept of fractions	Teaching fractions (12hrs)	• eliciting learners' prior knowledge on fractions • discussing the importance of fractions and its application in everyday life • determining primary school curriculum expectations on fractions in each standard, 3 to 8 • exploring activities in teaching fractions (<i>such as meaning of a fraction, modelling fractions, ordering fractions, types of fractions, equivalent fractions, basic operation on fractions and generating word problems</i>)	• direct teaching • investigation • student generated questions • demonstration • critical thinking methods (<i>such as bus stop, construction block, give one take one, card collection and clustering, think-pair-share, ball game and pens on the middle</i>) • group assessment	• objects for modelling fractions (<i>such as oranges, tomatoes, paper, seeds, stones, strings, sticks and bottle tops</i>) • representational resources (<i>such as fraction charts, number charts, number cards, number line, and tree charts</i>) • Teacher's guides, syllabuses learners' books

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate assessment methodologies in the teaching and learning of fractions		• analysing learners misconceptions, strategies and errors on fractions in early and later years (<i>such as video and written work</i>) • discussing various ways of assessing learners on fractions (<i>such as oral questions, written work and observation</i>) • developing various tools for assessing learners on fractions (<i>such as checklist</i>) • practising lesson planning and teaching fractions	• self-assessment • peer assessment • written exercise • micro-teaching	• objects for modelling fractions (<i>such as oranges, tomatoes, paper, seeds, stones, strings, sticks and bottle tops</i>) • representational resources (<i>such as fraction charts, number charts, number cards, number line, and tree charts</i>) • Teacher's guides, syllabuses learners' books

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies on the concept of decimals	Student teachers must be able to: 1 analyse learners understanding of the concept of decimals 2 use appropriate methodologies in teaching and learning the concept of decimals 3 use appropriate assessment methodologies in the teaching and learning of decimals	Teaching decimals (1hr) <i>(self- study)</i>	• determining primary school curriculum expectations on decimals in each standards, 5 to 8 • exploring activities in teaching decimals (such as <i>meaning of decimals, converting fractions to decimals and decimals to fractions, basic operations on decimals and generating word problems</i>) • discussing various ways of assessing learners on decimals (<i>such as observation and written work</i>)	• Self-study	• representational resources (<i>such as fraction charts, place value charts, number charts, number cards, number line, abacus and tree charts</i>) • instructional materials for standards 5 to 8 (<i>such as teacher's guides, syllabuses learners' books</i>) • ICT resources (<i>such as calculators, computers and cellphones</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching approximation and estimation	Student teachers must be able to: 1 analyse how learners develop the concepts of approximation and estimation	Teaching approximation and estimation (2hrs)	• eliciting learners' prior knowledge on approximation and estimation • discussing importance of approximation and estimation and its application in everyday life • determining primary school curriculum expectations on approximation and estimation	• direct teaching • investigation • demonstration • student generated questions • critical thinking methods (<i>such as pens in the middle, give one take one, think ink pair share, quick write, ball game, walk around talk around, card collection and clustering</i>)	• representational resources (<i>such as, graph paper, number line</i>) • instructional materials for standards 5 to 8 (<i>such as teacher's guides, syllabuses learners' books</i>) • strings • measuring tools (<i>such as ruler, measuring tape, measuring cylinder and scale</i>) • assessment resources (<i>such as rubric and checklist</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 apply appropriate methodologies in teaching and learning of approximation and estimation 3 use appropriate assessment methodologies in the teaching and learning of approximation and estimation		• exploring activities in teaching of approximation and estimation (<i>such as meaning, rounding off, significant figures and estimating quantities</i>) • modifying activities on the teaching of approximation and estimation to suit learners ability • developing various tools for assessing learners on decimals (<i>such as written exercise and oral questions</i>)	• group assessment • self-assessment • written exercise	• ICT resources (<i>such as calculators, computers, projector, electronic spreadsheet and cellphones</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching rate, ratio and proportion	Student teachers must be able to: 1 analyse how learners develop the concepts of rate, ratio and proportion 2 apply appropriate methodologies in teaching and learning of rate, ratio and proportion	Teaching rate, ratio and proportion (10hrs)	• eliciting learners' prior knowledge on rate, ratio and proportion • discussing importance of rate, ratio and proportion in everyday life • determining primary school curriculum expectations on rate, ratio and proportion • exploring activities in teaching of rate, ratio and proportion in standards 5 to 8 (<i>such as meanings, relationship between rate-ratio-proportion, representations, types of proportions</i>)	• direct teaching • investigation • demonstration • student generated questions • critical thinking methods (<i>such as construction block, pens in the middle, give one take one and think-ink-pair share</i>) • peer assessment • self-assessment • written exercise • micro-teaching	• instructional materials (<i>such as teacher's guides, syllabuses learners' books</i>) • assessment resources (<i>such as rubric, checklist and portfolio</i>) • ICT resources (<i>such as calculators, computers, projector, and cellphones</i>) • stop watch • football pitch • pencils • bank notes

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate assessment methodologies in the teaching and learning of rate, ratio and proportion		• applying problem solving skills to the teaching of learners rate, ratio and proportion • analysing learners misconceptions, strategies and errors on rate, ratio and proportion • modifying activities on the teaching of rate, ratio and proportion to suit learners ability • practicing lesson planning, teaching and assessing learners on rate, ratio and proportion		

**Core element
Outcome**

Measurement

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of measurement to enable primary school learners apply appropriate measurement skills in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching capacity and volume	Student teachers must be able to: 1 analyse how learners' develop the concept of volume and capacity 2 apply appropriate methodologies in teaching and learning of capacity and volume	Teaching capacity and volume (5hrs)	• eliciting learners' prior knowledge on capacity and volume • discussing importance of capacity and volume and its application in everyday life • determining primary school curriculum expectations on capacity and volume • exploring activities in teaching capacity and volume (<i>such as using non-standard and standard units, comparing the concepts of capacity and volume, converting capacity</i>)	• critical thinking methods (<i>such as construction block, pens in the middle, give one take one, think ink pair share, quick write, ball game, walk around talk around, card collection and clustering</i>) • direct teaching • investigation • demonstration	• instructional materials (<i>such as teacher's guides, syllabuses learners' books</i>) • rulers • assessment resources (<i>such as rubric, checklists and portfolio</i>) • ICT resources (<i>such as calculators, computers, projector, Geogebra software and cellphones</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate techniques to assess learners on capacity and volume		<i>to volume and vice-versa, solving problems on capacity and volume, deriving formulae for finding volume)</i> • using technology in the teaching and learning of capacity and volume (e.g. videos, drawing cubes or cuboids using drawing software) • analysing learners' misconceptions, strategies and errors on capacity and volume • modifying activities on the teaching of capacity and volume to suit learners ability • discussing suitable ways of assessing learners on capacity and volume (<i>such as observation and written work</i>)	• student generated questions • group assessment • self-assessment • written exercises	• containers • water • stones • wood blocks • bricks of different sizes

Term 2 of year 2 syllabus

Core element

Measurement

Outcome

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of measurement to enable primary school learners apply appropriate measurement skills in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching mass	Student teachers must be able to: 1 analyse how learners develop the concept of mass	Teaching mass (4hrs)	• investigate learners prior knowledge on mass • discussing the importance of mass and its application in everyday life • determining primary school curriculum expectations for teaching mass	• critical thinking methods (<i>such as question and answer, discussion, explanation, quick write, excursion, role play and gallery walk</i>) • group work • direct teaching • group assessment • self-assessment	• materials (<i>such as charts, simple balance, beam balance, digital scale and bottle tops</i>) • objects of different masses (<i>such as 500g, 1kg, 2kg, 5kg</i>) • instructional materials (<i>such as teacher's guides, learners' books and syllabuses</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 explore appropriate methodologies in the teaching and learning mass 3 apply appropriate techniques to assess learners on mass		• exploring activities in teaching mass (<i>such as measuring mass using non-standard and standard units, distinguishing mass and weight , solving problems involving mass in early and later years, representing mass graphically in later years</i>) • analyzing learners misconceptions, strategies and errors on mass • modifying activities on the teaching of mass to suit learners' abilities • discussing appropriate ways of assessing learners on mass • practicing teaching of mass in early and later years		• assessment resources (<i>such as checklist and portfolio</i>) • ICT resources (<i>such as projectors and calculator</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching the concept of time	Student teachers must be able to: 1 analyse how learners develop the concept of time	Teaching time (5hrs)	• exploring learners' prior knowledge on time • discussing the importance of time and its application in everyday life • determining primary school curriculum expectations for teaching time	• critical thinking methods (<i>such as baobab tree competition, revolution, mix freeze pair, quick write, student generated questions, think-pair-share, gallery walk</i>) • group assessment • self-assessment • explanation • demonstration • question and answer	• materials (<i>such as model of a clock, wall clock, analogue clock, digital clock paper strips, stop watches, clock faces, pendulum</i>) • local environment • assessment resources (<i>such as checklist</i>) • instructional materials (<i>such as syllabuses, teacher's guides and learners' books</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 explore appropriate methodologies in teaching and learning of the concept of time 3 use appropriate techniques to assess learners on the concept of time		- exploring activities in teaching mass (<i>such as telling time using non- standard units and standard units, reading time in hours, reading time to half past hour, reading time to quarter past and quarter to hour, reading time to 5 minutes and 1 minute, reading time in seconds, calculating time intervals</i>) - analysing learners' misconceptions, strategies and errors on the concept of time - modifying activities on teaching of time to suit learners' abilities - discussing suitable ways of assessing learners on the concept of time (<i>such as generating questions</i>)		

**Core element
Outcome**

Space and shape

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of space and shape to enable primary school learners use skills of space and shape in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching 3-D and 2-D shapes	Student teachers must be able to: 1 analyse how learners develop the concept of 3-D and 2-D shapes	Teaching 3-D and 2-D shapes (4hrs)	• investigating learners' prior knowledge on 3-D and 2-D shapes • discussing the importance of 3-D and 2-D shapes and its application in everyday life • determining primary school curriculum expectations for teaching 3-D and 2-D shapes	• critical thinking methods (<i>such as walk around talk around, student generated questions, think-pair-share, pens in the middle, mix freeze pair, give one take one and bus stop</i>) • group assessment • self-assessment	• 3-D objects (<i>such as bricks, maize cobs, balls, bottles</i>) • 3-D and 2-D models (<i>such as cubes, cuboids, squares, rectangles and spheres</i>) • Instructional resources (<i>such as learners' books and teacher's guides</i>) • Assessment resources (<i>such as checklists and portfolios</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 apply appropriate methodologies in the teaching and learning of 3-D and 2-D shapes 3 use appropriate techniques to assess learners on 3-D and 2-D shapes		• exploring activities in teaching 3-D and 2-D shapes (<i>such as comparing 3-D and 2-D shapes, finding lines of symmetry in 2-D shapes</i>) • using technology in the teaching and learning of 3-D and 2-D shapes such as software for drawing • analysing learners' misconceptions, strategies and errors on 3-D and 2-D shapes • modifying activities on teaching of 3-D and 2-D shapes to suit learners' abilities • exploring suitable ways of assessing learners on 3-D and 2-D shapes (<i>such as generating questions</i>)		• ICT resources (<i>such as computers, cell phones, tablets and projectors</i>) • graphics software

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching angles, parallel lines and triangles	Student teachers must be able to: 1 analyse how learners develop concepts of lines, angles and triangles 2 explore appropriate methodologies in the teaching and learning of angles, parallel lines and triangles	Teaching lines, angles and triangles (8hrs)	• investigating learners' prior knowledge on angles and triangles • discussing importance of teaching lines, angles and triangles • determining primary school curriculum expectations for teaching lines, angles and triangles • exploring activities in teaching lines, angles and triangles (such as lines and parallel lines, constructing parallel lines, classifying angles according to size, discussing properties of angles according to position, modeling angles, copying angles, constructing 30°, 45°, 60°, 90°, 120°, types of triangles and their properties, calculating values of angles and constructing triangles)	• critical thinking methods (such as question and answer, jigsaw, walk around talk around, student generated questions, think-pair-share, pens in the middle) • group assessment • self-assessment	• materials (such as ruler, pair of scissors, mathematical instruments, sticks and charts) • instructional resources (such as learners' books and teacher's guides) • assessment resources (such as checklist and portfolio) • ICT resources (such as computers, cell phones, tablets and projectors) • geogebra software

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate techniques to assess learners on angles, parallel lines and triangles		• using technology in the teaching and learning of lines, angles and triangles • analyzing learners misconceptions, strategies and errors on lines, angles and triangles • modifying activities on the teaching of lines, angles and triangle to suit learners' abilities • discussing suitable ways of assessing learners (<i>such as observation, developing questions and evaluating learners' work</i>)		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching quadrilaterals and circles	Student teachers must be able to: 1 analyse how learners develop the concept of quadrilaterals and circles	Teaching quadrilaterals and circles (5hrs)	• investigating learners' prior knowledge on quadrilaterals and circles • discussing importance of teaching quadrilaterals and circles and their application in everyday life • determining primary school curriculum expectations for teaching quadrilaterals and circles	• critical thinking methods (such as jigsaw , walk around talk around, question and answer, explanation, student generated questions, think-pair-share, pens in the middle) • assessment • self-assessment	• materials (such as ruler, pair of scissors, mathematical instruments, charts, sticks, strings, papers) • instructional resources (such as learners' books and teacher's guides) • assessment resources (such as checklist and portfolio) • ICT resources (such as computers, cell phones, tablets projectors and geogebra software)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	2 explore appropriate methodologies in the teaching and learning of quadrilaterals and circles		exploring activities in teaching quadrilaterals and circles (<i>such as discussing pi, discussing properties of quadrilaterals, calculating angles in quadrilaterals, constructing quadrilaterals given angles and sides, discussing parts of a circle, constructing circles, making protractors rulers from locally available resources</i>)		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate techniques to assess learners on quadrilaterals and circles		• using technology in the teaching and learning of quadrilaterals and circles e.g. software for drawing • analyzing learners' misconceptions, strategies and errors on quadrilaterals and circles • modifying activities on the teaching of quadrilaterals and circles to suit learners' abilities • discussing suitable ways of assessing learners on quadrilaterals and circles (<i>such as observation and developing questions</i>)		

**Core element
Outcome**

Measurement

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of measurement to enable primary school learners apply appropriate measurement skills in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching perimeter and area	Student teachers must be able to: 1 analyse how learners develop the concepts of perimeter and area 2 explore appropriate methodologies in the teaching and learning of	Teaching perimeter and area (6hrs)	• investigating learners' prior knowledge on perimeter and area • discussing importance of perimeter and area and their application in everyday life • determining primary school curriculum expectations for teaching perimeter and area • exploring activities in teaching (<i>such as deriving formulae for finding perimeter of</i>	• critical thinking methods (<i>such as, baobab tree competition, revolution, mix freeze pair, quick write, excursion, student generated questions, think-pair-share and gallery walk</i>) • group assessment • self-assessment • question and answer • demonstration	• materials (<i>such as ruler, pair of scissors, mathematical instruments, chart, graph paper, raised graph papers, tape measure, pipes and cylinders</i>) • circular objects (<i>such as coins and wheels</i>) • instructional materials (<i>such as syllabuses, teacher's guides and learners' book</i>) • calculators

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	perimeter and area 3 use appropriate techniques to assess learners on perimeter and area		<i>different shapes, solving problems involving perimeter and area, deriving formulae for finding area of different shapes, calculating area of borders and lawns)</i> • applying problem solving skills in teaching learners perimeter and area • analysing learners' misconceptions, strategies and errors on perimeter and area • modifying activities on perimeter and area to suit learners' abilities • discussing appropriate ways of assessing learners on perimeter and area(<i>such as generating questions</i>)	• explanation	• flower beds • school lawns

Core element

Space and shapes

Outcome

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of space and shape to enable primary school learners use skills of space and shapes in everyday life.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching scale drawing	Student teachers must be able to: 1 analyse how learners develop the concept of scale drawing 2 use appropriate methodologies in teaching and learning of scale drawing	Teaching scale drawing (4hrs)	• discussing learners' prior knowledge on scale drawing • discussing importance of scale drawing and its application in everyday life • determining primary school curriculum expectations for teaching scale drawing • exploring activities in teaching scale drawing (such as interpreting scale, drawing shapes to a given scale, reducing and	• critical thinking methods (such as walk around talk around, student generated questions, think-pair-share, pens in the middle, mix freeze pair, give one take one and bus stop and brainstorming) • group assessment • self-assessment	• materials (such as maps, rulers, pencils, charts, models of buildings and toys) • mathematical instruments • Instructional resources (such as learners' books and teacher's guides) • assessment resources (such as checklists and portfolios) • ICT resources (such as computers, cell phones, tablets and

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate techniques to assess learners on scale drawing		<i>enlarging shapes to a given scale factor)</i> • using technology in the teaching and learning of scale drawing eg software for drawing • analysing learners' misconceptions, strategies and errors on scale drawing • modifying activities on the teaching of scale drawing to suit learners' abilities • discussing suitable ways of assessing learners on scale drawing (<i>such as observation and evaluating learners' work</i>)		<i>projectors, Geogebra and other graphic software)</i>

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching bearing	Student teachers must be able to: 1 analyse how learners develop the concept of bearing 2 apply appropriate methodologies in teaching and learning of bearing	Teaching bearing (4hrs)	• investigating learners' prior knowledge on bearing • discussing importance of teaching bearing and its application in everyday life • determining primary school curriculum expectations for teaching bearing • exploring activities in teaching bearing (<i>such as locating objects using cardinal points and calculating bearing</i>) • using technology in the teaching and learning of bearing • analysing learners	• critical thinking methods (<i>such as walk around talk around, student generated questions, think-pair-share, pens in the middle, mix freeze pair, give one take one and bus stop and brainstorming</i>) • group assessment • self-assessment	• materials (<i>such as maps, rulers, pencils, charts, models of buildings and toys</i>) • mathematical instruments • local environment • Instructional resources (<i>such as learners' books and teacher's guides</i>) • Assessment resources (<i>such as checklist and portfolio</i>) • ICT resources (<i>such as computers, calculators, projectors, Geogebra and other graphic</i>

	3 use appropriate techniques to assess learners on bearing		misconceptions, strategies and errors on bearing • modifying activities on the teaching of bearing to suit learners' abilities • discussing suitable ways of assessing learners on bearing (<i>such as developing questions</i>)		<i>software)</i>
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Term 3 of year 2 Syllabus

Core element Accounting and business studies

Outcome The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of accounting and business studies to enable primary school learner acquire basic knowledge and skills on financial management.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching money	Student teachers must be able to: 1 analyse how learners develop the concept of money 2 apply appropriate methodologies when teaching money	Teaching money in standards 1 to 4 (5hrs)	• eliciting learners' prior knowledge of money • discussing the importance of teaching the concept of money and its use in everyday life • determining primary school curriculum expectations on the teaching of money in standards 1 to 4 • exploring activities in	• critical thinking methods (<i>such as think-pair-share, ball game, walk around talk around pens in the middle and quick write</i>) • direct teaching • role play • investigation • demonstration • student generated	• Different forms of money (<i>such as coins and bank notes</i>) • dummy money shopping corner • local market • ICT resources (<i>such as computers, videos and online articles</i>) • charts • cards • instructional materials (<i>such as syllabuses, teacher's</i>

	3 use appropriate assessment methodologies in the teaching and learning of money		teaching of money (describing features on coins and bank notes, writing of money, expressing values of money and performing basic operations on money) • modifying activities on the teaching of money to suit learners' abilities • analysing learners' misconceptions, strategies and errors on money discussing appropriate ways of assessing the learning of money (such as observation, oral questioning and written work)	questions • written exercise • micro-teaching • group assessment • self-assessment	guides, learners' books) • assessment resources (such as checklist and portfolio)
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies on postal and bank services	Student teachers must be able to: 1 analyse learners' understanding of postal services and bank services 2 apply appropriate methodologies when teaching postal and bank services	Teaching postal and bank services (2hrs)	• eliciting learners' prior knowledge of postal and bank services • discussing postal and bank services and their application in everyday life • investigating primary school curriculum expectations on postal and bank services • exploring activities in teaching of postal services (<i>such as identifying postal and bank services, calculating charges for postal services and solving practical problems</i>)	• role play • excursion • critical thinking methods (<i>such as think-pair-share, pens in the middle, walk around talk around, bus stop, give one take one</i>) • observation • direct teaching • student generated questions • discussion • group assessment • self-assessment	• postal and bank resources (<i>such as postal orders, money orders, cheques, deposit forms and withdrawal forms</i>) • ICT resources (<i>such as online articles on postal and bank services</i>) • instructional materials (<i>such as syllabuses, teacher's guides, learners' books</i>) • fliers on bank services (<i>such as online banking, mobile banking and</i>

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 apply appropriate assessment methodologies in the teaching and learning of postal and bank services		• modifying activities on the teaching of postal and bank services to suit learners' abilities • analysing learners' errors on postal and bank services • discussing appropriate ways of assessing learners on postal and bank services(<i>such as observation, oral questioning and written work</i>)		<i>bill payments)</i> Assessment resources (<i>such as checklist</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching commission and discount	Student teachers must be able to: 1 analyse how learners develop the concepts of commission and discount 2 apply appropriate methodologies when teaching commission and discount	Teaching commission and discount (4hrs)	• investigating students prior knowledge of commission and discount • discussing situations where commission and discount are applied in everyday life • determining primary school curriculum expectations on commission and discount • exploring activities in teaching commission and discount (such as differentiating commission and discount, calculating	• critical thinking methods (such as quick write, think-pair-share and ball game) • direct teaching • investigation • role play • demonstration • excursions • discussion • student generated questions • written exercises • group assessment	• local market • accounting resources (such as sale sheets, price list and clearance forms) • ICT resources (such as online articles and videos) • instructional materials (such as syllabuses, teacher's guides, learners' books) • assessment resources (such as checklist and rubric)

	3 use appropriate assessment methodologies in the teaching commission and discount		<i>commission, calculating discount)</i> • modifying activities on teaching of commission and discount to suit learners' abilities • analysing misconceptions, strategies and errors on commission and discount • discussing ways of assessing commission and discount(<i>such as observation and written work</i>)	• self-assessment	
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching taxes and premiums	Student teachers must be able to: 1 analyse how learners develop the concepts of taxes and premiums 2 apply appropriate methodologies when teaching of taxes and premiums	Teaching taxes and premiums (3hrs)	• investigate learners' prior knowledge of taxes and premiums • discussing the importance of teaching taxes and premiums and its application in everyday life • determining primary school curriculum expectations on taxes and premiums • exploring activities in teaching of taxes and premiums (such as types of taxes, calculating value added tax, custom s duties and income tax, types	• investigation • role play • demonstration • critical thinking methods (such as quick write, think-pair-share and ball game) • direct teaching • excursion • discussion • student generated questions • written exercises • self-assessment • self-assessment • group assessment	• local market • Accounting resources (such as sale sheets, receipts, price list and income tax rate sheet) • resource person • premium chart • ICT resources (such as computers, cell phones and online articles) • insurance policies • insurance forms • instructional materials (such as syllabuses, teacher's guides, learners' books) • assessment

	3 use appropriate assessment methodologies in the teaching of taxes and premiums		<i>of insurance policies and solving practical problems on taxes and premiums)</i> • modifying activities on teaching of taxes and premiums to suit learners' abilities • analysing learners' misconceptions, strategies and errors on taxes and premiums discussing suitable ways of assessing learners on taxes and premiums(<i>such as observation and written work</i>)		resources (<i>such as checklist and portfolio</i>)
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching simple and compound interest	Student teachers must be able to: 1 analyse how learners develop the concepts of simple and compound interest 2 apply appropriate methodologies in teaching of	Teaching simple and compound interest (4hrs)	• investigate learners' prior knowledge of simple and compound interest • discussing the importance of simple and compound interest and its application in everyday life • determining primary school curriculum expectations on simple and compound interest • exploring activities in teaching of simple and compound interest • modifying activities on	• critical thinking methods (<i>such as, think-pair-share, pens in the middle, give one take one, walk around talk around, construction block, bus stop and ball game</i>) • direct teaching • discussion • student generated questions • written exercise • self-assessment	• ICT resources (<i>such as computers and online articles</i>) • calculator • problem cards • instructional materials (<i>such as syllabuses, teacher's guides, learners' books</i>) • assessment resources (<i>such as checklist and portfolio</i>)

	simple and compound interest 3 use appropriate assessment methodologies in the teaching of simple and compound interest		simple and compound interest to suit learners' abilities • analysing learners' misconceptions, strategies and errors on simple and compound interest • discussing ways of assessing learners on simple and compound interest(<i>such as observation and written work</i>) • developing assessment tools for assessing learners on simple and compound interest (<i>generating questions</i>)	• group assessment	
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching simple accounts	Student teachers must be able to: 1 analyse how learners develop the concept of simple accounts 2 apply appropriate methodologies when teaching simple accounts 3 use appropriate assessment methodologies in the teaching of simple accounts	Teaching simple accounts (1hr) Self-study	• determining primary school curriculum expectations on simple accounts • exploring activities in teaching of simple accounts (such as introducing cash account, bank account and cash book, preparing simple accounts using spreadsheets and balancing accounts) • discussing ways of assessing learners on simple accounts (such as observation and written work)	• Self-study	• ICT resources (such as computers, cell phones, tablets and online articles) • spread sheet software • Bank resources (such as deposit slips, withdraw forms, ATM cards and cheque book) • calculator • instructional materials (such as syllabuses, teacher's guides, learners' books)

**Core element
Outcome**

Patterns, functions and algebra

The student teachers will be able to demonstrate appropriate pedagogical knowledge in the teaching and learning of patterns, functions and algebra to enable the primary school learner use algebraic language and develop skills to solve textual problems.

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching patterns	Student teachers must be able to: 1 analyse how learners develop the concept of patterns	Teaching patterns (6hrs)	• eliciting learners' prior knowledge on patterns • exploring simple patterns, number patterns and geometric patterns • discussing importance of teaching of patterns and its application in everyday life • determining primary school curriculum expectations on patterns	• critical thinking methods (<i>such as think-pair-share, walk around talk around, and pens in the middle</i>) • direct teaching • brainstorming • excursions • investigation • games • discussion • student generated questions • written exercise	• local environment • assorted objects (<i>such as bottle tops, leaves, bottles, tins, clothes, cups, papers, coloured pencils, glue, pair of scissors</i>) • ICT resources (<i>such as computers, cell phones, online articles and video-clips of patterns</i>) • instructional materials (<i>such as syllabuses, teacher's guides, learners'</i>

	2 apply appropriate methodologies when teaching patterns 3 use appropriate assessment methodologies in the teaching and learning of patterns		• exploring activities in teaching patterns (<i>such as identifying patterns in the environment, establishing rules for patterns, extending patterns, completing patterns and generating patterns</i>) • using technology in the teaching and learning of patterns e.g. <i>drawing patterns on a computer</i> • modifying activities on the teaching of patterns to suit learners' abilities • analysing learners' misconceptions and errors on patterns • discussing suitable ways of assessing learners on patterns (<i>such as observation and written work</i>) • practicing lesson planning and teaching patterns	• self-assessment • group assessment •	<i>books</i>) • samples of patterns • assessment resources (<i>such as checklist and portfolio</i>)
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching algebraic expressions	Student teachers must be able to: 1 analyse how learners develop the concept of algebraic expressions 2 apply appropriate methodologies when teaching algebraic expressions	Teaching algebraic expressions (4hrs)	• eliciting learners' prior knowledge on algebraic expressions • discussing importance of teaching algebraic expressions and its application in everyday life • investigating primary school curriculum expectations on algebraic expressions • exploring activities in teaching algebraic expressions (such as introducing variables, identifying terms in algebraic expressions, basic operations on algebraic expressions,	• discussion • critical thinking methods (<i>such as think-pair-share, walk around talk around, and pens in the middle</i>) • demonstration • direct teaching • student generated questions • written exercise • self-assessment • group assessment	• assorted objects • number lines • ICT resources (<i>such as online articles and video-clips of algebraic expressions</i>) • instructional materials (<i>such as syllabuses, teacher's guides, learners' books</i>) • assessment resources (<i>such as checklist and rubric</i>)

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
	3 use appropriate assessment methodologies in the teaching and learning of algebraic expressions		<i>expanding algebraic expressions, factorising algebraic expressions, factorising quadratic expressions)</i> • analysing learners' strategies, misconceptions and errors when learning algebraic expressions • modifying activities on the teaching of algebraic expressions to suit learners' abilities • discussing suitable ways of assessing learners on algebraic expressions (<i>such as observation and written work</i>)		

Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching linear and quadratic equations	Student teachers must be able to: 1 analyse how learners develop the concept of equations 2 apply appropriate methodologies when teaching equations	Teaching equations (5hrs)	• eliciting learners' prior knowledge on equations • discussing importance of teaching equations and its application in everyday life • investigating primary school curriculum expectations on equations • exploring activities in teaching pre-number and numbers (<i>such as changing subject of formula, solving linear equations, generating linear equations from word problems using everyday life or experiences</i>) • analysing misconceptions and errors that learners make on equations	• discussion • demonstration • critical thinking methods (<i>such as think-pair-share, walk around talk around and pens in the middle</i>) • written exercise • direct teaching • student generated questions • self-assessment • group assessment	• assorted objects of different masses • simple balance • ICT resources (<i>such as online articles and video-clips of equations</i>) • graph paper • raised graph paper • calculator • instructional materials (<i>such as syllabuses, teacher's guides, learners' books</i>) • assessment resources (<i>such as checklist and portfolio</i>)

	3 use appropriate assessment methodologies in the teaching and learning of equations		• analysing learners' strategies when learning equations • modifying activities on the teaching of algebraic expressions to suit learners' abilities - discussing suitable ways of assessing learners on the concept of equations(<i>such as observation and written work</i>)		
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Assessment standard	Success criteria	Topic	Suggested teaching, learning and assessment activities	Suggested teaching, learning and assessment methods	Suggested teaching, learning and assessment resources
We will know this when student teachers are able to: • apply effective teaching, learning and assessment methodologies when teaching inequalities	Student teachers must be able to: 1 analyse how learners develop the concept of inequalities 2 use appropriate methodologies when teaching of inequalities	Teaching inequalities (4hrs)	• investigating learners' prior knowledge of inequalities • discussing the importance of inequalities and its application in everyday life • exploring primary school curriculum expectations for teaching inequalities • exploring activities in teaching of inequalities (<i>such as inequality language and symbols, rules governing inequalities, solving problems on inequalities, formulating word problems</i>) • modifying activities on the teaching of inequalities to suit learners' abilities • analysing learners'	• critical thinking methods (<i>such as quick write, think-pair-share, walk around talk around, baobab tree competition, pens in the middle and give one take one</i>) • direct teaching • discussion • student generated questions • written exercise • self-assessment • group assessment	• assorted objects (<i>such as bottle tops, stones, sticks and leaves</i>) • ICT resources (<i>such as computers, cell phones online articles and video-clips of inequalities</i>) • Geogebra software • balance • representational resources (<i>such as number line, graph paper</i>) • instructional materials (<i>such as syllabuses, teacher's guides, learners' books</i>)

	3 use appropriate assessment methodologies in the teaching of inequalities		misconceptions, strategies and errors on inequalities • discussing suitable ways of assessing learners on inequalities(<i>such as observation and written work</i>) • developing assessment tools for assessing learners on inequalities (<i>such as checklist and generating questions</i>)		• assessment resources (<i>such as checklist and rubric</i>)
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