NCDC
NATIONAL CURRICULUM DEVELOPMENT CENTRE

ACCELERATED EDUCATION PROGRAMME FOR UGANDA

MATHEMATICS LEVEL TWO AND THREE

SYLLABUS FOR
Level 2 and 3

NRC NORWEGIAN REFUGEE COUNCIL

Save the Children

EDUCATION CANNOT WAIT

NCDC
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NATIONAL CURRICULUM DEVELOPMENT CENTRE

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FOREWORD

Uganda has made important strides in promoting children's rights over the past 20 years. In order to fully understand the lives of children in the country today and the issues that continue to hamper the achievement of their full potential, it is important to take a systematic look at the situation of children and specifically the disadvantaged (refugees and out of school children).

Children and youth frequently miss out on substantial amounts of schooling due to a variety of reasons including poverty, marginalisation, conflict, and crisis. Currently, according to the UNESCO Institute for Statistics, there are approximately 263 million children and youth out of school globally. With each missed school year, there is greater risk that they will be unable to return to formal education and greater risk to their protection as a result. Responding to the needs of these learners has increasingly led governments and agencies to provide more flexible forms of education such as *"Accelerated Education".*

Uganda has a big number of children and youth out of school. The most affected are; displaced children (internally and externally), combatants as well as girls and children with disabilities who usually find it difficult to access and complete their education. The enactment of the Sustainable Development Goals (SDGs) reaffirms a global commitment to ensuring that all boys and girls have access to, and complete, free, equitable, and quality Primary education by 2030.

Over-age learners who enrol in formal education systems are found to be much more likely to drop out early because of; poor instructional strategies and methodologies, and stigmatization. Children who do not start school at the correct age would likely remain out of school, and those who enter when they are already over aged face multiple challenges including sharing classrooms and studying with much younger children (thus inferiority complex).

The accelerated education curriculum provides an opportunity for these over-aged out-of-school children to access education, catch up and transition back into the formal system, secondary education, vocational training and livelihoods.

Hon. Janet Museveni Kataaha
MINISTER OF EDUCATION AND SPORTS

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Grace Baguma
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List of Acronyms

AEP	Accelerated Education Programme
SNE	Special Needs Education
SEN	Special Educational Needs
NRC	Norwegian Refugee Council
MoES	Ministry of Education and Sports
NCDC	National Curriculum Development Centre

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Introduction

Children and youth frequently miss out on substantial amounts of schooling due to a variety of reasons including poverty, marginalisation, conflict, and crisis. Acceraleted Education Programme (AEP) emphasises speeding up a curriculum, and allowing students to complete a certified, equivalent level of education in a shortened timeframe. This requires increased and more effective time on task, an emphasis on literacy and numeracy with a socio-emotional learning component and oftentimes, removal of non-core subjects. Programmes also often demonstrate flexibility to meet the unique needs of the learners they aim to serve – both in relation to timetabling and location of instruction. The intention of this flexibility is to enable students to study in a way and at a level appropriate to their ability, age and circumstance.

The AEP targets the over-aged learners who, in one way or another, were disadvantaged and dropped out of the normal Primary school cycle. The AEP intends to help learners of age group 10-18 years to catch up and accomplish the Primary level in a shorter time of three instead of seven years. It is structured in levels i.e. Level 1 (P1-P3) which is equivalent of the Thematic Section in Primary school. Level 2 combines P4 and P5 and Level 3 combines P6 and P7. Each level merges the curricula content in relevant classes which is to be completed in one year.

On completion of an AEP, the learners should be able to either reintegrate into the formal schooling system, or enter into skills-based technical and vocational education, or to enter directly into the workforce, but with core literacy and numeracy skills in place. There are varied structures of an AEP, and they vary in their pace of acceleration, the age range they target, and the approach to teaching and learning that they employ.

This AEP is a review of the curriculum for various non-formal education programmes which Uganda has been implementing since 2011 to address educational barriers of different communities.

Scope and Sequence

Each topic of this curriculum comprises the following:

i) Rationale
ii) Learning outcome (s)
iii) Subject competences
iv) Language competences

v) Content
vi) Suggested teaching and learning activities
vii) Life skills indicators and values
viii) Suggested competences for assessment
ix) Hints for the teacher

The National Aims of Education

This programme is designed to address the National Aims of Education and aims and objectives of primary curriculum as specified in the Government White Paper on the Education Policy Review Commission Report (1992).

The aims are:

a) To promote understanding and appreciation of the value of national unity, patriotism and cultural heritage, with due consideration to internal relations and beneficial interdependence.
b) To inculcate moral, ethical and spiritual values in the individual and to develop self-discipline, integrity, tolerance and human fellowship.
c) To inculcate into Ugandans a sense of service, duty and leadership for participation in civic, social and national affairs through group activities in educational institutions and the community.
d) To promote scientific, technical and cultural knowledge, skills and attitudes needed to enhance individual and national development.
e) To eradicate illiteracy and equip the individual with basic skills and knowledge to exploit the environment for self-development as well as national development; for better health, nutrition and family life, and the capacity for continued learning.
f) To equip the learners with the ability to contribute to the building of an integrated, self-sustaining and independent national economy.

Objectives of Primary Education in Uganda

1. To enable individuals to acquire functional literacy, numeracy and communication skills in Ugandan languages and English.
2. To develop and maintain sound mental and physical health.
3. To instil the value of living and working cooperatively with other people and caring for others in the community.
4. To develop cultural, moral and spiritual values of life
5. To inculcate an understanding of and appreciation, for, the protection and utilisation of the natural environment using scientific and technological knowledge.

6. To develop a sense of patriotism and unity, an understanding of one's rights and responsibilities and an appreciation of the need to participate actively in civic matters.
7. To develop pre-requisite for continuing education and development.
8. To develop adequate practical skills for making a living.
9. To develop appreciation for the dignity of work and for making a living by one's honest effort.
10. To develop the ability to use the problem-solving approach in various life situations.
11. To develop discipline and good manners.

Definition of T

Learning outcome is a broad behavioural changes or abilities demonstrated after a learning period. Learning outcomes define the overall direction of the teaching and learning process.

Competence what one is able to do as a result of learning or what the learner understands, knows and is able to do.

Assessment - Huba & Freed assert that, "Assessment is the processes of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand and can do with their knowledge as a result of their educational experiences; the process culminates when assessment results are used to improve subsequent learning".
Life skill - Life skills as abilities for adaptive and positive behaviour that enable learners to deal effectively with the demands and challenges of everyday life.

Value – desired standards of behaviour acceptable in a given society

Life skill indicator – observable ability shown in a learner

Methodology – an executable process or procedure with specific tasks that someone can use to deliver content according to the work plan.

Technique - the final skilful execution on a given point which can be used to get productive outcome

Strategy – is a mental model in our understanding and an end in mind that enables us to deliver lessons systematically in class.

Approach – is a set of or combination of different methods.

Instructional strategies – techniques teachers use to help learners become focused and independent.

Instructional material – any resource the teacher uses to him/her to teach learners.

Tools - an item or implement used for a specific purpose/something physical used in performing different tasks.

Special Educational Needs - An educational provision designed for learners with special educational needs or to address barriers to learning.

Special Needs Education – A programme that addresses barriers to learning

Special Education - Educational provision for learners with special Educational Needs

Inclusive education - A term which wholesomely provides for optimum participation of all learners; inclusion does suggest all other exposures.

Background to Mathematics

The Mathematics syllabus has seven themes for Level 2 and seven themes for Level 3 which are broken down into topics that are taught throughout the whole period.

ation of the Syllabus

A background for each topic has been provided. It gives an overview of the topic, thus giving the teacher an insight into the topic.

Learning Outcomes

Learning outcomes have been stipulated for each topic. Learning outcomes define the overall direction of the teaching and learning process. It is what the learner understands, knows and is able to do. They are achieved through competences.

Competences

Competences describe the specific abilities of the learner. It is what the learner can demonstrate, show and do as a result of being exposed to the given mathematics concepts. The syllabus stipulates subject and language competences to be developed in each topic. These competences focus on knowledge, comprehension, application and attitude change. Language competences have been emphasised to enhance literacy skills.

Life skills are personal and social abilities that enable learners to function confidently and competently with others. This curriculum emphasises the development of life skills and values across the themes/topics. This will help morals and ethical values. Life skills and values will help learners to:

i) make informed decisions.
ii) practise healthy behaviours.
iii) avoid risky situations.
iv) change attitudes.
v) become good citizens.
vi) be active and constructive in life.
vii) solve problems encountered in different situations.
viii) cope with stress and control their emotions.
ix) communicate effectively.

These are the desired standards of behaviour acceptable in a given society. Values need to be developed during and after the teaching and learning process. Examples of values include; cooperation, sharing, appreciation, endurance, patience, responsibility, care, respect, trustworthiness, love, togetherness, honesty, joy, concern, privacy, independence and self-reliance. It is important to note that you need to observe the learners to see whether they are practising what they learn.

Methodology and trategies

You are expected to use child-centred methods which put the learner at the centre of the teaching and learning process. Some of the methods to be used during the teaching and learning process include; project work, role-play, brainstorming, excursion, dramatisation, demonstration, question and answer, repetition, I do, we do, you do, discovery, discussion, demonstration, think- pair- share, peer teaching and learning, group work, task analysis, individualised educational plan/programme (IEP), remediation, total communication, plays and songs.

Instructional Materials, Tools and Equipment

Instructional materials are very important in lesson delivery. Use instructional materials and get learners involved in the teaching and learning process as this will help learners get more interested in their work. Use a wide range of instructional materials. Utilise the local environment and locally available resources to make learning real and interesting. Examples of instructional materials include; textbooks, chalkboard, money, clock, pictures, charts, life skills manual, Abacus frames, beads, straws, bottle tops, ropes, balls, flash cards and number charts.

Assessment

Continuous assessment is recommended and should be based on the suggested competences for each topic. Carry out assessment during, after the teaching and learning process, at the end of the topic/themes, end of the term and at the end of the year. Assess learners and keep records.

Note: Pre-entry assessment should be carried out to identify the level of placement of learners. The second kind of assessment should be done per term or annually to enable learners to transit to their appropriate levels after displaying the required competences.

Remember that we have learners in classes with various barriers to learning and development. Take keen interest in every learner and identify those that behave differently and keep their records, and where possible call for personnel who are trained in special needs education for functional assessment and proper guidance on how to manage those learners. You can as well utilise the following strategies to provide the necessary assistance during the teaching and learning processes for learners with special educational needs;

i) Signs/finger spells (deaf)
ii) Brailles (blind)
iii) Large print (low vision)
iv) Tactile (blind and deaf/blind)
v) Total communication for deaf
vi) Use real objects
vii) Variety of colours (while preparing their instructional materials)

General Guidance

i) During the teaching learning process, a variety of IMS and child-centred methods should be used so that the learning process will be lively and interesting.
ii) Apart from the given life skills, indicators and values, apply a lot of creativity by utilising any other relevant idea that may enable you make the lesson succeed.
iii) Make use of the locally available materials in the environment as much as possible to make the learning and teaching environments friendly.
iv) Help learners to use variety of senses through observations, discovery, tactile, thus making the learning/teaching more meaningful.
v) Make teaching processes more interacting and inclusive by integrating different subjects as a means of developing the target concepts.
vi) Study and understand the learning styles of your learners in order to plan for each individual child. Aim at an individual child not a class.
vii) Modifications of the curriculum key areas should be focused on the content, activities, methodologies, environment, time and assessment.
viii) No subject is minor, give equal opportunity for the learners to acquire and practice various skills by learning Creative Performing Arts (CAPEs)

ix) Use CAPE subjects as strategies to teach other subjects for instance; using songs, plays, drama in the teaching processes.
x) Use Religious Education lessons to solve psycho-social problems like trauma, torture, hatred, loss of dear ones and others which are common in camps and the community.
xi) Remember to use life skills that will enable learners develop important values like resolving conflicts, forgiveness, love and acceptance.
xii) Endeavour to teach all the topics adequately.

Topic utline: Level

Theme		Topic	Periods	Changed Periods
1	Sets	• Set Concepts	10	24
2	Numeracy	• Whole Numbers • Operations on Whole Numbers • Patterns and Sequences • Fractions	18 18 10 12	28 20 24 24
Theme		**Topic**	**Periods**	**Changed Periods**
2	Numeracy	• Fractions (Decimals)	06	30
3	Geometry	• Lines, Angles, Geometrical Figures	30	30
4	Interpretation of Graphs and Data	• Data handling	12	25
5	Measurements	• Time	10	35
Theme		**Topic**	**Periods**	**Changed Periods**
6	Measurements	• Money • Length, Mass and Capacity	10 18	25 35
7	Numeracy	• Integers	16	30
		• Algebra	10	30

Number of themes per term - Term 1: 2 themes, Term 2: 3 themes, Term 3: 2 themes, Total: 7 themes
Number of topics per term - Term 1: 4 topics, Term 2: 3 topics, Term 3: 4 topics, Total: 11 topics
Periods per week - 10 periods per week
Duration of lessons - 40 minutes
Hours per week - 04 hours and 40 minutes

Topic utline: Level

Theme		Topic	Periods	Changed Periods
1	Sets	• Set Concepts	17	30
2	Numeracy	• Whole Numbers • Operations on Whole Number • Patterns and Sequences	15 18 08	30 30 30
Theme		**Topic**	**Periods**	**Changed Periods**
3	Numeracy	• Fractions	**20**	30
4	Interpretation of Graphs and Data	• Data Handling	18	30
5	Measurements	• Money • Time, Distance and Speed	06 16	30 30
Theme		**Topic**	**Periods**	**Changed Periods**
6	Measurements	• Length, Mass and Capacity	15	30
	Geometry	• Lines, Angles and Geometric Figures	26	30
	Algebra	• Algebra	16	30
	Measurements	• Time	07	30

Number of themes per term - Term 1: 2 themes, Term 2: 3 themes, Term 3: 4 themes, Total: 9 themes
Number of topics per term - Term 1: 4 Topics, Term 2: 4 topics, Term 3: 4 topics, Total: 12 topics
Periods per week - 10 periods per wk
Duration of lessons - 40 minutes
Hours per week - 04 hrs and 40 minutes

Sample Time Table for Level 2 and

DAY		8.30-9.10	9.10- 9.50	9.50-10.30	10.30-11.00	11.00-11.40	11.40-12.20	12.20-1.00	1.00-2.00	2.10-2.50	2.50-3.30	3.30-4.30
MON		ENG	MATH	SST		SCI	RE	MATHS		ENG	SCI	
TUE		MATH	ENG	ENG		SST	SCI	RE		MATHS	$CAPE_1$	
WED		MATH	SST	ENG	**BREAK**	MATH	SCI	ENG	**LUNCH**	SCI	RE	
THU		SST	MATH	$CAPE_2$		MATH	ENG	ENG		SCIE	SCIE	
FRI		ENG	ENG	MATH		MATH	SST	SST		$CAPE_3$		

Analysis

English	10
Mathematics	10
Science	7
Social Studies	6
Religious Education	3
CAPE 1	I
CAPE 2	1

LEVEL
TWO

Term

Theme: Sets

opic: Set Concepts

Duration: 24 Periods

Overview

In Level 1, the learner was introduced to the concepts of Sets. In Level 2 and 3, the focus is on types of sets and an introduction of Venn diagrams. Different scenarios should be explored to support learners in internalising the concepts of equal, equivalent and empty sets, and Venn diagrams. Learners should further be supported to use union and intersection of sets correctly. During this process, the teacher should focus on development of identified life skills and values as the learners perform the various activities.

Learning Outcome

The learner should be able to use the knowledge of sets to solve problems in real life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies equal, equivalent and empty sets. • forms equal and equivalent sets. • identifies union and intersection of sets. • tells	The learner: • writes/ brails, spells/signs the word: - sets - equal - equivalent - empty - members of a set • uses the word empty sets to make sentences.	• Equal sets • Equivalent sets • Empty sets • Union of sets • Intersection of sets • Venn diagrams	• Using different scenarios and activities from the environment to form equal and equivalent sets • Identifying and naming empty sets	• Creative thinking - Initiating new ideas • Critical thinking - Finding different ways of doing things • Problem solving

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
numbers of members in sets. • represents information on a Venn diagram. • uses Venn diagrams to answer questions related to sets. • tells the number of elements in a set.	• describes equivalent sets. • distinguishes equal sets from equivalent sets. • spells/signs and reads the words union and intersection of sets. • reads/signs the number of elements in a set. • reads/signs mathematical sentences using equal, equivalent, empty, union and intersection of sets. • reads/signs information from Venn diagrams.		• Identifying members of union and intersection of sets • Counting/signing number of elements in a given set • Drawing/ describing and using Venn diagrams to answer questions related to sets	- Responding to questions appropriately - Audibility • Effective communication - Making choices • Friendship formation - Playing with others - Working in groups **Values** • Patience • Responsibility • Care • Cooperation

Suggested Competences for Assessment

The learner:

i) names sets.
ii) forms sets.
iii) identifies numbers of members in a given set.

iv) draws equal sets, equivalent sets, empty sets, union and intersection of sets.
v) represents information on Venn diagrams.
vi) answers questions related to sets using Venn diagrams.

Hints for the Teacher

i) Revise the work covered on sets in Level 1.
ii) Use correct language on sets and encourage cooperative learning.
iii) Display information on Venn diagrams up to 2 events and relate the application of Venn diagrams to real situations.
iv) Give learners ample time to describe the relationship between sets using Venn diagrams.
v) Use cooperative/collaborative learning groups to solve problems involving sets.
vi) Assign tasks according to learner's ability levels and interest.
vii) In all activities involve learners with SNE and cater for their specific needs.
viii) Select only methods and strategies that relate to a particular sub-topic and content.
ix) Task learners to represent information on Venn diagrams.
x) Let them answers questions related to sets using Venn diagrams.

Theme: Numeracy

opic : Whole Numbers

Duration: 28 Periods

Overview

The counting, reading and writing of whole numbers at this level ranges from 1 to 99,999. This topic intends to introduce and build on the knowledge the learner has already obtained from Level 1 sub-topics on counting, reading and writing of whole numbers ranging from 100 to 10,000. In this topic, learners will be introduced to Roman numerals ranging from I to L.

Learning Outcome

The learner should be able to gain confidence in counting, reading and writing of large whole numbers and using Roman numerals.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • finds the place values of 5 digit numbers. • counts whole numbers up to 99,999. • writes whole numbers in order up to 99,999. • writes numbers in words up to 99,999 and figures for	The learner: • pronounces number names up to 999,999. • reads/signs/brailles whole numbers up to 999,999. • reads/signs numbers that have been rounded off.	• Whole numbers up to 99,999 • Place values of numbers up to 5 digits • Writing whole numbers in words up to 5 digits • Whole	• Counting/signing whole numbers up to 999,999 • Writing/brailing whole numbers in figures up to 999,999 • Reading/signing whole numbers up to 999,999 • Writing/brailing whole numbers in	• Creative thinking - Responding to questions appropriately • Critical thinking - Selecting and evaluating information - Taking

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
numbers given in words. • expands 5 digit numbers and writes short forms that have been expanded. • writes numbers in words up to ten thousands. • finds place values of 6 digit numbers. • expands 6 digit and writes short form numbers that have been expanded. • rounds off whole numbers to the nearest tenths, hundredth and ten thousand digits. • writes Roman numerals up to fifty.	• reads/signs Roman numerals up to fifty.	numbers up to 999,999 • Place values of numbers up to 6 digits • Writing numbers in expanded form • Writing numbers in words up to 6 digits • Rounding off numbers to the nearest 10s, 100s, 1000s, 10000s • Writing Roman numerals	words up to 999,999 • Changing figures to words and vice versa • Finding place values of numbers • Expanding 5 and 6 digit numbers • Writing/signing expanded numbers in short form • Rounding off whole numbers to the nearest 10s, 100s, 1000s and 10,000s • Writing/signing Roman numerals up to fifty • Changing Roman numerals to Arabic numerals and vice versa	decisions • Problem solving - Audibility - Giving appropriate feedback • Effective communication - Working in groups • Friendship formation **Values** • Accuracy • Patience • Responsibility • Care • Cooperation

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• translates Roman numerals.				

Suggested Competences for Assessment

The learner:

i) counts in hundredth up to 99,999.
ii) counts whole numbers up to 999,999.
iii) writes whole numbers in order up to 999,999.
iv) writes numbers in words up to a hundred thousand.
v) finds place values of 5 and 6 digit numbers.
vi) expands 5 and 6 digit numbers and writes expanded numbers in short form.
vii) rounds off whole numbers up to the nearest 10s, 100s, 1000s and 10000s.
viii) writes Roman numerals up to fifty (I to 50).

i) Let the learners revise work covered in Level 1 including multiplication tables.
ii) Encourage practical work such as puzzles, games and quizzes.
iii) Allow learners ample time to revise work covered in Level 1 on Roman numerals and bases.
iv) Give the learners opportunity to read/sign and write/write in braille numbers as much as possible.
v) Let the learners make abaci which can be used in naming and identifying place values.

Topic : Operations on Whole Numbers

Duration: 20 Periods

Overview

The work covered in Level 1 on the four operations should be revised at the beginning of this topic using mental work, number spiders, games and competitions. The learner should be helped to realise that every day they add, subtract, multiply and divide different things in life. For instance, a farmer adds or loses an animal or animals may multiply by producing and he may share his or her produce with others. Use daily life experiences as much as possible.

Learning Outcome

The learner should be able to use the four operations to solve daily life problems.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • adds whole numbers up to six digits without or with carrying. • subtracts whole numbers up to six digit without or with grouping. • multiplies numbers up to 4 digits by 2 digit numbers. • divides whole numbers by 2 digit numbers without or with remainder. • uses mixed operations to solve word problems. • interprets and solves word problems. • counts, adds,	The learner: • spells/finger spells/ signs/brailles, pronounces and uses in sentences the following terms: - add - plus - sum - increase • uses other words that mean subtraction like take away, minus, decrease, less than in sentences. • uses correct mathematical terms in multiplication sentences. • uses other words to mean division e.g. share, quotient, divide by, division, divided in sentences. • spells /signs and reads the	• Addition of whole numbers up to 6 digits without or with carrying • Subtraction of whole numbers up to 6 digits without or with regrouping • Multiplication of whole numbers up to 4 digits by 2 digit numbers • Division of whole numbers by 2 digit numbers without or with remainder • Mixed operations on whole numbers • Counting, addition, subtraction and multiplication in base five • Conversion of	• Adding whole numbers up to six digits without or with carrying • Subtracting whole numbers up to six digits without or with grouping • Multiplying numbers up to 4 digits by 2 digit numbers • Dividing numbers by two digit numbers without or with a remainder • Using mixed operations to solve problems • Interpretin g and	• Creative thinking - Logical reasoning • Critical thinking - Finding different ways of doing things • Problem solving - Responding to questions appropriately - Giving reasons for actions taken • Effective communication - Audibility - Articulation • Friendship formation - Playing in groups - Working with others **Values** • Orderliness • Endurance • Appreciation • Care

subtracts and multiplies numbers in base five. • converts numbers from base 5 to other bases and vice versa.	word mixed operations.	numbers from base five to other bases and vice versa.	solving word problems • Counting, adding, subtracting and multiplying the numbers in base five and converting numbers to base 5	

Suggested Competences for Assessme

The learner:

i) adds whole numbers up to six digits without or with carrying.
ii) subtracts whole numbers up to six digits without or with grouping.
iii) multiplies whole numbers up to 4 digits by 2 digit numbers.
iv) divides whole numbers by 2 digit numbers without or with remainders.
v) uses mixed operations to solve word problems.
vi) counts, adds, subtracts and multiplies whole numbers to base five.
vii) converts numbers to base 5.

Hints for the Teacher

i) Encourage learners to use concrete objects when carrying out operations on whole numbers.
ii) Encourage learners to always read aloud mathematical problems to the whole class.
iii) Learners should always be reminded of place values while carrying out operations on whole numbers.
iv) Involve learners in group work and IEP.

Topic : Patterns and Sequences

Duration: 24 Periods

Overview

This topic builds on what learners covered in level I about shapes. Focus will be on a variety of shapes using concrete objects, diagrams to form patterns and sequences. The patterns formed by shapes will introduce learners to number patterns which can later lead them to discovering multiples and factors of numbers. Learners will also be introduced to types of numbers, multiples and factors. Learners should be guided to discover the difference between multiples and factors using different shapes.

Learning Outcome

The learner should be able to use skills involving patterns and sequences to draw conclusions in real life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • forms patterns using different shapes. • identifies types of numbers. • uses types of numbers to form patterns and sequences. • finds multiples of numbers. • finds factors of numbers.	The learner: • spells/ signs the words, shapes and patterns. • reads/signs and writes/writes in Braille the types of numbers. • Reads/signs and writes/writes in Braille the different number patterns. • spells/signs	• Patterns and sequences using different shapes • Number patterns and sequences • Types of numbers • Multiples of numbers • Factors of numbers	• Forming patterns using different shapes • Completing sequences using shapes • Listing the types of numbers • Forming number patterns and sequences • Finding	• Creative thinking - Innovativeness • Critical thinking - Finding different ways of doing things - Making the best use of available information - Taking decisions

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• calculates Lowest Common Multiples (LCM) of given numbers. • works out the Greatest Common Factors (GCF) of given numbers.	and reads the word multiples. • spells /signs and reads the word factors. • reads/signs factors and multiples of numbers. • spells/signs and reads the words LCM and GCF.	• LCM • GCF	multiples of numbers • Finding factors of numbers • Working out the LCM of given numbers • Working out GCF of given numbers	• Problem solving - Making a choice • Effective communication - Fluency - Articulation - Sharing - Using polite language **Values** • Appreciation • Patience • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) forms patterns using different shapes.
ii) identifies types of numbers.
iii) forms patterns and sequences using different number patterns.
iv) finds multiples of numbers.
v) finds factors of numbers.
vi) calculates LCM of given numbers.
vii) works out GCF of given numbers.

i) Introduce various patterns and sequences to the learners.
ii) In groups, learners form and solve problems involving patterns and sequences.
iii) Involve learners to work in groups with different tasks in a rotational way or form.

Topic 4 Fractions

Duration: 24 Periods

Overview

Fractions are part of our daily life. A fraction is a part of a whole. We always give parts of a whole away and receive parts of a whole during sharing processes. Therefore using real objects will help in the understanding of the basics about fractions. Emphasise to the learners the concepts of reading and writing fractions correctly as well as the use of LCM in addition and subtraction of fractions.

Learning Outcome

The learner should be able to use fractions in real life situation.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies simple equivalent fractions using diagrams. • orders and compares fractions with the same denominator in ascending and descending order. • identifies proper and	The learner: • reads / signs equivalent fractions identified. • reads /signs the ordering of fractions. • spells /signs the words proper, improper and mixed number. • spells/signs, reads, writes /brails and	• Equivalent fractions • Ordering and comparing fractions • Proper and improper fractions • Mixed numbers • Addition of fractions	• Writing/brailing equivalent fractions • Ordering and comparing fractions in ascending and descending order • Writing/brailing proper and improper fractions • Changing proper fractions to	• Creative thinking - Logical reasoning • Critical thinking - Analysing statements • Problem solving - Responding to questions - Making choice

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
improper fractions. • converts improper fractions to mixed numbers and vice versa. • adds fractions with the same and different denominators. • subtracts fractions with different denominators. • subtracts with mixed numbers. • multiplies fractions by natural numbers. • multiplies fractions (proper, improper fractions, and mixed numbers). • divides proper fractions by natural	pronounces the words denominator and numerator and uses them correctly in sentences related to fractions. • reads /signs the words addition, subtraction, multiplication and division.	• Subtraction of fractions • Multiplication of fractions • Division of fractions • Word problems involving addition, subtraction, multiplication, division and mixed numbers	mixed numbers and vice versa • Adding fractions with the same and different denominators • Subtracting fractions with the same and different denominators • Multiplying fractions by natural numbers • Multiplying fractions (proper, improper fractions and mixed numbers) • Dividing proper fractions by natural numbers • Dividing fractions (proper, improper	- Finding different strategies •Effective communication - Accuracy and confidence - Verbal and non-verbal expression • Friendship formation - Use of polite language - Working in groups **Values** • Appreciation • Patience • Responsibility • Cooperation

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
numbers. • divides fractions (proper, improper and mixed numbers). • solves word problems involving operations on fractions.			fractions and mixed numbers) • Solving word problems	

Suggested Competences or Assessment

The learner:

i) identifies simple equivalent fractions using diagrams.
ii) orders and compares fractions with the same denominators in ascending and descending order.
iii) identifies proper and improper fractions.
iv) converts improper fractions to mixed numbers and vice versa.
v) adds and subtracts fractions with same and different denominators.
vi) multiplies and divides fractions by natural numbers.
vii) multiplies and divides proper and improper fractions.
viii) multiplies and divides mixed numbers.

the Teacher

i) Introduce the concept of fractions with different denominators clearly by letting the learners cut parts of whole objects in different sizes.
ii) Let the learners name parts they have cut out as fractions of the whole object.
iii) The fractions named will have different denominators.

iv) Help learners to realise that when adding or subtracting fractions with different denominators, the knowledge of equivalent fractions and multiples is applied.
v) Guide learners in solving word problems.

Term

opic 5 Fractions (Decimals)

Duration: 30 Periods

Overview

This topic builds on the learners' knowledge about fractions. Learners will be helped to distinguish between the normal and decimal fractions. Introduce them to addition and subtraction of decimals after they have learnt place values.

Learning Outcome

The learner should be able to use the knowledge of decimal fractions in different real life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skill and Values
The learner: • orders and compares decimals on a number line. • converts decimals to fractions and vice versa. • identifies place values and values of each digit	The learner: • writes /writes in Braille decimals on a number line. • spells / signs the words fraction and decimal. • reads/signs the place values and	• Decimals on the number line • Conversion of decimals • Place values • Addition and subtraction of decimals	• Ordering and comparing decimals using a number line • Converting decimals to fractions and vice versa • Finding	• Creative thinking - Finding different ways of doing things - Selecting and evaluating information • Critical thinking - Evaluating facts

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skill and Values
up to hundredths. • adds and subtracts decimals up to hundreds.	values of decimals when asked. • writes/brails decimals up to hundreds. • reads/signs word problems involving decimals.		place values and values of digits of decimals • Adding and subtracting decimal fractions up to hundreds	meaningfully • Problem solving - Accuracy • Effective communication - Working in groups - Use of polite language • Self esteem - Talking about self - Expressing likes and dislikes **Values** • Appreciation • Patience • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) orders and compares decimals on number lines.
ii) converts decimals to fractions and vice versa.
iii) identifies place values and values of each digit up to hundredths.
iv) adds and subtracts decimals up to hundredths.

i) Revise number lines on whole numbers.
ii) Write decimal numbers on the number line.
iii) Guide learners to practise place values for decimals starting from tenth to hundredth and so on. Remind them to read from left to right and that the value decreases from left to right.

Theme: Geometry

opic: Lines, Angles and Geometrical Figures

Duration: 30 Periods

Overview

Geometry is the study of size, shape and position of two dimension shapes and three dimension figures. Geometry is used daily by almost everyone especially in gardens, construction of kraals, compounds and houses, among others. It is therefore important that the practical approach be used as much as possible for the learner to conceive the ideas about geometry.

Learning Outcome

The learner should be able to recognise and construct various geometric shapes, and relate them to other fields such as architectural drawings/buildings, play grounds, flower gardens and designs.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • draws 2 dimension figures. • folds real objects to find the lines of symmetry. • measures the perimeter of rectangles, squares and triangles.	The learner: • writes /writes in Braille and reads /signs names of 2 dimension figures. • spells/signs the words perimeter and area. • writes/writes in Braille and	• 2 dimension figures: triangles, squares, rectangles • Simple lines of folding symmetry • Perimeter of square and rectangles • Area of	• Drawing/drawing in Braille 2 dimension figures • Folding real objects to find the lines of symmetry • Measuring the	• Creative thinking - Innovativeness • Critical thinking - Making the best use of information available - Taking

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• calculates perimeter. • finds the area of squares and rectangles. • constructs parallel and perpendicular lines. • draws angles using a protractor and compasses. • draws diagrams to show rotations and revolutions. • constructs circles and regular hexagons. • draws 3 dimension figures. • builds models of solids.	reads the names of common solid figures. • reads/signs and writes /brails sentences about angles. • spells/signs the words parallel and perpendicular. • reads/signs different angles. • writes /writes in Braille examples of rotations. • reads/signs the instructions on drawing rotations and revolutions. • reads/signs and writes the parts of a circle. • writes/writes in Braille	squares and rectangles • Area and perimeter of triangles • Parallel and perpendicular lines • Angles • Rotations and revolutions • Circles and regular hexagon • 3 dimension figures	perimeter of squares and rectangles • Finding the perimeter and area of squares, circles and rectangles • Calculating perimeter • Constructing parallel and perpendicular lines • Drawing/brailing simple angles • Drawing/brailing diagrams to show rotation and revolution • Constructing circles and regular hexagons • Building models of solids • Drawing/br	decision • Effective communication - Articulation - Accuracy - Verbal and non-verbal expression • Friendship formation - Sharing - Working in groups **Values** • Appreciation • Care • Accuracy • Patience • Responsibility • Cooperation

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
	common solids. • reads/signs the parts of solid models.		ailing figures showing solids and matching their names	

Suggested Competences for Assessment

The learner:

i) draws /brails 2 dimension figures.
ii) finds lines of symmetry.
iii) measures the perimeter of rectangles, squares and triangles.
iv) finds area of squares and rectangles.
v) constructs parallel and perpendicular lines.
vi) draws /draws in Braille angles.
vii) draws/draws in Braille diagrams to show rotations and revolutions.
viii) constructs circles and regular hexagons.
ix) draws /draws in Braille 3-dimentional figures.
x) builds models of solids.

Hints for the Teacher

i) Guide learners to identify objects in their classroom which have parallel and perpendicular sides.
ii) Encourage learners to have their own geometry sets and always guide them to draw parallel and perpendicular lines.
iii) Help learners to practically construct a hexagon as you observe them.
iv) Lead learners to fold square, rectangular and triangular papers to form lines of symmetry.
v) After the practice, guide learners to describe what a line of symmetry is all about.

Theme: Interpretation of Graphs and Data

opic: Data Handling

Duration: 25 Periods

Overview

This should be a fun topic for the learners where they collect, record, display and interpret data from their everyday life using pictograph, line graph and bar graph. Learners should be encouraged to practise collecting, analysing and presenting data frequently to ensure that they apply the knowledge they have gained. Let them discover how information can be summarised into graphs.

Learning Outcome

The learner should be able to use the knowledge gained on data handling to summarise information gathered in daily life.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • collects data and uses tally marks to group it. • organises, displays and interprets data using pictographs. • organises, displays, interprets	The learner: • reads/ signs, spells and writes/ brails tally marks. • reads/ signs scale on horizontal and vertical axes. • reads/signs and writes/brails	• Tally marks • Pictographs • Line graphs • Bar graphs • Interpretation of frequency tables • Constructing frequency tables • Correct use	• Collecting data • Using tally marks to group data • Finding the scales on both vertical and horizontal axis • Drawing/br	• Creative thinking - Finding different ways of doing things • Problem solving - Logical reasoning • Effective communication

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
and presents data using bar graphs. • organises, displays, interprets and presents data using line graphs. • uses the information on the graph to calculate average mean. • constructs frequency tables. • uses the correct data. • uses the mean, median, mode and range utilising information presented on tables and graphs.	information on graphs average • writes /brails the interpretatio ns of information on the graphs	of data • The mean, median, mode and range using information presented on tables and graphs	ailing graphs using the identified scales • Presenting information on graphs • Interpreting information illustrated on graphs • Calculating average mean using the information represented on graphs • Constructin g frequency tables • Using mean, median, mode and range to for information	- Selecting and evaluating information • Friendship formation - Working in groups - Use of polite language - Expressing likes and dislikes - Analysing statements - Making the best use of the information you have - Meaningfully - Accuracy **Values** • Appreciation • Care • Patience • Responsibility • Cooperation

Suggested ompetences for ssessment

The learner:

i) collects data and uses tally marks to group data.

ii) organises, displays and interprets data using pictographs, bar graphs and line graphs.
iii) uses the information on the graph to calculate average mean.

Hints for the Teacher

i) Use learners to collect data from situations and scenarios within the school environment and community.
ii) Ask learners to find out how they scored in the previous term and then guide them to record the marks scored in a table.
iii) Guide learners to plot the number of learners on the Y-axis and marks scored on the X-axis.
iv) Guide learners to draw different graphs.
v) Help learners to make graphs using locally available materials.

Theme: Measurement

opic 1: Time

Duration: 35 Periods

Overview

Revision of all earlier work from Level 1 should be done at the start of this topic using real or model clocks. It is through this topic that the learner will read and write time correctly. Real clock faces and phones will be a source of emphasising phrases such as minutes to, or minutes past. Finding durations must be introduced gradually because sometimes it involves conversion of units of time.

Learning Outcome

The learner should be able to read, tell and calculate time in real life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • converts units of time e.g. days to weeks, weeks to months and, months to years. • identifies hour, minute and	The learner: • reads/ signs, writes/ writes in Braille and spells the days of a week and months of the year. • reads/signs time on a 12	• Conversion of units of time • Telling time • Duration of time	• Converting days to weeks, weeks to months and months to years • Making and reading calendars	• Creative thinking - Initiating new ideas - Finding different ways of doing things • Critical thinking - Responding to questions appropriately

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
second hands from the clock. • uses different types of clocks and phones to tell time on a 12 hour clock. • finds the duration between events.	hour clock reads/signs time in both English and Local Language. • pronounces am and pm in relation to time. • reads/reads in Braille and writes a weekly timetable in his/ her exercise book.		• Recognising hour, minutes and second hands • Using different types of clocks and phones to tell time • Finding the duration between events • Making time tables	- Making a choice • Problem solving - Audibility - Accuracy - Confidence • Effective communication - Sharing - Playing with others - Working in groups **Values** • Appreciation • Care • Accuracy • Responsibility • Cooperation

Suggested ompetences for ssessment

The learner:

i) converts measures of time e.g. days to weeks, weeks to months, and months to a year.
ii) identifies hour, minute and second hands from the clock.
iii) uses different types of clocks and phones to tell time on a 12 hour clock.
iv) finds the duration between events.

Hints for the Teacher

i) Bring a physical clock or clock face in the class for the learners to see and use.
ii) Let learners draw clock faces and write time in hours, minutes and seconds.
iii) Guide the learners to make clock faces and use the phrases am and pm correctly.
iv) Lead learners to find out the difference and relationship between hour, minutes and seconds.
v) Conduct all lessons practically by using instructional materials.
vi) Let learners practise how to convert units of time from days to weeks, weeks to months, and months to years.

Term 3

Theme: Measurement

opic : Money

Duration: 25 Periods

Overview

This topic should begin with revision of the denominations already covered in Level 1. Introduce learners to other denominations used in Ugandan currency and their features. Ensure that the concept of buying, selling, profit and loss comes out clearly. The teacher should remind the learners of what happens in their local shops.

Learning Outcome

The learner should be able to recognise, describe and use money in buying and selling activities in everyday life.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies coins and notes of Uganda currency and their features. • identifies the costs and prices of items in their local community. • demonstrate	The learner: • reads/signs and pronounces various Uganda currencies and their features. • pronounces /signs the prices to customers during role playing.	• Uganda currency • Costs and prices • Buying and selling • Profit and loss	• Identifying the coins and notes of Uganda currency and their features • Finding out prices and costs of commodities in the local community • Role playing buying and selling using	• Inter-personal relationship - Interacting freely with others - Working together - Respecting other people's opinions - Working together • Creative thinking

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
s buying and selling using the identified costs and prices. • calculates the cost of buying a given number of items according to their prices. • calculates simple profits and loss.	• reads/signs and writes /brails the profits and losses made during the buying and selling role playing. • pronounces /signs and uses the phrase; "how much correctly".		Uganda currency • Calculating the cost of buying given number of items • Working out problems involving profit and loss	- Logical reasoning - Initiating new ideas • Critical thinking - Responding to questions appropriately • Problem solving - Taking decisions - Making choices **Values** • Appreciation • Patience • Sharing • Responsibility • Cooperation

ompetences for ssessment

The learner:

i) identifies coins and notes of Uganda currency and their features.
ii) identifies the costs and prices of items in their local community.
iii) demonstrates buying and selling using the identified costs and prices.
iv) calculates the cost of buying a given number of items according to their prices.
v) calculates profits and losses.

Hints for the Teacher

i) Apply question and answer approach and prompt learners to role-play the buying and selling.
ii) Let learners relate buying, selling, profit and loss.

iii) Guide learners to come up with a shopping list.
iv) Let learners play a hawker game to sell items below or above the price of a shop.
v) Discuss with the learners conditions that lead a person to sell at a loss and at a profit.

Topic 3: Length, Mass and Capacity

Duration: 35 Periods

Rationale

In Level 1, learners were introduced to this topic using non-standard units. At this Level, they should practice using standard instruments to measure length, mass and capacity accurately. Let them get involved in the practical measurement of length, mass and capacity before they can work out area, perimeter and problems involving mass and capacity.

Learning Outcome

The learner should be able to recognise and use standard instruments to measure length, mass and capacity in day today life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • uses standard measuring instruments to practically measure length in m, cm and mm. • converts mm to cm and m and vice versa. • calculates the perimeter of an object using mm and cm.	The learner: • uses length, mass and capacity to make correct statements. • reads/ signs the table of different units of length, mass and capacity then shows their abbreviations. • constructs sentences uses cm,	• Length in metres, centimetres and millimetres • Mass in kilograms and grams • Capacity in litres and millilitres • Conversion of units of length and capacity	• Using standard measuring instruments with appropriate units of measurement • Converting units of length, mass and capacity correctly • Calculating the mass, capacity, area and	• Creative thinking - Finding different ways of doing things • Decision making - Acceptance - Refusal • Critical thinking - Selecting and evaluating information

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• calculates area in cm^2 and m^2. • uses standard measuring instruments to measure mass in kg and g. • converts grams to kilograms and vice versa. • calculates mass in kg and gm. • measures capacity in ml and l. • converts ml to litre and vice versa. • calculates capacity of various containers.	mm, perimeter, area, kg, gm, litre and meters correctly. • reads/ signs and interprets word problems involving length mass and capacity.		perimeter of plane shapes • Measuring length, mass and capacity • Solving word problems involving length, mass and capacity	• Friendship formation - Sharing - Working in groups **Values** • Respect • Sharing • Appreciation • Care • Patience • Responsibility • Cooperation

Suggested Competences for ssessment

The learner:

i) uses standard measuring instruments to measure length in ms, cm and mm.
ii) converts mms to cm and m and vice versa.
iii) calculates the perimeter using standard measures.
iv) calculates area in cm^2 and m^2.
v) uses standard measuring instruments to measure mass in kg and g.

vi) converts grams to kilograms and vice versa.
vii) measures capacity in ml and l.
viii) converts ml to litre and vice versa.

Hints for the Teacher

i) Using a meter ruler let the learners find out how many centimetres are in a metre.
ii) Guide learners on how to convert from metres to centimetres and vice versa.
iii) Get different containers marked in litres (l) and others marked with millilitres (ml). Let the learners tell how many ml containers were used to fill the container marked l.
iv) Guide learners on how to convert from kg to g and vice versa.
v) Let the learners tell how many grams are in one kilogram and guide them on how to convert from kg to g and vice versa.

Theme: umeracy

opic ntegers

Duration: 30 Periods

Overview

An integer is a whole number (not a fraction) that can be positive, negative or zero. Integers cannot have decimal places. This topic should be introduced using the idea of a number line and enough practices should be done.

Learning Outcome

The learner should be able to use integers to determine the location of an item.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • draws number lines. • identifies positive and negative integers. • arranges and compares bintegers. • uses symbols >, <, and = to compare integers. • adds, subtracts, and	The learner: • reads/ signs the numbers on a number line. • writes /writes in Braille and reads positive and negative integers. • reads/signs the symbols >, < or =. • reads/signs sentences involving	• Positive and negative integers • Compare and order integers • Addition of integers • Subtraction of integers • Multiplication of integers • Word	• Drawing/ brailing number lines • Identifying positive and negative integers • Adding, subtracting and multiplying integers using a number line	• Creative thinking - Logical reasoning - Innovativeness • Decision making - Acceptance • Critical thinking - Making choices - Analysing sentences • Problem solving - Responding to questions - Taking decision - Evaluating facts • Effective

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
multiplies integers using number lines. • solves word problems.	addition and subtraction of integers reads/signs simple word problems involving integers.	problems	• Using symbols >, <, and = to compare integers • Solving simple word problems involving integers • Arranging and comparing integers using symbols >, <, and = to	communication - Sharing - Working in groups • Friendship formation - Fluency - Articulation **Values** • Appreciation • Care • Accuracy • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) draws/draws in Braille number lines and identifies positive and negative integers.
ii) arranges integers on the number line.
iii) uses symbols >, <,and = to compare integers.
iv) adds, subtracts and multiplies integers using a number line.

Hints for the Teacher

i) Introduce integers using a number line which has both positive and negative numbers.
ii) Help learners to realise that positive movement is represented by positive numbers and negative movement by negative numbers.
iii) Let the learners relate positive and negative numbers to profit and loss respectively.

Theme: lgebra

opic: Algebra

Duration: 30 Periods

Overview

Algebra is a branch of mathematics that substitutes letters for numbers. At this Level, learners must get actively involved in solving algebraic problems. The teacher should use examples that learners are familiar with to help them form algebraic expressions. Learners should be able to change simple word problems into mathematical sentences and solve them.

Learning Outcome

The learner should be able to solve mathematical problems using the knowledge of algebra.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • collects like terms. • forms algebraic expressions • solves simple equations without letters but with boxes. • solves simple equations with letters. • solves simple word	The learner: • reads /signs algebraic expressions. • reads /signs and writes /brails simple equations without letters. • uses words like simplify in sentences. • reads /signs word problems	• Algebraic expression - Forming and simplifying algebraic expressions • Simple equations - Solving equations by adding, subtracting and dividing • Square root	• Collecting like terms • Forming algebraic expressions • Solving simple equations without letters but with boxes • Solving simple equations with letters • Solving simple word	• Creative thinking - Logical reasoning - Finding different ways of doing things • Decision making - Making a choice • Critical thinking - Asking questions - Selecting

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
problems involving algebra. • solves equations by adding, subtracting, multiplying and dividing. • finds the sides of a square using square root. • finds the unknown sides of figures when given perimeter, area and volume. • solves simple equations with letters representin g unknown value.	involving algebra.	- Finding the sides of a square using square root • Finding unknown sides of perimeter area and volume when given an equation	problems involving algebra • Solving equations by adding, subtracting, multiplying and dividing • Solving simple equations involving representin g letters • Finding equations using the unknown • Finding the unknown sides of figures when given perimeter, area and volume • Finding the sides of a square by using square roots	and evaluating information - Analysing statements - Giving reasons for actions taken **Values** • Sharing • Appreciation • Care • Accuracy • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) collects like terms.
ii) forms algebraic expressions.
iii) solves simple equations without letters but with boxes.
iv) solves simple equations with letters.
v) solves simple word problems involving algebra.

Hints for the Teacher

i) Introduce the topic by using a lot of mental work.
ii) Write problems on the chalkboard with missing numbers.
iii) Let the learners solve the problems by referring to the missing numbers as the unknown and use letters to represent the known.
iv) Introduce the term `like terms', and guide the learners on how mathematical operations are carried out.
v) Guide learners to solve equations by adding, subtracting, multiplying and dividing.
vi) Help learners to find out the size of a square, using square roots.
vii) Encourage learners to find out the unknown sides of a figure when given perimeter, area and volume.

LEVEL
THREE

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Theme 1:

opic: Set Concepts

Duration: 30 Periods

Overview

This is a continuation of work of sets studied in Level 2. In Level 3, focus will be on universal set, subset, complement set, finite and infinite sets and probability. While handling this topic, practical work should be emphasised. The learners should be encouraged to apply the knowledge gained.

Learning Outcome

The learner should be able to use the knowledge of sets to solve problems in set related situations.

Subject Competences	Language Competences	Content	Suggested Learning Activities	Life Skills and Values
The learner: • identifies finite and infinite sets. • interprets information on a Venn diagram. • solves problems using Venn diagrams. • forms subsets from universal sets. • identifies	The learner: • spells /signs and reads the words finite and infinite. • writes /brails the difference between finite and infinite sets. • reads /signs sentences related to Venn diagrams.	• Finite and infinite sets • Venn diagrams • Universal and subsets • Complement sets • Probability • Solving	• Identifying finite and infinite sets • Representing information on Venn diagrams • Interpreting information on Venn diagrams • Solving problems using Venn diagrams	• Critical thinking - Responding to questions appropriately • Problem solving - Selecting and evaluating information - Evaluating facts • Friendship formation - Working in groups - Interpersonal

Subject Competences	Language Competences	Content	Suggested Learning Activities	Life Skills and Values
complement sets. • works out probability of events using Venn diagrams. • applies the knowledge of sets to solve word problems.	• writes/writes in Braille and reads out complement sets. • writes/signs the probability of simple events.	word problems	• Forming subsets from universal sets • Identifying complement sets • Finding probability of simple events using Venn diagrams • Solving word problems	relationships **Values** • Patience • Responsibility • Care • Cooperation

Suggested Competences for Assessment

The learner:

i) identifies finite and infinite sets.
ii) solves problems using Venn diagrams.
iii) forms subsets from universal sets.
iv) identifies complement sets.
v) works out probability of events using Venn diagrams.

Hints for the Teacher

i) Revise the work covered in the previous Levels at the beginning of the topic to further learners' understanding of sets.
ii) Encourage cooperative learning and group work.
iii) Remember to display information on Venn diagrams up to 2 sets.
iv) Give learners enough time to discuss the relationships between sets using Venn diagrams.
v) Have learners work in cooperative learning groups to solve problems involving sets.
vi) Emphasise the formulae of finding sub-sets.
vii) Help learners in solving problems involving probability.

Theme: umeracy

opic 1: Whole Numbers

Duration: 30 Periods

Overview

This topic gives learners opportunities to further develop their numeracy skills. Learners should be helped to read and write numbers up to eight digits correctly. Learners will also extend their knowledge of Roman numerals up to MM and bases.

Learning Outcome

The learner should be able to use large numbers, Roman numerals and bases in solving problems.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies place values up to 9,999,999. • writes numbers in expanded form. • writes numbers in figures up to 9,999,999. • writes numbers in words up to 9,999,999.	The learner: • reads/signs place values of numbers up to millions. • reads/signs the expanded number. • reads/signs numbers in words up to millions. • reads/signs and writes Roman	• Place values up to millions • Numbers in expanded form • Numbers in figures • Numbers in words • Roman numerals up to MM • Converting bases • Counting	• Identifying place values up to 9,999,999 • Writing numbers in expanded form and vice versa • Writing numbers in figures up to 9,999,999 • Writing numbers in words up to	• Creative thinking - Selecting and evaluating information • Problem solving - Evaluating facts • Effective communication - Audibility • Friendship formation

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• writes Roman numerals up to two million (MM). • converts numbers from other bases to base ten and vice versa. • identifies the counting digits of number bases. • adds, subtracts and multiplies in binary system up to 5 digits. • coverts bases in binary system.	numerals up to MM. • reads/signs the counting digit of number bases. • reads/signs answers got after adding, subtracting and multiplying in binary system.	digits of numbers in bases • Operations in binary systems	9,999,999 • Writing Roman numerals up to MM • Converting numbers from other bases to base ten and vice versa • Identifying the counting digits of number bases • Adding, subtracting and multiplying numbers in binary system up to 5 digits • Converting bases • Counting bases of numbers	- Working in groups **Values** • Accuracy • Patience • Responsibility • Care • Cooperation

Suggested petences for ssessment

The learner:

i) identifies place values up to 9,999,999.

ii) writes /writes in Braille numbers in expanded form.
iii) writes /writes in Braille numbers in figures and words up to 9,999,999.
iv) writes / writes in Braille Roman numerals up to MM.
v) converts numbers from other bases to base ten and vice versa.
vi) adds, subtracts and multiplies in binary system up to 5 digits.

Hints for the Teacher

i) Give learners opportunity to read and write numbers as much as possible.
ii) Give learners adequate, relevant, and varied mental work.
iii) Encourage practical work such as number puzzles, games and quizzes.
iv) Guide learners to work in pairs and make cards to form Roman numerals up to two million (MM).

Topic 2: Operations on Whole Numbers

Duration: 30 Periods

Overview

This topic builds on knowledge already got from previous levels. The use of operations on numbers will help the learners in carrying out daily activities. Therefore encourage them to use their everyday experiences to carry out addition, subtraction, multiplication and division of large numbers.

Learning Outcome

The learner should be able to use the four operations on large numbers to solve real life problems.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • adds whole numbers whose sum does not exceed 99,999,999. • subtracts whole numbers up to eight digits. • multiplies whole numbers whose product does not exceed 99,999,999. • divides whole numbers by two digit numbers with	The learner; • reads /signs mathematical statements of addition. • reads /signs mathematical statements of subtraction. • reads /signs mathematical statements of multiplicatio n. • reads /signs mathematical statements of division. • reads /signs and solves problems involving	• Addition of whole numbers up to 8 digits • Subtraction of whole numbers up to 8 digits • Multiplicatio n of whole numbers whose product does not exceed 99,999,999 • Division of six digit numbers by two digit numbers • Mixed	• Adding whole numbers whose sum does not exceed 99,999,999 • Subtracting whole numbers up to eight digits • multiplies whole numbers whose product does not exceed 99,999,999 • Dividing whole numbers by two digit numbers with or without remainders • Working out	• Creative thinking - Logical reasoning - Finding different ways of doing things • Critical thinking - Giving reasons for action taken - Responding to questions appropriately • Problem solving - Making

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
or without remainders. • applies operations on numbers integrating commutative, associative and distributive properties. • solves problems involving mixed operations of whole numbers. • writes numbers in expanded form using indices and vice versa. • prime factorises whole numbers. • identifies the relationship between square roots and square numbers. • solves problems on cube numbers and roots.	mixed operations. • reads /signs numbers in expanded form. • spells /signs the word prime factorisation. • writes /brails the relationship between square roots and square numbers.	operations • Expanded form using indices • Standard form (scientific notation) • Prime factorisation • Square and square roots • Cube numbers and cube roots	operations on numbers integrating them with commutative, associative and distributive properties • Solving problems involving mixed operations of whole numbers • Writing/brailing numbers in expanded form using indices and vice versa • Prime factorising whole numbers • Identifying the relationship between square roots and square numbers • Solving problems on cubes, numbers and roots	choices - Finding different strategies **Values** • Endurance • appreciation • Accuracy • Patience • Care • Cooperation

Suggested Competences for Assessment

The learner:

i) adds whole numbers whose sum does not exceed 99,999,999.
ii) subtracts whole numbers up to eight digits.
iii) multiplies whole numbers whose product does not exceed 99,999,999.
iv) divides whole numbers by two digit numbers without or with remainders.
v) applies operations on numbers integrating with commutative, associative and distributive properties.
vi) solves problems involving mixed operations on whole numbers.
vii) writes /brails numbers in expanded form using indices and vice versa.
viii) prime factorizes whole numbers.
ix) identifies the relationship between square roots and square numbers.

Hints for the Teacher

i) Let learners identify place values and values of digits.
ii) Encourage learners to use concrete objects when they are carrying out operations on whole numbers.
iii) Guide learners to write/brail, and read/sign Roman numerals up to MM.
iv) Emphasise proper alignment of digits when carrying out operations.
v) Use BODMAS and DMAS carefully when teaching operation of whole numbers.
vi) Give learners enough practice on the application of the four operations.

Topic 3: Patterns and Sequences

Duration: 30 Periods

Overview

New terms like triangular, composite, cubic numbers and divisibility tests, are introduced in this topic. The terms should be explained properly to the learner so that he/she understands them. In order to make the topic interesting, encourage the learners to make their own patterns and sequences.

Learning Outcome

The learner should be able to form various patterns and sequences using numbers and carry out tests of divisibility.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies composite, cubic and triangular numbers. • forms patterns and sequences using composite, cubic and triangular numbers. • tests number divisibility by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.	The learner: • pronounces the words composite, cubic and triangular numbers correctly. • spells/signs the words composite, cubic and triangular. • reads /signs number patterns and sequences formed. • writes /writes in Braille steps for divisibility tests.	• Types of numbers • Number patterns and sequences • Tests of divisibility of: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	• Revising types of numbers covered in Level 2 • Defining and giving examples of composite, triangular and cubic numbers • Developing patterns using numbers • Testing divisibility of numbers by 2, 3, 4 5, 6, 7, 8, 9, 10 and 11	• Creative thinking - Innovativeness • Problem solving - Finding different ways of doing things - Making choices **Values** • Appreciation • Patience • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) identifies composite, cubic and triangular numbers.
ii) forms patterns and sequences using composite, cubic and triangular numbers.
iii) tests number divisibility by 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

Hints for the Teacher

i) Help learners recognise how patterns lead to sequences.
ii) In groups or in pairs, let learners make their own patterns and sequences.
iii) Stress the importance of using the correct symbols.
iv) Engage learners in doing activities of divisibility test from 2 to 11.

erm

opic 4 ractions

Duration: 30 Periods

Overview

This topic builds on the learners' knowledge on fractions learnt previously in Level 2. New ideas such as ratios, proportion, simple interest and percentage will be introduced. Vulgar fractions and decimals must be well defined gradually bringing out the difference between the two. The use of various materials and methodology will be very useful in teaching and learning the concept of fractions in relation to real world problems.

Learning Outcome

The learner solves problems involving ratios, proportions, simple interest, fractions, decimals and percentages and relates them to real life situations.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • applies BODMAS to solve mixed operations on fractions. • writes fractions as decimals and decimals as fractions. • writes repeating and non-repeating decimals. • rounds off decimals up	The learner: • reads/ signs and uses the following terms correctly; BODMAS, vulgar fractions, decimals, ratio, proportion, percentage, loss, profit, interest • reads/ signs word problems	• Fractions • Decimals • Ratio • Proportion • Percentages • Simple interest • Increase, decrease, discount, loss, profit and simple interest	• Applying BODMAS to solve problems involving fractions • Writing/brailing fractions as decimals and decimals as fractions • Changing recurring decimals to fractions and vice versa • Rounding off decimals up	**Creative thinking** - Logical reasoning - Initiating new ideas **Problem solving** - Making choice - Finding different strategies **Effective communication** - Accuracy - Confidence

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
to hundredths. • solves problems involving ratio and proportions. • identifies the relationship between ratio and proportion. • converts fractions into percentages and vice versa. • solves word problems involving percentage increase, decrease, discount, loss, profit and simple interest.	involving fractions • reads/signs the rounded off decimals up to hundredths. • writes/writes in Braille the relationship between ratio and proportion. • writes/ writes in Braille correct sentences using loss, profit, ratio, proportion, interest and percentages.		to hundredths • Solving problems involving ratio and proportion • Identifying the relationship between ratio and proportion • Converting fractions into percentages and vice versa • Defining loss, profit, percentages and simple interest • Solving problems involving percentages, loss, profit and simple interest	**Values** • Appreciation • Patience • Responsibility • Cooperation

Competences for Assessment

The learner:

i) applies BODMAS to solve mixed operations on fractions.
ii) writes/writes in Braille fractions as decimals and decimals as fractions.
iii) writes/writes in Braille repeating and non-repeating decimals.

iv) rounds off decimals up to hundredths.
v) solves problems involving ratio and proportion.
vi) converts fractions into percentages and vice versa.
vii) solves word problems involving percentages, loss, profit and simple interest.

Hints for the T

i) Promote the use of mental abilities/work to check whether learners still remember what was covered in the previous level.
ii) Use previous manipulative skills to help learners understand fraction concepts.
iii) Stress the use of correct language when reading and writing fractions.
iv) Point out to the learners the importance of using correct and exhaustive steps while solving problems.

Theme: Interpretation of Graphs and Data

opic: Data Handling

Duration: 30 Periods

Overview

Organising and displaying data using graphs helps the learners to make conclusions based on the relationship on the facts of the problem. Teachers should therefore introduce further ideas such as travel graphs, pie charts and measures of central tendency. Let learners make graphs other than only drawing them and allow them sufficient practice so as to acquire the intended skills. However, it is important to emphasise accuracy in collection, presentation, recording and interpretation of data.

Learning Outcome

The learner should be able to collect, organise, record, present and interpret different types of data using different graphs.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • collects and presents data in table form. • uses the information on the tables to draw pie charts. • interprets information calculates probabilities of events based on pie-charts.	The learner; • reads/signs the data collected. • reads/signs the data in tables. • writes/writes in Braille the information in the pie charts and line graphs. • reads/signs the information from the pie	• Data in tables • Pie-charts • Probability • Measures of central tendency and range • Graphs of ordered pairs of coordinates • Travel graphs • Coordinate graphs	• Collecting and presenting data in tables • Using the information on the tables to draw pie charts • Interpreting information illustrated on pie charts • Calculating	• Creative thinking - Finding different ways of doing things • Critical thinking -Selecting and evaluating information • Problem solving -Analysing statements

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
• finds the measures of central tendency and range. • draws a table of ordered pairs of coordinates (x and y) illustrated on pie charts. • draws coordinate graphs. • plots the given ordered pairs. • names the figures formed.	charts. • spells/signs and reads the following vocabulary correctly; graph, data, pie chart, line graph, scale, statistics, probability, travel graph, mean, median, mode, range. • reads/signs the measures of central tendency and range. • reads/signs the table of ordered pairs of coordinates. • discusses ways of finding mean, median, mode, range and probability of events. • reads/signs the information in the travel graphs. • uses information on tables to draw graphs of ordered pairs	• Plotting ordered pairs • Names of figures formed	probabilities of events based on pie-charts • Finding the measures of central tendency and range • Drawing/brailing a table of ordered pair of coordinates (X and Y) • Using information in tables to draw graphs of ordered pairs of coordinates • Completing the pattern of the given ordered pairs in the table • Drawing/drawing in Braille travel graphs using the idea of ordered pairs • Interpreting information on the travel	• Effective communication - Making the best use of language - Evaluating facts - Accuracy • Friendship formation - Working in groups - Use of polite language • Self esteem - Talking about self - Expressing likes and dislikes **Values** • Appreciation • care • Patience • Responsibility • Cooperation • Love

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
	of coordinates. • completes the pattern of the given ordered pairs in the table. • draws travel graphs using the idea of ordered pairs. • interprets information on the travel graphs.		graphs	

Suggested Competences for Assessment

The learner:

i) collects data and presents it in tables.
ii) uses the information in the tables to draw pie charts.
iii) interprets information illustrated on pie charts.
iv) calculates probabilities of events based on pie charts.
v) finds the measures of central tendency and range.
vi) draws/draws in Braille a table of ordered pair of coordinates (X and Y).
vii) uses information on tables to draw graphs of ordered pairs of coordinates.
viii) completes the pattern of the given ordered pairs in the table.
ix) draws/ draws in Braille travel graphs using the idea of ordered pairs.

Hints for the Teacher

i) Point out the purpose of using graphs.
ii) Engage learners in collecting and presenting data on graphs.
iii) Stress that a numerical scale is one of the vertical and horizontal axis.

Theme: Measurements

opic 1: Distance, Time and Speed

Duration: 30 Periods

Overview

Help learners to build up a table showing speed, distance and time. Assist them to use the knowledge of coordinates to draw the travel graphs, guide learners to transfer information from the table to the travel graphs, guide them to get the formulas by themselves using the pattern formed by ordered pairs and emphasise correct units because lack of this changes the intended task.

Learning Outcome

The learner should be able to use the knowledge of time, speed and distance to draw time, distance and speed graphs.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • draws a table showing distance, time and speed. • draws distance, time and speed graphs. • plots distance – time graphs (avoid plotting	The learner: • reads/ signs and uses the following vocabulary correctly – distance, time, speed, rate, plot. • reads/ signs time and distance from travel graphs. • reads/	• Distance, time and speed • Distance, time and speed graphs	• Reviewing the previous work on ordered pairs (coordinates) • Drawing/ brailing a distance, time and speed graphs • Plotting distance, time and	• Decision – making - Giving instructions - Making choice • Critical thinking - Taking a decision • Problem solving - Giving reason for action taken - Taking a

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
return journeys and bodies moving in opposite directions). • develops the formula for finding distance, time and speed. • applies the formula to find distance, time and speed. • solves problems involving distance, time and speed.	signs the relationship between time, speed and distance.		speed graphs • Stating/ signing the relationships between distance, time and speed • Developing the formula for distance, time and speed • Calculating distance, time and speed • Solving problems involving distance, time and speed using the developed formula	decision - Making a choice - Evaluating facts **Values** • Patience • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) draws a table showing distance, time and speed.
ii) draws a distance, time and speed graph.
iii) plots distance, time and speed graphs (avoid plotting return journeys and bodies moving in opposite directions).
iv) uses the formulae to find distance, time and speed.
v) solves problems involving distance, time and speed

Hints for the Teacher

i) Use correct units of distance, time and speed i.e.
   - Distance in kilometres and metres
   - Time – hours - minutes - seconds
   - Speed – km/hr, m/sec

ii) Help learners to understand the relationships between distance, time and speed.

iii) Give learner the opportunity to read data from a pre-prepared graph drawn on a scale.

iv) The learners should plot graphs and interpret them (avoid return journeys and bodies moving in opposite directions).

v) Emphasise that on a travel graph, the return does not go back to the starting point but on the horizontal axis (X axis).

Topic 2: Money

Duration: 6 Periods

Overview

Learners have some background about money. In this level, learners are being introduced to conversion of money. This involves changing one currency to an equal value of another currency. Use currencies known to the learners to carry out conversion, for example, currencies from the East African countries.

Learning Outcome

The learner should be able to demonstrate the ability to use the exchange rates to change money from one currency to another and explain why conversion of money is done.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • identifies currencies from different countries and their features. • finds out the exchange rates. • converts Uganda currency to other countries' currencies and vice versa.	The learner: • reads/ signs currencies of different countries (exchange rates, shillings, francs) • uses the word currency to make correct sentences. • uses the phrases currency and exchange.	• Exchange rates • Conversion of currency (dollars, pound sterling) • Rates and conversion to make sentences	• Collecting various currencies • Identifying the values of the various currencies • Reading/signing exchange rates from newspapers • Converting Uganda currency to other currencies and vice versa practically	• Inter-personal relationship - Interacting freely with others - Working together - Respecting other people's opinions • Critical thinking - Responding to questions appropriately **Values** • Appreciation • Patience

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
				• Sharing • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) identifies currencies from different countries and their features.
ii) finds out the exchange rates.
iii) converts Uganda currency to other countries' currencies and vice versa.

i) Use real money when naming and identifying Uganda currency (notes and coins).
ii) Guide learners in exercises that involve reading exchange rates from newspapers or pre-prepared charts. It is very important to use current exchange rates.
iii) Help learners to develop understanding that different countries have different currencies with different values.
iv) Give learners the opportunity to explain why we convert money from one currency to another.
v) Guide learners to use the knowledge of time, speed and distance to draw time, distance and speed graphs.

Term 3

opic : Lengths, Mass and Capacity

Duration: 30 Periods

Overview

This topic will help the learners to describe the world they are living in using the ideas of length, mass and capacity to manipulate the world and manage it. Involve the learners as much as possible in activities involving measurements to capture their interest.

Learning Outcome

The learner should be able to measure length, mass and capacity of various objects and apply the knowledge in everyday life.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • solves problems involving: - circumference /perimeter - area - volume and capacity. • applies the use of the formulae for circumference /perimeter, area, volume and capacity in real life situations.	The learner: - reads/signs and uses the following terms correctly:– area, volume, circumference (perimeter of a circle), capacity, pi, radius, cubic units, and square units. - reads/signs the values got for perimeter, area, volume and capacity of given figures.	• Circumference/perimeter • Area • Volume • Capacity	• Calculating circumference/perimeter of different polygons or figures • Calculating area of different polygons/figures • Calculating volume and capacity of given figures	• Creative thinking - Finding different ways of doing things • Decision making - Acceptance • Critical thinking - Selecting and evaluating information • Friendship formation - Sharing - Working in groups

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
				Values • Sharing • Appreciation • Care • Patience • Responsibility • Cooperation

Suggested Competences for Assessment

The learner:

i) finds the circumference/ perimeter, area, volume and capacity in relation to real life situations.
ii) practises using correct units for length, volume and capacity.
iii) calculates length, volume and capacity of different objects.
iv) identifies examples that bring out relevancy in relation to real life situations.
v) compares volume and capacity of different substances and objects.

i) Emphasise the units used in the topic (length, mass and capacity).
ii) While comparing units of the same measures, use a practical approach, for instance; to find out how many half litters can fill a twenty litre container.
iii) Use examples which bring out relevancy in relation to real life.
iv) Bring out a clear difference between length, volume and capacity.
v) Encourage learners to use correct units for length, volume and capacity.

Theme: Geometry

opic: Lines, Angles and Geometrical Figures

Duration: 30 Periods

Overview

This topic will build on learners' knowledge learnt in Level 2. The focus will be on construction of angles and regular polygons. Learners must be given enough practice to acquire the intended concepts. Let the learners gain experience out of a wide range of activities like identification and recognition of geometric figures using their properties.

Learning Outcome

The learner should be able to recognise and construct lines, angles and geometric figures and relate them to other fields in everyday life.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • constructs parallel, perpendicular and skew lines. • identifies vertically opposite co-interior, corresponding and alternate angles. • uses the symbols of parallel and perpendicular lines. • constructs	The learner: • reads/signs and uses the following vocabulary correctly: lines, angles, parallel, perpendicular, polygon, prism, hexagon, pentagon, Pythagoras, planes, quadrilaterals, intersect, bisect, line,	• Parallel, perpendicular and skew lines • Angles • Quadrilaterals • Simple and regular polygons • Bearing and scale drawing	• Constructing parallel, perpendicular and skew lines • Identifying vertically opposite co-interior, corresponding and alternate angles • Using the symbols of parallel and perpendicular lines • Constructing angles 30^0, 45^0,	• Creative thinking - Innovativeness - Taking a decision • Critical thinking - Making the best use of information • Friendship formation - Sharing - Working in groups Care

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
angles 30^0, 45^0, 60^0, 90^0. • bisects angles. • applies Pythagoras theorem to find the sides of quadrilaterals like rhombus and kites. • identifies quadrilaterals and their classifications. • states the properties of polygons. • constructs simple regular polygons. • applies the formulae for interior and exterior angle sum of polygons. • finds and shows the directions, bearing of a place and scale drawings.	segment, complementary, supplementary, transversal, vertical, adjacent, diagonal, symmetry and bearing. • reads/signs angles constructed. • reads/signs correct bearing from a given direction.		60^0, 90^0 • Bisecting angles of different sizes • Applying Pythagoras theorem to find the length of a right angled triangle • Identifying quadrilaterals and their classifications • Stating the properties of polygons • Constructing simple regular polygons • Applying the formulae for interior and exterior angle sum of polygons • Showing the bearing of different directions • Applying Pythagoras theorem to find the sides of quadrilaterals like a rhombus and kite	

Competences for Assessment

The learner:

i) constructs parallel, perpendicular and skew lines.
ii) identifies vertically opposite co-interior, corresponding and alternate angles.
iii) constructs angles 30^0, 45^0, 60^0, 90^0.
iv) bisects angles of different sizes.
v) applies Pythagoras theorem to find the length of a right angled triangle.
vi) identifies quadrilaterals and their classifications.
vii) states the properties of polygons.
viii) constructs simple regular polygons.
ix) uses the formulae for interior and exterior angle sum of polygons.
x) calculates the bearing of given directions.

i) Bring out examples that will help learners in understanding the terms perpendicular, parallel and skew lines.
ii) Give learners ample time to identify and name basic geometrical figures.
iii) Guide learners to measure, draw and construct lines, angles and geometric figures using mathematical instruments.
iv) Use practical approaches that will enable learners to recognise and find lines of folding symmetry.

Theme: lgebra

opic lgebra

Duration: 30 Periods

Overview

At this level, learners should solve equations and inequalities involving unknown letters. Two operations can be introduced in one expression. Introduce some terms like unknown and like terms and relate them to the letters used in algebraic expressions. Give learners real life situation examples where algebra is applied. Allow them to solve the algebraic expressions on their own.

Learning Outcome

The learner should be able to form and solve algebraic problems and apply them in everyday life.

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
The learner: • simplifies algebraic expressions. • substitutes numbers for the unknown. • solves equations. • solves inequalities and finds solution sets.	The learner: • reads/signs the following words correctly: variables, substitutes, equation, inequalities, expressions, solving, like terms, solution sets. • uses the following words:	• Algebraic expressions • Substitution • Equations • Inequalities and solution sets	• Forming algebraic equations • Simplifying algebraic expressions • Substituting numbers for the unknowns • Solving simple equations • Writing /brailing	• Creative thinking - Logical reasoning • Decision making - Finding different ways of doing things • Critical thinking - Making a

Subject Competences	Language Competences	Content	Suggested Teaching and Learning Activities	Life Skills and Values
	variables, substitutes, equation, inequalities, expressions, solving, like terms, solution sets to make correct sentences. • reads/signs the solution sets. • read/signs statement showing inequalities.		inequalities and finding solution sets	choice - Asking questions - Selecting and evaluating information • Problem solving - Analysing statements - Giving reasons for actions taken - Evaluating facts - Finding different things **Values** • Appreciation • Care • Accuracy • Responsibility • Cooperation

Suggested ompetences for ssessment

The learner:

i) simplifies algebraic expressions.
ii) substitutes numbers for the unknown.
iii) solves equations.
iv) solves inequalities and finds solution sets.

i) Help learners identify the relationship between an algebraic statement and an equation.
ii) Set word problems familiar to the learners' experience and let them write down algebraic expressions.
iii) In groups and pairs, give learners chance to solve algebraic problems using real life examples.

Biography

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Sample Mathematics Scheme of W

WK	PD	THEME	TOPIC	SUB TOPIC	SUBJECT COMPETENCES	LANGUGE COMPETENCES	CONTENT	SUGGESTED INSTRUCTIONAL METHODS/ STRATEGIES	TEACHING LEARNING ACTIVITIES	LIFESKILLS INDICATORS AND VALUES	INSTR.MATERIALS	REFERENCES	REMARKS
1	1	Sets	Set concepts	Types of sets	The learner: • identifies; equal sets equivalent sets, empty sets. • identifies union and intersection of sets. • tells number of members in sets. • represents information on a Venn diagram. • uses Venn diagrams to answer questions. • tells the number of members in a set.	The learner: - writes the words: sets, equal, equivalent and empty of sets. - uses the word empty set to make sentences. - spells/signs and reads the words union and intersection of sets.	• Equal sets • Equivalent sets • Empty sets • Union sets • Intersection of sets • Venn diagrams	• Discussion • Demonstration • Group work • Total communication	Identifying and naming equal sets and equivalent sets Identifying and naming empty sets Identifying members of union and intersection of sets **SNE TIPS** Finger spelling Using total communication Using large font/print Breaking down tasks Using Braille for visually Impaired learners	Creative thinking Chalkboard illustrations Books , pencils Fruits **Values** Patience Responsibility Care Cooperation	• Chart showing Venn diagram • Chalkboard illustrations • Books, pencils • Fruits	NCDC prim.Math .curricula p.4-7 MK Math pupils books 4-7 and Teachers guides 4-7 (2014) Fountain prim.Math .a simplified approach pupil and Teacher's book 4 (2011)	

Sample Mathematics Lesson Plan

Date	Class	Learning Area	Time	Number of Learners		
				Boys	Girls	Total
28/07/2018	Level II/III	Mathematics	8:30-9:10 Am	37	42	79

Theme: Sets
Topic: Set concepts
Sub-topic: Equal sets (Equivalent sets, Empty sets, Union of sets)

Competences Subject: The learner:
- identifies equal sets, equivalent sets and empty sets.
- identifies union and inter section sets.
- tells number of members in a set.
- represents information on a Venn diagram.

Language: reads/signs, pronounces, writes/brails words and sentences describing sets mathematically/ in a mathematical context (Sets, Equal set, Equivalent set, Empty set, Union of sets)

Instructional Materials
- Charts showing different sets, Venn diagrams
- Chalkboard illustrations
- Pencils and papers
- Real objects (fruits, tins)

Instructional Methods/Strategies
- Discussion
- Demonstration
- Group work
- Total communication

Special Needs Tips
- Finger spells
- Brails
- Writs in bold words (large font print)

- Uses total communication

Life Skills Indicators and Values

- Creative thinking – initiating new ideas
- Critical thinking – finding different ways of doing things
- Effective communication – availability

Values

- Patience
- Responsibility
- Cooperation
- Care

References

- NCDC prim. Math. curricula p.4-7
- MK Math pupils book and Teacher's guide s 4-7 (2014)
- Fountain prim. Maths, a simplified approach pupil and Teacher's book 4-7 (2011)

Lesson Development

Step	Phase	Duration	Teacher's Activities	Learner's Activities
I	Introduction	5 minutes	Begin lesson by guiding learners to sort and group different objects according to; colours, shapes or size. • Ask them to repeat number of members in their different sets	Sorts and groups different objects according to; colour, shape or size. Repeats numbers of members in the sets
II	Experiencing phase	22 minutes	• Let learners compare the different sets formed and group them according to number of members in them\ • Guide them to name the formed sets • Guide the learners to read, pronounce, spell and to write	Groups and compares number of members different groups Names the formed sets Practises reading, pronounces, spells and writes the new words correctly

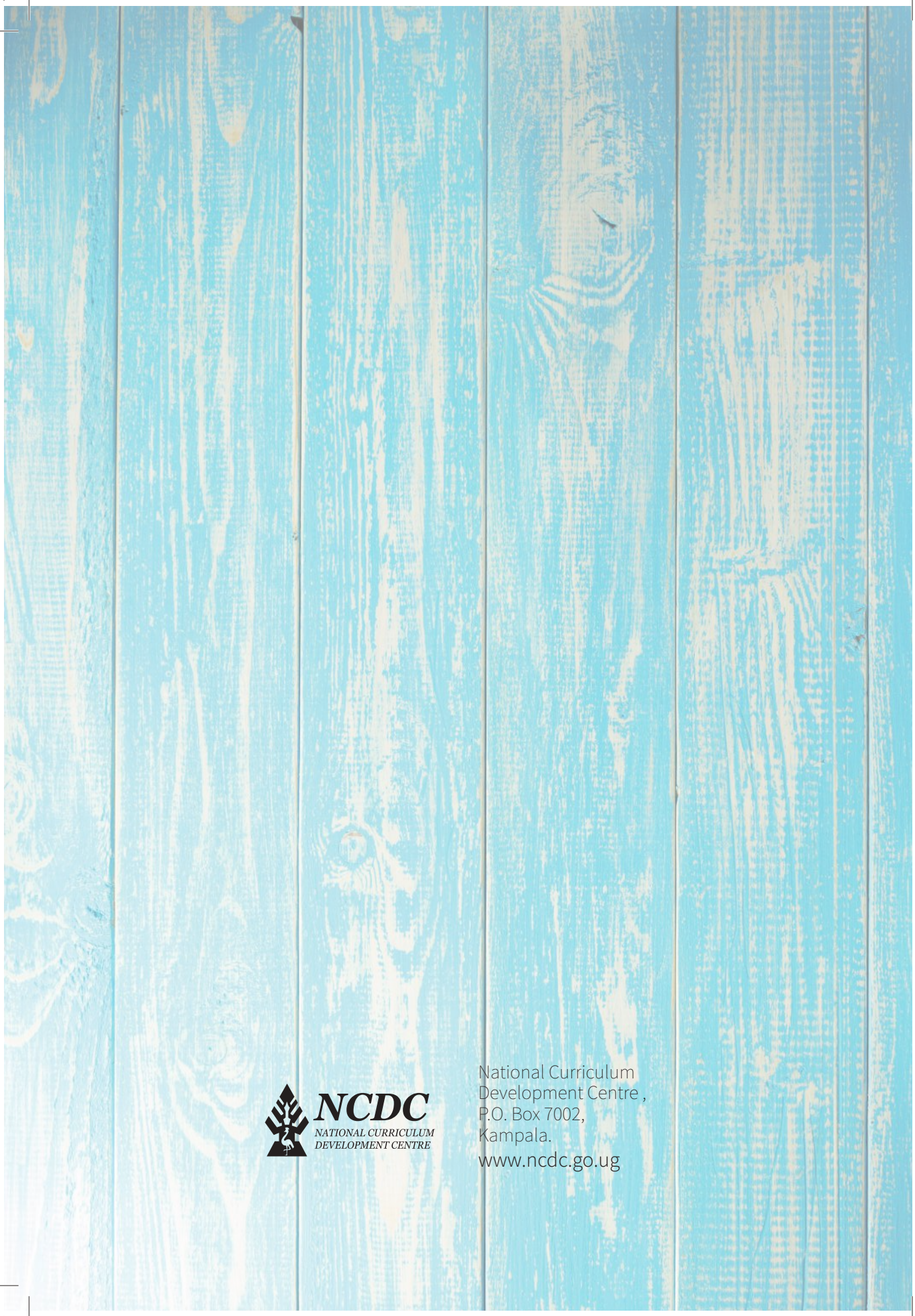
Step	Phase	Duration	Teacher's Activities	Learner's Activities
			them correctly	
III	Sharing of experience phase	3 minutes	• Ask learners to form more sets, match and compare the number of members in them • Guide them to name them	Forms sets, compares the number of members in each set Names the sets formed
IV	Evaluation phase	10 minutes	Give the learners written work/exercise: 1. Name types of sets 2. Matching equivalent sets	Does written exercise /work on sets Names types of sets Matches equivalent set

Evaluation

Strengths:……

Areas to improve:……

Way forward:……



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