REPUBLIC OF KENYA
MINISTRY OF EDUCATION

JUNIOR SCHOOL CURRICULUM DESIGN
GRADE 7

MATHEMATICS
FOR LEARNERS WITH HEARING IMPAIRMENT

KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

Nurturing Every Learners Potential

First Published in 2022

ISBN:

Published and printed by Kenya Institute of Curriculum Development

FOREWORD

The Government of Kenya is committed to ensuring that policy objectives for Education, Training and Research meet the aspirations of the Constitution of Kenya 2010, the Kenya Vision 2030, National Curriculum Policy 2019, the United Nations Sustainable Development Goals (SDGs) and the Regional and Global conventions to which Kenya is a signatory. Towards achieving the mission of Basic Education, the Ministry of Education (MoE) has successfully and progressively rolled out the implementation of the Competency Based Curriculum (CBC) at Pre-Primary, Primary and Junior School levels.

The implementation of Competency Based Curriculum involves monitoring and evaluation to determine its success. After the five-year implementation cycle, a summative evaluation of the primary education cycle was undertaken to establish the achievement of learning outcomes as envisaged in the Basic Education Curriculum Framework. The Government of Kenya constituted a Presidential working Party on Education Reforms (PWPER) in 2022 to address salient issues affecting the education sector. PWPER made far reaching recommendations for basic education that necessitated curriculum review. The recommendations of the PWPER, monitoring reports, summative evaluation, feedback from curriculum implementers and other stakeholders led to rationalisation and review of the basic education curriculum.

The reviewed Grade seven curriculum designs for learners with hearing impairment build on competencies attained by learners at Primary school level. Emphasis at this grade is the development of skills for exploration and making informed decision on pathways based on careers.

The curriculum designs present National Goals of Education, essence statements, general and specific expected learning outcomes for the subjects as well as strands and sub strands. The designs also outline suggested learning experiences, key inquiry questions, core competencies, Pertinent and Contemporary Issues (PCIs), values, and assessment rubric.

It is my hope that all Government agencies and other stakeholders in Education will use the designs to plan for effective and efficient implementation of the CBC.

HON. EZEKIEL OMBAKI MACHOGU, CBS
CABINET SECRETARY,
MINISTRY OF EDUCATION

PREFACE

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ACKNOWLEDGEMENT

The Kenya Institute of Curriculum Development (KICD) Act Number 4 of 2013 (Revised 2019) mandates the Institute to develop and review (*SNE adapt*) curricula and curriculum support materials for basic and tertiary education and training. The curriculum development process for any level of education involves thorough research, international benchmarking and robust stakeholder engagement. Through a systematic and consultative process, the KICD conceptualised the Competency Based Curriculum (CBC) as captured in the Basic Education Curriculum Framework (BECF)2017, that responds to the demands of the 21st Century and the aspirations captured in the Constitution of Kenya 2010, the Kenya Vision 2030, East African Community Protocol, International Bureau of Education Guidelines and the United Nations Sustainable Development Goals (SDGs).

KICD receives its funding from the Government of Kenya to facilitate successful achievement of the stipulated mandate and implementation of the Government and Sector (Ministry of Education (MoE) plans. The Institute also receives support from development partners targeting specific programmes. The revised Grade seven curriculum designs for learners with hearing impairment were developed and adapted with the support of the World Bank through the Kenya Primary Education Equity in Learning Programme (KPEELP); a project coordinated by MoE. Therefore, the Institute is very grateful for the support of the Government of Kenya, through the MoE and the development partners for policy, resource and logistical support. Specifically, special thanks to the Cabinet Secretary-MoE and the Principal Secretary – State Department of Basic Education,

I also wish to acknowledge the KICD curriculum developers and other staff, all teachers, educators who took part as panelists; the Semi-Autonomous Government Agencies (SAGAs) and representatives of various stakeholders for their roles in the development and adaptation of the Grade seven curriculum designs for learners with hearing impairment. In relation to this, I acknowledge the support of the Chief Executive Officers of the Teachers Service Commission (TSC) and the Kenya National Examinations Council (KNEC) for their support in the process of developing and adapting these

designs. Finally, I am very grateful to the KICD Council Chairperson and other members of the Council for very consistent guidance in the process.

I assure all teachers, parents and other stakeholders that this curriculum design will effectively guide the implementation of the CBC at Grade seven and preparation of learners with hearing impairment for transition to Grade eight.

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NATIONAL GOALS OF EDUCATION

Education in Kenya should:

i) Foster nationalism, patriotism and promote national unity.

Kenya's people belong to different communities, races and religions, but these differences need not divide them. They must be able to live and interact as Kenyans. It is a paramount duty of education to help young people acquire this sense of nationhood by removing conflicts and promoting positive attitudes of mutual respect which enable them to live together in harmony and foster patriotism in order to make a positive contribution to the life of the nation.

ii) Promote the social, economic, technological and industrial needs for national development.

Education should prepare the youth of the country to play an effective and productive role in the life of the nation.

a) Social Needs

Education in Kenya must prepare children for changes in attitudes and relationships which are necessary for the smooth progress of a rapidly developing modern economy. There is bound to be a silent social revolution in the wake of rapid modernisation. Education should assist our youth to adapt to this change.

b) Economic Needs

Education in Kenya should produce citizens with the skills, knowledge, expertise and personal qualities that are required to support a growing economy. Kenya is building a modern and independent economy which is in need of an adequate and relevant domestic workforce.

c) **Technological and Industrial Needs**

Education in Kenya should provide learners with the necessary skills and attitudes for industrial development. Kenya recognises the rapid industrial and technological changes taking place, especially in the developed world. We can only be part of this development if our education system is deliberately focused on the knowledge, skills and attitudes that will prepare our young people for these changing global trends.

iii) Promote individual development and self-fulfillment.

Education should provide opportunities for the fullest development of individual talents and personality. It should help children to develop their potential interests and abilities. A vital aspect of individual development is the building of character.

iv) Promote sound moral and religious values.

Education should provide for the development of knowledge, skills and attitudes that will enhance the acquisition of sound moral values and help children to grow up into self-disciplined, self-reliant and integrated citizens.

v) **Promote social equality and responsibility.**

Education should promote social equality and foster a sense of social responsibility within an education system which provides equal educational opportunities for all. It should give all children varied and challenging opportunities for collective activities and corporate social service irrespective of gender, ability or geographical environment.

vi) Promote respect for and development of Kenya's rich and varied cultures.

Education should instill in the youth of Kenya an understanding of past and present cultures and their valid place in contemporary society. Children should be able to blend the best of traditional values with the changing requirements that must follow rapid development in order to build a stable and modern society.

vii) Promote international consciousness and foster positive attitudes towards other nations.

Kenya is part of the international community. It is part of the complicated and interdependent network of peoples and nations. Education should therefore lead the youth of the country to accept membership of this international community with all the obligations and responsibilities, rights and benefits that this membership entails.

viii. Promote positive attitudes towards good health and environmental protection.

Education should inculcate in young people the value of good health in order for them to avoid indulging in activities that will lead to physical or mental ill health. It should foster positive attitudes towards environmental development and conservation. It should lead the youth of Kenya to appreciate the need for a healthy environment.

LEVEL LEARNING OUTCOMES

By end of Junior School, the learner should be able to:

1. Apply literacy, numeracy and logical thinking skills for appropriate self-expression.
2. Communicate effectively, verbally and non-verbally, in diverse contexts.
3. Demonstrate social skills, and spiritual and moral values for peaceful co-existence.
4. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.
5. Practice relevant hygiene, sanitation and nutrition skills to promote health.
6. Demonstrate ethical behaviour and exhibit good citizenship as a civic responsibility.
7. Appreciate the country's rich and diverse cultural heritage for harmonious coexistence.
8. Manage pertinent and contemporary issues in society effectively.
9. Apply digital literacy skills for communication and learning.

ESSENCE STATEMENT

We live in a world of Mathematics whereby we count, add, subtract, multiply or divide quantities and substances throughout our daily interactions. Mathematics involves understanding numbers and the numerical operations used to develop strategies for mental mathematical problem-solving skills, estimation and computational fluency. We live in a world of space, shape and structures. It is impossible to think of a world without Mathematics. It is applied in the economic activities, scientific, social, religious and political worlds. It is therefore imperative that children are taught Mathematics from early years.

In Junior Secondary, Mathematics builds on the competencies acquired by the learner from primary school. It enhances the learner's competencies in mathematical skills as a foundation for Science, Technology, Engineering and Mathematics (STEM) and other pathways at Senior School. Mathematics also prepares the learner to have sufficient skills and competencies for application in solving problems in real life situations. This is in line with vision 2030 and sessional paper number 1 of 2019 which emphasizes on STEM areas. Further, this design has been adapted to ensure that learners who are Deaf and those with Hard of Hearing learn effectively. The adaptations include suggestions for provision of sign interpretation on aspects that require use of sound, use of digital devices with assistive technology, use of visual aids such as charts, maps and diagrams, use of hands-on activities, guided demonstrations, purposeful pairing and use of adapted learning resources. The design has also incorporated alternative learning outcomes and activities to enhance the acquisition of sign language vocabulary to learners with Hearing Impairments.

SUBJECT GENERAL LEARNING OUTCOMES

a) Demonstrate mastery of number concepts by working out problems in day-to-day life.
b) Represent and apply algebraic expressions in different ways.
c) Apply measurement skills to find solutions to problems in a variety of contexts.
d) Use money and carry out financial transactions in real life situations.
e) Generate geometrical shapes and describe spatial relationships in different contexts.
f) Collect and organise data to inform and solve problems in real life situations.
g) Develop logical thinking, reasoning, communication and application skills through a mathematical approach to problem solving
h) Apply mathematical ideas and concepts to other learning areas or subjects and in real life contexts.
i) Develop confidence and interest in mathematics for further training and enjoyment.

SUMMARY OF STRANDS AND SUBSTRANDS

Strand	Sub-Strand	Suggested Number of Lessons
1. NUMBERS	1.1 Whole Numbers	20
	1.2 Factors	7
	1.3 Fractions	9
	1.4 Decimals	6
	1.5 Squares and square roots	5
2. ALGEBRA	2.1 Algebraic Expressions	5
	2.2 Linear Equations	6
	2.3 Inequalities	8
3. MEASUREMENT	3.1 Pythagorean Relationship	4
	3.2 Length	6
	3.3 Area	8
	3.4 Volume and Capacity	8
	3.5 Time, distance and speed	8
	3.6 Temperature	6
	3.7 Money	14
4. GEOMETRY	4.1 Angles	8
	4.2 Geometric constructions	12
5. DATA HANDLING AND PROBABILITY	5.1 Data handling	**10**
Note: The suggested number of lessons per sub strand may be less or more depending on the context.		

STRAND 1.0: NUMBERS

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
1.0 NUMBERS	**1.1 Whole Numbers** **(20 lessons)**	By the end of the sub-strand the learner should be able to; a) sign vocabulary related to whole numbers, b) use place value and total value of digits up to hundreds of millions in real life, c) write numbers in symbols up to hundreds of millions in real life situations, d) write numbers in words up to millions for fluency, e) round off numbers up to the nearest hundreds of millions in real life situations, f) classify natural numbers as even, odd and prime in different situations,	● In pairs or groups, learners are guided to fingerspell and sign the vocabularies related to whole numbers such as even numbers, odd numbers, prime numbers and natural numbers. ● In purposive groups, learners are guided to identify and write place value and total value of digits using place value apparatus. ● In purposive groups, learners are guided to write and sign numbers in symbols up to hundreds of millions on number cards or charts.	1. Why do we write numbers in words and/or symbols? 2. Why do we round off numbers in real life situations?

		g) apply operations of whole numbers in real life situations, h) identify number sequence in different situations, i) create number sequence for playing number games, j) use digital devices for learning more on whole numbers and for enjoyment, k) appreciate use of whole numbers in real life situations.	● In purposive groups, learners are guided to prepare and use place value charts up to hundreds of millions to round off numbers. ● In pairs, learners are guided to play a number game, make number cards, sort and classify numbers according to those that are even, odd or prime. ● In purposive groups, learners are guided to work out or perform 2, 3 or more combined operations in the correct order using digital devices. ● In purposive groups, learners are groups be guided to identify the number patterns to work out number sequences. ● In purposive groups, learners are guided to play	

			games of creating number puzzles that involve number sequences using digital devices or other materials.	

Core Competencies to be developed:

- Communication and Collaboration: Signing, writing and teamwork; as the learner signs and writes clearly and effectively while working with others.
- Creativity and Imagination: Networking; as the learner exchanges new ideas while preparing and using place value charts to play games of creating number puzzles that involve number sequences.

Values:

- Respect: As the learner shows patience while working in pairs or groups and playing number games.
- Unity: As the learner cooperates while working towards achieving set goals of making number puzzles.
- Peace: As the learner displays love while working in groups and sharing different roles in playing games.

Pertinent and Contemporary Issues (PCIs):

- Socio-Economic and Environmental Issues: Environment & technology: As the learner practices writing dummy cheques for different sums of money.
- Life Skills and Human Sexuality: Self–esteem**:** As the learner creates number puzzles that involve number sequences.

Link to other learning areas

The learner is able to relate the skill of writing numbers in words and in symbols to writing dummy cheques in Pre-Technical Studies.

Suggested Learning Resources

- Place value apparatus, number charts, number cards, multiplication table

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	suggested key Inquiry Questions
1.0 NUMBERS	**1.2 Factors** **(7 lessons)**	By the end of the sub-strand, the learner should be able to**;** a) sign the terms related to divisibility test of in different situation, b) express composite numbers as a product of prime factors in different situations, c) work out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations, d) apply the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) in real life situations,	● In pairs or individually, learners are guided to fingerspell and sign terms related to the divisibility test of numbers such as divisible, by, etc. ● In purposive groups, learners are guided to use regrouping and divisibility rule work, - to determine divisibility of numbers 2, 3, 4, 5, 6, 8, 9, 10 and 11. ● In pairs, learners are guided to sign and write factors of composite numbers by factorization, factor tree, factor rainbow in charts, colour charts or cards using locally available materials. ● In purposive groups, learners are guided to use factors to determine the	1. Why do we use factors in day-to-day activities? 2. How do we use factors in day-to-day activities? 3. How do we apply the GCD and the LCM in day-to-day activities?

		e) use digital devices for learning more on factors and for enjoyment, f) reflect on the use of factors in real life situations.	LCM and the GCD using number cards or charts. ● In purposive groups, learners are guided to use digital devices to access factors of numbers including sign songs/poems or games on divisibility tests. ● In the purposive groups, learners are guided to work out sample questions and solve problems relating to the GCD and the LCM in real life situations. ● In purposive groups, learners are guided to determine the GCD and LCM of numbers using digital devices to perform exercises on factors such as matching activities or games.	

Core Competencies to be developed:

- Communication and Collaboration: Active observing and signing; as the learner follows instructions in using factors to determine the LCM and GCD using number cards or charts.
- Digital Literacy: Playing digital games; as the learners use digital devices to perform exercises on factors such as matching activities.

Values:

- Unity: As the learner cooperates while sign singing together or solving puzzles on factors.
- Respect for self and others: As the learner displays patience while working in groups to write factors of composite numbers using the factor tree.

Pertinent and Contemporary Issues (PCIs):

- Self-awareness: As learners work in groups to create sign songs and poems on divisibility tests.
- Education for Sustainable Development (ESD): As the learner uses locally available materials for making number cards and charts.

Link to other learning areas:

- The learner is able to relate the concept of LCM or GCD to the use of the smallest or largest containers for measuring different substances in Agriculture and Nutrition.

Suggested Learning Resources:

- Multiplication table, charts, digital devices, puzzles

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
1.0 NUMBERS	**1.3 Fractions** (9 lessons)	By the end of the sub-strand, the learner should be able to: a) sign vocabularies related to fractions, b) compare fractions in different situations, c) add fractions in different situations, d) subtract fractions in different situations, e) multiply fractions by a whole number, fraction and a mixed number in real life situations, f) identify the reciprocals of fractions in, different situations, g) divide fractions by a whole number, fraction and a mixed fraction in real life situations,	• Individually or in pairs, learners are guided to sign words related to fractions such as reciprocal, mixed fraction, whole number, proper fraction and improper fraction. • In the purposive groups, learners are guided to arrange fractions in increasing order using different strategies. • In purposive groups, learners are guided to arrange fractions in decreasing order using different strategies. • In purposive groups, learners are guided to arrange fractions in ascending or descending	1. How do we use fractions in daily activities? 2. Why do we study fractions?

		h) divide a whole number by fractions in different situations, i) identify number sequence involving fractions in different situations, j) create number sequence involving fractions for playing number games, k) use digital devices for learning more on fractions and for enjoyment, l) recognise use of fractions in real life situations.	order using fraction cards. ● In the purposive groups, learners are guided to add fractions in cut-outs, cards, charts and concrete objects. ● In the purposive groups, learners are guided to subtract fractions in cut-outs, cards, charts and concrete objects. ● In the purposive groups, learners are guided to multiply fractions in cut-outs, cards, charts and models. ● In the purposive groups, learners are guided to divide fractions in cut-outs, cards, charts and models. ● In the purposive groups, learners are guided to use	

			flip cards to discuss reciprocals. ● In the purposive groups, learners are guided to play games of creating number puzzles that involve fractions number sequences using digital devices or other materials.	

Core Competencies to be developed:

- Creativity and Imagination: Generates ideas when given a clear brief: As the learner creates a fraction sequence game that can be used for play and learning.
- Self-efficacy: as the learner signs with clarity words related to fraction.

Values:

- Social justice: As the learner shares resources equitably.
- Responsibility: As the learner shows determination while performing multiplication and division of fractions when sharing or allocating resources.
- Unity: As the learner cooperates when playing games of creating number puzzles that involve fractions.

Pertinent and Contemporary Issues (PCIs):

- Citizenship Education: Social cohesion: as the learner shares digital devices at home and outside school using fractions.

Link to other learning areas:

- Creative Arts and Sports: The learner is able to relate the concept of fractions to use fractions in types of musical notes like semi-quavers (1/16), quavers in Creative Arts and Sports.

Suggested resources:

- Multiplication tables,

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Question
1.0 NUMBERS	**1.4 Decimals** (6 lessons)	By the end of the sub-strand, the learner should be able to; a) Sign vocabularies related to decimals for fluency in signing, b) identify the place value and the total value of digits in decimals in real life, c) multiply decimals by a whole number and by a decimal in real life situations, d) divide decimals by a whole number and by a decimal in real life situations, e) use digital devices for learning more on decimals and for enjoyment,	● In groups, learners are guided to fingerspell and sign vocabularies related to decimals i.e. decimals, place value, total value and place value chart. ● In the purposive groups, learners are guided to discuss the place value and the total value of decimals using place value apparatus and worksheets. ● In the purposive groups, learners are guided to state the place value and the total value of decimals using place value apparatus and worksheets. ● In the purposive groups, learners are guided to use the place value and the total value of decimals using place value apparatus and worksheets.	1. How are decimals applicable in real life? 2. How do you use decimals in daily activities?

		f) recognise use of decimals in real life situations.	• In the purposive groups, learners are guided to multiply and divide decimals using cut-outs, cards, charts and models. • In purposive groups, learners are guided to use calculators and other digital devices to work out operations of decimals. • In purposive groups, learners play games involving multiplication and division of decimals.	
Core Competencies to be developed: • Critical thinking and problem solving: Finds the information required to complete a task; as learners identify and use the place value and the total value of decimals using place value apparatus and worksheets. • Digital literacy: Playing digital games; as learners use digital devices gadgets to play games and learn more on decimals.				
Values: • Unity: As the learner works in groups to multiply and divide decimals using cut-outs, cards, charts and models. • Responsibility: As a learner they take care of digital devices used • Love: As the learners discuss the place value together				
Pertinent and Contemporary Issues (PCIs): • Social Economic and Environmental Issues, cyber bullying; as the learner uses digital devices to play games. Safety; as the learner makes paper cut-outs or other materials and models.				
Link to other learning areas:				

● Agriculture and Nutrition: the learner is able to relate the concept of decimals to measuring mass of ingredients for cooking in decimals in Agriculture and Nutrition.
Suggested Learning Resources: ● Equivalent fraction board, circular and rectangular cut-outs, counters

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Question(s)
1.0 NUMBERS	**1.5 Square and Square Roots** (5 lessons)	By the end of the sub-strand, the learner should be able to; a) sign vocabularies related to squares and square roots, b) determine the squares of whole numbers, fractions and decimals by multiplication in different situations, c) determine the square roots of whole numbers, fractions and decimals of perfect squares in different situations, d) use digital devices for learning more on squares and square roots and for enjoyment, e) appreciate use of squares and square roots in real life situations.	● In groups, learners are guided to sign vocabularies related to; ➢ squares ➢ square roots ➢ perfect squares. ● In purposive groups, learners are guided to work out squares of whole numbers using ➢ grids and charts ➢ long multiplication method ➢ using calculators. ● In purposive groups, learners are guided to work out squares of fractions using: ➢ grids and charts ➢ long multiplication method	1. Why do we use squares and square roots in daily activities? 2. How do we apply squares and square roots in daily activities?

			➢ using calculators. ● In purposive groups, the learners are guided to work out squares of decimals using: ➢ grids and charts ➢ long multiplication method ➢ using calculators. ● In purposive groups, learners are guided to work out square roots of whole number using: ➢ factors method ➢ division method ➢ calculators. ● In purposive groups, learners are guided to work out square roots of fractions using: ➢ factors method ➢ division method ➢ calculators	

			● In purposive groups, learners are guided to work out square roots of decimals using: ➢ factors method ➢ division method ➢ calculators ● In purposive groups, learners are guided to use digital devices to play games involving squares and square roots.	

Core Competencies to be developed:

- Critical thinking and problem solving: Completes tasks by following instructions; as the learner uses grid squares and charts to find squares and square roots.
- Digital literacy: Operates digital devices; as the learner uses digital devices to work out squares and square roots of numbers.

Values

- Respect: As the learner shows patience group discussion while using grids and charts.
- Unity: As the learner cooperates while working in groups and works out the factors of numbers to get the square roots.

Pertinent and Contemporary Issues (PCIs): Socio-Economic and Environmental Issues **environmental education;** As the learner considers shapes of different objects in the school compound especially the ones that are squares.
Link to other learning areas: ● The learner is able to relate the skill of calculating square root to determining the number of seedlings that would fit in a square portion of land in Agriculture and Nutrition.
Suggested resources ● Place value charts, number cards

Level / Indicator	Exceeds Expectation	Meets Expectation	Approaches Expectation	Below Expectation
Ability to sign terms related to numbers, whole numbers, factors, fractions, decimals, squares and square root	signs terms related to numbers, whole numbers, factors, fractions, decimals, squares and square root with exceptional accuracy demonstrating signing proficiency.	signs terms related to numbers, whole numbers, factors, fractions, decimals, squares and square root accurately.	signs terms related to numbers, whole numbers, factors, fractions, decimals, squares and square root with noticeable errors.	Signs terms related to numbers, whole numbers, factors, fractions, decimals, squares and square root inaccurately lacking clarity.
Ability to read and write numbers in symbols and words up to hundreds of millions.	Reads and writes numbers exceptionally in symbols and words up to hundreds of millions.	Reads and writes numbers in symbols and words up to hundreds of millions.	Reads and writes numbers with minimal support in symbols and words up to hundreds of millions.	Reads and writes numbers with omission in symbols and words up to hundreds of millions.

Ability to apply operations of whole numbers in real life situations.	Applies operations of whole numbers in real life situations demonstrating a clear understanding of the concept.	Applies operations of whole numbers in real life situations.	Applies operations of whole numbers in real life situations demonstrating partial understanding of the correct order of operation.	Applies operations of whole numbers in real life situations demonstrating little to no understanding of the correct order of operation.
Ability to determine divisibility of numbers by 2, 3, 4, 5, 6, 8, 9,10 and 11 in different situations. 2	Determines divisibility of numbers by 2, 3, 4, 5, 6, 8, 9,10 and 11 in different situations by explaining rationale behind each rule.	Determines divisibility of numbers by 2, 3, 4, 5, 6, 8, 9,10 and 11 in different situations.	Determines divisibility of numbers by 2, 3, 4, 5, 6, 8, 9,10 and 11 in different situations but lacks depth in explaining the rationale behind some rules.	Determines divisibility of numbers by 2, 3, 4, 5, 6, 8, 9,10 and 11 in different situations but struggle with consistency in understanding of rules.

Ability to work out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations. 2	Works out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations showing clear steps in calculation.	Works out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations	Works out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations with some steps lacking completeness.	Works out the Greatest Common Divisor (GCD) and the Least Common Multiples (LCM) of numbers by factor method in different situations but struggles to provide clear steps in calculation.
Ability to perform operations on fractions in real life situations. 3	Performs operations on fractions in real life situations demonstrating a deep understanding of concepts.	Performs operations on fractions in real life situations.	Performs operations on fractions in real life situations with occasional minor errors.	Performs operations on fractions in real life situations but struggles to execute operations accurately.
Ability to identify the place value and the total value of digits in decimals in real life.	Identifies the place value and the total value of digits in decimals providing an insightful explanation in real life.	Identifies the place value and the total value of digits in decimals in real life.	Identifies the place value and the total value of digits in decimals in real life but lacks depth in connecting place value to total value.	Identifies the place value and the total value of digits in decimals in real life but struggles to accurately assign place value.

Ability to perform multiplication and division on decimals by a whole number and by a decimal in real life situations.	Performs multiplication and division on decimals by a whole number and by a decimal in real life situations showcasing clear steps in calculation.	Performs multiplication and division on decimals by a whole number and by a decimal in real life situations.	Performs multiplication and division on decimals by a whole number and by a decimal in real life situations with the occasional minor errors.	Performs multiplication and division on decimals by a whole number and by a decimal in real life situations but struggles to execute operations accurately.
Ability to determine the square and the square roots of whole numbers, fractions and decimals of perfect squares in different situations.	Determines the square and the square roots of whole numbers, fractions and decimals of perfect squares in different situations showing clear and precise steps in calculations.	Determines the square and the square roots of whole numbers, fractions and decimals of perfect squares in different situations.	Determines the square and the square roots of whole numbers, fractions and decimals of perfect squares in different situations but lacks thoroughness in connecting concepts.	Determines the square and the square roots of whole numbers, fractions and decimals of perfect squares in different situations but shows minimal connections between the concepts.

STRAND 2.0: ALGEBRA

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
2.0 ALGEBRA	**2.1 Algebraic Expressions** (5 lessons)	By the end of the sub-strand the learner should be able to; a) sign words related to algebraic expressions in real life situations, b) form algebraic expressions from simple algebraic statements in real life situations, c) simplify algebraic expressions in real life situations, d) use digital devices for more learning on algebraic expressions and for enjoyment, e) appreciate the use of algebraic expressions in real life.	● In the purposive group, learners are guided to discuss, fingerspell, sign and classify objects in their immediate environment according to given attributes such as similarities or differences. ● In the purposive groups, the learners are guided to discuss and sign how to form algebraic expressions from the classified objects. ● In the purposive groups, learners are guided to sign, read, fingerspell and interpret algebraic statements to form algebraic expressions. ● In the purposive groups, learners are guided to discuss how to simplify algebraic	How do we use algebraic expressions in daily activities?

			expressions from the classified objects. ● In purposive groups, learners are guided to use digital devices to work out exercises and activities in algebra or drag and drops, activities to group similar objects.	

Core Competencies to be developed:

- Communication and collaboration: Signing, observation and support others; as the learner discusses, in groups, formation of algebraic expressions.
- Critical thinking and problem solving: Completes tasks by following instructions; as the learner factorises algebraic expressions.

Values:

- Unity: As the learner displays cooperation while classifying/grouping similar objects in groups.
- Respect: As the learners appreciate each other's contribution while discussing and forming algebraic expressions.

- **Pertinent and Contemporary Issues (PCIs):**
- Socio-Economic and Environmental Issues: Environment and technology; as the learner classifies objects from the environment.
- **Life Skills and Human Sexuality; Self-awareness;** As the learner works and discusses, in groups, formation of algebraic expressions.

Link to other learning areas:

The learner is able to relate the concept of algebraic expression to programming and algorithm development in Pre-Technical Studies.

Suggested learning resources:

Information from different sources.

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
2.0 ALGEBRA	2.2 **Linear Equations** (6 lessons)	By the end of the sub-strand, the learner should be able to; a) sign words related to linear equation, b) form a linear equation in one unknown in different situation, c) solve linear equations in one unknown in different situations, d) apply linear equations in one unknown to real life situations, e) use digital devices for more learning on linear equations and for enjoyment, f) reflect on the use of linear equations in real life situations.	● In a purposive group, learners are guided to sign and fingerspell how to form a linear equation in one unknown situation. ● In purposive groups, learners are guided to role-play activities involving equations with one unknown, for example weighing using beam balance and shopping activities. ● In purposive groups, learners are guided to discuss fingerspell and sign how to form and solve linear equations generated from role-play activities	1. How do we use linear equations in real life? 2. Why do we use linear equations in real life?

			● In the purposive groups, learners are guided to use digital devices to form and solve linear equations.	

Core Competencies to be developed:

- Communication and Collaboration: Signing, observing and contributing to group decision making; as learners role-play activities involving equations in one unknown.
- Self-efficacy: Keeps trying when something goes wrong; as the learner carries outweighing using beam balance and role play.
- Learning to learn: Works with care and attention to details; as the learner applies linear equations in real life.

Values:

- Integrity: As the learner shares resources fairly as per the given equation (conditions).
- Responsibility: As the learner displays self-drive while using a given letter in the equation to represent a digital device.

Pertinent and Contemporary Issues (PCIs):

- Citizenship Education: Social cohesion; As the learner works in groups to role play in shopping activities.
- Life Skills and Human Sexuality; self-esteem: As the learner participates in role-play activities like weighing and shopping that will lead to equations in one unknown.

Link to other learning areas:

- The learner is able to relate the skills of using technology to solve problems to the use of digital devices in learning in Pre-Technical Studies.

Suggested Learning Resources:

- Information from different sources

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
2.0 ALGEBRA	**2.3 Linear Inequalities** (8 lessons**)**	By the end of the sub-strand, the learner should be able to; a) sign vocabularies related to linear inequalities for learning, b) apply inequality symbols to inequality statements in learning situations, c) form simple linear inequalities in one unknown in different situations, d) illustrate simple inequalities on a number line, e) form compound inequality statements in one unknown in different situations, f) illustrate compound inequalities in one unknown on a number line, g) use digital devices for more learning on linear	• In purposive groups, learners are guided to sign vocabularies related to linear inequalities such as; - Linear - inequality - compound inequality - unknown - number line -greater than -smaller than. ● In the purposive groups, learners are guided to use inequality cards to complete simple inequality statements. ● In the purposive groups, learners are guided to use inequality cards/objects to form	1. How do we use linear inequalities in real life? 2. Why do we use linear inequalities in real life?

		inequalities and for enjoyment, h) appreciate use of linear inequalities in real life.	simple linear inequalities with one unknown. ● In the purposive groups, learners are guided to draw and represent simple inequality statements on a number line. ● In the purposive groups, the learner is guided to use inequality cards to complete compound inequality statements. ● In the purposive groups, learners draw and represent compound inequality statements on a number line. ● In purposive groups, learners are guided to use digital devices graphing tools to	

			present solutions to inequalities.	

Core Competencies to be developed:

- Communication and collaboration: Observing and signing; as the learner participates in the discussion on how to form the linear inequalities.
- Creativity and imagination: Uses creativity in work context; as the learner draws and represents inequality statements on a number line.

Values:

- Unity: As the learner cooperates in using inequality cards to complete compound inequality statements.
- Love: As the learner shares inequality cards while completing compound inequality statements.

Pertinent and Contemporary Issues (PCIs)

- Health Promotion Issues: Drugs and substance abuse; Observing the correct dosage in drugs / limits on drug consumption.
- Socio-Economic and Environmental Issues: Gender issues; Gender representation for inclusivity.

Link to other learning areas:

The learner is able to relate the concept of inequality to describe acceptable ranges of vital signs or dosage limits for medications in Integrated Science.

Suggested Learning Resources:

- Information from different sources

Level Indicators	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to sign terms related to algebra, linear inequalities, linear equations, algebraic expressions.	signs terms related to algebra, linear inequalities, linear equations, algebraic expressions with exceptional accuracy demonstrating signing proficiency.	signs terms related algebra, linear inequalities, linear equations, algebraic expressions accurately.	signs terms related to algebra, linear inequalities, linear equations, algebraic expressions noticeable errors.	Signs terms related to algebra, linear inequalities, linear equations, algebraic expressions inaccurately lacking clarity.
Ability to simplify algebraic expressions in real life situations.	Simplifies algebraic expressions in real life situations demonstrating clear understanding of algebraic rules and properties.	Simplifies algebraic expressions in real life situations.	Simplifies algebraic expressions in real life situations with occasional minor errors.	Simplifies algebraic expressions in real life situations making frequent errors.

Ability to solve linear equations in one unknown situation.	Solves linear equations in one unknown effectively in different situations.	Solves linear equations in one unknown situation.	Solves linear equations in one unknown with minor omissions some steps in different situations.	Solves linear equations in one unknown with major omissions in different situations.
Ability to form simple and compound inequality statements in one unknown in different situations.	Forms simple and compound inequality statements explicitly in one unknown in different situations.	Forms simple and compound inequality statements in one unknown in different situations.	Forms simple and compound inequality statements partly in one unknown in different situations.	Forms simple and compound inequality statements partly even with cues in one unknown in different situations.

STRAND 3.0: MEASUREMENTS

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Question(s)
3.0 MEASUREMENTS	**3.1 Pythagorean Relationship** (4 lessons)	By the end of the sub-strand, the learner should be able to; a) sign terms related to a right angled triangle, b) recognise the sides of a right-angled triangle in different situations, c) identify Pythagorean relationship in different situations, d) apply Pythagorean relationship to real life situations, e) promote use of Pythagoras Theorem in real life situations.	● In purposive groups, learners are guided to sign the terms used to recognise the sides of a right angled triangle ❖ opposite ❖ adjacent ❖ hypotenuse. ● In purposive groups, learners are guided to draw to represent practical cases of a right-angled triangle of an object leaning on a wall at different positions and recognise the sides as the hypotenuse, the height and the base, for	How do we use Pythagorean relationships in real life situations?

			example, a ladder leaning on a wall. ● In purposive groups, learners are guided to carry out a variety of activities for example, counting squares on different sides of a 3, 4, 5 right angled-triangle, establish the Pythagorean relationship and practice using other right angled-triangles. ● In purposive groups, learners work out exercises related to Pythagorean relationship. ● In purposive groups, learners are guided to create Pythagorean relationship puzzles. ● In the purposive groups, learners are	

			guided to use digital devices to explore the use of Pythagorean relationship in daily life.	

Core Competencies to be developed:

- Critical thinking and problem solving: Interpretation and inference; as learners identify Pythagorean relationships in different situations for example a ladder leaning on a wall at different heights.
- Creativity and imagination: Open-mindedness and creativity; as learners create Pythagorean relationship puzzles.
- Learning to learn: Sharing learnt knowledge**;** as learners apply Pythagorean relationships in real life situations.

Values

- Unity: As the learner carries out various activities together, such as creating Pythagorean relationship puzzles.
- Respect: As the learner appreciates each other's opinions when identifying and applying Pythagorean relationships in real life situations.

Pertinent and Contemporary Issues (PCIs)

- Citizenship Education: Peer education; as the learner works in groups to establish the Pythagorean relationship.
- Socio-Economic and Environmental Issues: Safety; as the learner takes care when using the ladder to carry out various activities on Pythagorean relationships.

Link to other learning areas:

- The learner is able to relate the concept of Pythagorean theorem in maths to drawing in Pre-Technical Studies.

Suggested learning resources

- Ladder, stairs, square cut-outs, 1cm squares, 1m squares

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Question(s)
3.0 MEASUREMENTS	**3.2 Length** (6 lessons)	By the end of the sub-strand, the learner should be able to; a) sign words related to length and digital devices units, b) convert units of length from one form to another involving cm, dm, m, Dm, Hm in learning situations, c) perform operations involving units of length in different situations, d) work out the perimeter of plane figures in different situations, e) work out the circumference of	● In purposive groups, learners are guided to sign ● and fingerspell words related to length and their units and generate conversion tables involving cm, dm, m, Dm, Hm. ● In purposive groups, learners are guided to practise different operations involving length. ● In purposive groups, learners are guided to watch videos on correct procedures of measuring length and working out perimeter. ● In the purposive groups, the learners are	1. Why do we use different units of measuring length? 2. How do we measure the perimeter of different objects?

		circles in different situations, f) use digital devices for more learning on length and for enjoyment, g) promote use of length in real life situations.	guided to use appropriate measuring tools to measure the length of various objects. ● In the purposive groups, learners are guided to measure and work out the perimeter of different plane figures including combined shapes. ● In the purposive groups, learners are guided to measure the circumference and diameter of different circular objects and establish the relationship between circumference and diameter, which is Pi. ● In the purposive groups, learners are guided to use Pi to	

			practice working out the circumference of circles and digital devices for calculations.	

Core Competencies to be developed:

- Communication and collaboration: Signing, observing and giving opinion in a group; as the learner works in pairs or groups when measuring lengths of various objects and also as they discuss the relationship between circumference and diameter.
- Self-efficacy: Personal skills; as the learner practices different operations using length.
  Critical thinking and problem solving interpretation and inference; as the learner relates circumference to diameter.

Values

- Integrity: as the learner carries out the activities and gives the correct measurement however tedious the activity may be.
  Unity: as the learner works in groups measuring lengths of various objects.

Pertinent and Contemporary Issues (PCIs)

- Citizenship Education: Social cohesion; as the learner works in pairs and groups in measuring lengths of various objects.
- Socio-Economic and Environmental Issues: Safety; as the learner handles different instruments of measuring length.

Link to other learning areas:

The learner is able to relate the concept of measuring in mathematics to a similar concept in Pre-Technical Studies.

Suggested Learning Resources:

Ladder, stairs, square, cut-outs, 1cm squares, 1m squares

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Question[s]
3.0 MEASUREMENTS	**3.3 Area**	By the end of the sub-strand, the learner should be able to; a) sign vocabularies related to area in different situations, b) identify square metre (m^2), acres and hectares as units of measuring area, c) work out the area of rectangle, parallelogram, rhombus and trapezium in different situations, d) work out the area of circles in different situations, e) calculate the area of borders and combined	● In purposive groups, learners are guided to sign the shapes; rectangle, parallelogram, rhombus, circle, semi-circle and trapezium. ● In purposive groups, the learners are guided to identify rectangle, parallelogram, rhombus, circle, semi-circle and trapezium from a list of figures. ● In purposive groups, learners are guided to fingerspell the shapes; rectangle, parallelogram, rhombus, circle, semi-circle and trapezium. ● In purposive groups, learners are guided to fingerspell and sign acres and hectares as units of measuring area. ● In purposive groups, learners are guided to generate	How do we work out the areas of plane figures?

		shapes in real life situations, f) use digital devices for more learning on area and for enjoyment, g) recognise use of area in real life situations.	conversion tables involving acres and hectares as units of measuring area. ● In purposive groups, learners are guided to use cut-outs to find the area of the plane figures. ● In purposive groups, learners are guided to watch signed/captioned videos on how to cut out a circle to small sectors to demonstrate how to derive the formula for the area of a circle. ● In purposive groups, learners are guided to cut out a circle into small sectors and rearrange to form a rectangle to derive the formula for the area of a circle. ● In the purposive groups, learners are guided to practice cutting out the plane figures of combined shapes into different shapes to work out the area.	

Core Competencies to be developed:

- Critical thinking and problem solving: Completes tasks by following instructions; as the learner cuts out the circle into small sectors, joining them to create a rectangle and generate the formula of getting the area of a circle.
- Creativity and imaginations: Generates ideas to improve something; as the learner combines different shapes to make patterns.
- Self-efficacy: Personal skills**;** as learners demonstrate how to derive the formula for the area of a circle.

Values

- Responsibility: As the learner cuts out the small sectors of the circle and joins them up to form a rectangle and properly disposes of the wastes.
- Integrity: As the learner works out exact areas of different shapes.
- Unity: As the learner works in groups and shares tasks in measuring the area.

PCIs

- Safety: As the learner handles different instruments/tools to make cut-outs of different materials.
- Environmental education; As the learner uses locally available materials in measuring the area.

Link to other learning areas:

The learner is able to relate the concept of area to building and construction in Pre-Technical Studies.

Suggested learning resources

Square cut-outs, 1cm squares, 1m squares.

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
3.0 MEASUREMENTS	**3.4 Volume and Capacity (**8 lessons)	By the end of the sub-strand, the learner should be able to; a) sign words related to volume and capacity, b) identify cubic metre (m^3) as a unit of volume in measurements, c) convert cubic metre (m^3) into cubic centimetre (cm^3) and vice versa in different situations, d) work out the volume of cubes, cuboids and cylinder in different situations, e) identify the relationship between cm^3, m^3 and litres in real life situations, f) relate volume to capacity in real life situations,	● In groups, learners are guided to fingerspell and sign the units of volume from the smallest to the largest. ● In purposive groups, learners are guided to make a cube of sides 1 metre using locally available materials. ● In purposive groups, learners are guided to discuss, sign and work out the conversions of cubic centimetre (cm^3) and cubic metre (m^3). ● In purposive groups, learners are guided to collect signs and discuss labelled containers of different	1.How do we use volume and capacity in daily activities? 2.Why do we measure volume?

		g) work out the capacity of containers in real life situations, h) use digital devices for more learning on volume and capacity and for enjoyment, i) promote use of volume and capacity in real life situations.	volume and capacity from the environment. ● In purposive groups, learners are guided to generate conversion tables of volume and capacity. ● In purposive groups, learners are guided to create models of cubes, cuboids, and cylinders which they will use to work out volume In purposive groups, learners are guided to watch videos on volume and capacity.	
Core Competencies to be developed: ● Critical thinking and problem solving: Finds the information required to complete a task; as the learner creates a conversion table of units of volume. ● Creativity and Imagination: Brings imaginations to life in different ways; as the learners create models of cubes and cuboids.				
Values ● Responsibility: As the learner works in groups and shares different tasks in making models. ● Peace: As the learner discusses making the models for different volumes and capacities.				

Pertinent and Contemporary Issues (PCIs) ● Socio-Economic and Environmental Issues: Environmental education; as the learner uses big and small containers of different volumes from locally available resources. Safety: As the learner collects containers of different capacities from the environment and when making models of cubes and cuboids. Education for Sustainable Development: Water conservation using containers of different capacities.
Link to other learning areas: The learner is able to relate the skill of calculating volume to the concept of building and construction in Pre-Technical Studies
Suggested learning resources ● Cubes, cuboids, cylinders, pyramids, Spheres, cut-outs of rectangles, circles, and triangles of different sizes

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
3.0 **MEASUREMENTS**	**3.5 Time, Distance and Speed** **(**8 lessons)	By the end of the sub-strand, the learner should be able to**;** a) sign vocabularies related time, speed and distance for fluency in communication, b) identify units of measuring time in real life situations, c) convert units of time from one form to another in learning situations, d) convert units of measuring distance in learning situations, e) identify speed as distance covered per unit time in different situations,	● In groups, learners are guided to identify units of time and distance such as seconds, minutes, hour, day, metre, kilometre. ● In groups, learners are guided to fingerspell and sign the vocabularies of second, minute, hour, metre, kilometre and speed. ● In purposive groups, learners are guided to use analog or digital clocks to tell time in hours, minutes and seconds and discuss the units of time. ● In purposive groups, learners are guided to	1. How do we relate distance, time and speed? 2. Why is speed important in daily activities?

		f) work out speed in kilometres per hour (km/h) and metres per second (m/s) in real life situations, g) convert units of speed from Km/h to m/s and vice versa in real life situations, h) use digital devices to learn more on time, distance and speed for planning, i) reflect on use of time, distance and speed in real life situations.	create conversion tables on units of time. ● In the purposive group learners are guided to discuss and estimate distances between two or more points and convert from km to m and vice versa. ● In purposive group learners are guided to engage in activities that involve distance and time such as track events to relate time, distance and speed. ● In the groups, learners are guided to discuss how long they take to travel from home to school. ● In purposive groups, learners are guided to discuss the aspects of distance, and time taken	

			to get to school from home. ● In the purposive group learners are guided to practice calculating speeds in km/h or m/s. ● In the purposive group, learners are guided to play digital games involving racing or watch marathons.	

Core Competencies to be developed:

- Critical thinking and problem solving: as the learner creates conversion tables, relate and determine distance, time and speed.
- Self-efficacy: Personality skills; as the learner observes punctuality in attending to different activities.

Values

- Responsibility: As the learner observes road safety rules, including speed limits.
- Integrity: As the learner observes punctuality and works out correct distances.

Pertinent and Contemporary Issues (PCIs)

- Socio-Economic and Environmental Issues: Disaster risk reduction (DRR) and safety; as learners observe safety in roads and machines in relation to speed.

Link to other learning areas:

The learner is able to relate the concept of time learned in maths to observing time as they carry out different experiments in Integrated Science.

● The learner is able to relate the concept of speed in Mathematics to similar concepts as the learner participates in athletics in Creative Arts and Sports.
Suggested learning resources ● Analogue and digital clocks, digital watches, stop watches

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
3.0 MEASUREMENTS	**3.6 Temperature** (6 lessons)	By the end of the sub-strand, the learner should be able to; a) sign vocabularies related to temperature in different situations, b) describe the temperature conditions of the immediate environment as either warm, hot or cold, c) compare temperature using hotter, warmer, colder and same as in different situations, d) identify units of measuring	● In purposive groups, learners are guided to estimate the temperatures of the various weather conditions. ● In purposive groups, learners are guided to sign the temperatures as either hot, warm or cold. ● In the purposive groups, learners are guided to move to the field, observe the temperature in the environment and discuss the temperature conditions as either warm, hot or cold. ● In the purposive groups, learners are	1. How does temperature affect our everyday lives? 2. How do we measure temperature?

		temperature as degree Celsius and Kelvin in different situations, e) convert units of measuring temperature from degree Celsius to Kelvin and vice-versa, f) work out temperature in degree Celsius and Kelvin in real life situations, g) use digital devices or other resources to learn about temperature conditions of different places, h) recognise temperature changes in the environment.	guided to discuss and test the temperature of different substances using arbitrary methods like touching, for example cold, warm or hot water (exercise caution when dealing with hot substances). ● In the purposive groups, learners are guided to identify, sign and use tools of measuring temperature, for example, thermometers that are in degrees Celsius. ● In purposive groups, learners are guided to work out conversions of temperature from degrees Celsius to Kelvin and vice versa. ● In the purposive groups, learners are	

			guided to practice using digital devices or other resources to determine the temperature of different places in degree Celsius and Kelvin.	

Core Competencies to be developed

- Communication and collaboration: Supports others in a group activity; as the learner works in groups and uses tools of measuring temperature.
- Digital literacy: Using digital devices; as the learner determines the temperature of different places using digital devices.

Values

- Responsibility: As the learner carefully handles tools of measuring temperature.
- Integrity: As the learner gives correct measurements of temperature.

Pertinent and Contemporary Issues (PCIs):

- Life Skills and Human Sexuality: Self-awareness; as the learner takes their body temperatures.
- Socio-Economic and Environmental Issues: Safety; as the learner works in groups and exercises caution when dealing with hot substances.

Link to other learning areas:

The learner is able to relate the concept of temperature in Mathematics to body temperatures in Health Education And climatic temperature changes in Social Studies.

Suggested learning resources:

Thermometer, weather charts

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
3.0 MEASUREMENTS	**3.7 Money** (12 lessons)	By the end of the sub-strand, the learner should be able to; a) sign words related to money, b) work out profit and loss in real life situations, c) calculate the percentage profit and loss in different situations, d) calculate discount and percentage discount of different goods and services, e) calculate commission and percentage commission in real life situations, f) interpret bills at home,	● In purposive groups, learners are guided to fingerspell and sign terms like profit, loss, discount and commission involved in shopping activities. ● In purposive groups, learners are guided to work out profit and loss involving different activities and settings. ● In purposive groups, learners are guided to work out percentage profit/loss from the role-play activities. ● In purposive groups, learners are guided to work out and sign discounts and percentage discounts from model shopping activities.	1. Why do we use money in daily activities? 2. How do we realise profit or loss when buying or selling?

		g) prepare bills in real life situations, h) work out postal charges in real life situations, i) identify mobile money services for different transactions, j) work out mobile money transactions in real life situations, k) use digital devices to learn more about money for expenditure and investment, l) recognise use of money in day-to-day activities.	● In purposive groups, learners are guided to work out and sign commission and percentage commission from the role-play activities. ● In purposive groups, learners are guided to identify different types of bills, read fingerspell and sign the components of bills. ● In purposive groups, learners are guided to prepare bills of different digital devices and expenses. ● In purposive groups, learners are guided to visit the post office to gather information on postal services and charges. ● In purposive groups, learners are guided to work	

			out sign postal charges in different situations. ● In the purposive groups, learners are guided to discuss, fingerspell, sign and identify mobile money services. ● In the purposive groups, learners are guided to work out fingerspell and sign mobile money transactions, for example, in sending or receiving money, credit and savings. ● In the purposive groups, learners are guided to generate bills, pay for goods and services, and other online transactions using digital devices.	

Core Competencies to be developed:

- Critical thinking and problem solving: Completes tasks by following instructions; as the learner works out discounts, commissions and mobile money as well as postal charges and bills.
- Communication and collaboration: Signing and observing as the learner role-play negotiating for discounts and commissions.

- Citizenship: Manages resources; as the learner works out discounts, commissions and mobile money in Kenyan currency.
- Self-efficacy: Negotiation skills: as the learner role-play negotiating for discounts and commissions.

Values

- Patriotism: As the learner works out and pays bills in Kenyan currency.
- Integrity: As the learner pays bills and appreciates use of money.
- Unity: As the learner interacts with one another when working on discounts, commission, mobile money transactions etc..

Pertinent and Contemporary Issues (PCIs)

- Socio-Economic and Environmental Issues: As the learner works out any discounts, commissions and mobile money as well as postal charges and bills.
- Life Skills and Human Sexuality: Self-awareness; As learners use money in paying bills and postal charges.

Link to other learning areas:

The learner is able to relate the concept of money to working out bills, discounts, commissions and postal charges in Pre-Technical Studies.

Suggested learning resources:

Course book, postal charges charts, digital devices

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to sign terms related to Pythagorean relationship, money, temperature, time, distance, speed, volume, capacity, length, and money.	signs terms related to Pythagorean relationship, money, temperature, time, distance, speed, volume, capacity, length, and money with exceptional accuracy demonstrating signing proficiency.	signs terms related to Pythagorean relationship, money, temperature, time, distance, speed, volume, capacity, length, and money accurately.	signs terms related to Pythagorean relationship, money, temperature, time, distance, speed, volume, capacity, length, and money with noticeable errors.	Signs terms related to Pythagorean relationship, money, temperature, time, distance, speed, volume, capacity, length, and money inaccurately lack clarity.
Ability to apply Pythagorean relationships to real life situations.	Applies Pythagorean relationships to real life situations and demonstrates mastery of the theorem to solve problems.	Applies Pythagorean relationships to real life situations.	Applies Pythagorean relationships to real life situations with minimal support.	Applies Pythagorean relationships to real life situations but struggles to relate the sides.

Ability to work out the perimeter of plane figures and circumference of circles in different situations.	Works out the perimeter of plane figures and circumference of circles in different situations utilising different methods.	Works out the perimeter of plane figures and circumference of circles in different situations.	Works out the perimeter of plane figures and circumference of circles in different situations with inaccuracies in solutions.	Works out the perimeter of plane figures and circumference of circles in different situations with incomplete solution.
Ability to work out the area of rectangle, parallelogram, rhombus, trapezium, circles and combines shapes in different situations.	Works out the area of rectangle, parallelogram, rhombus, trapezium, circles and combined shapes in different situations utilising different approaches.	Work out the area of rectangle, parallelogram, rhombus, trapezium, circles and combined shapes in different situations.	Work out the area of rectangle, parallelogram, rhombus, trapezium, circles and combined shapes in different situations with inaccuracies in solutions.	Work out the area of rectangle, parallelogram, rhombus, trapezium, circles and combined shapes in different situations with incorrect solutions.

Ability to work out the volume and capacity of cubes, cuboids and cylinders in different situations.	Works out the volume and capacity of cubes, cuboids and cylinders in different situations showing interrelationships between volume and capacity.	Works out the volume and capacity of cubes, cuboids and cylinders in different situations.	Works out the volume and capacity of cubes, cuboids and cylinders in different situations with minimal errors.	Works out the volume and capacity of cubes, cuboids and cylinders in different situations with major errors.
Ability to convert units of time, distance and speed from one form to another in learning situations.	Converts units of time, distance and speed from one form to another effectively in learning situations.	Converts units of time, distance and speed from one form to another in learning situations.	Converts units of time, distance and speed from one form to another in learning situations with minimal assistance.	Converts units of time, distance and speed from one form to another in learning situations with frequent errors.
Ability to work out temperature in degrees Celsius and Kelvin in real life situations.	Works out temperature in degrees Celsius and Kelvin in real life situations effectively connecting	Works out temperature in degrees Celsius and Kelvin in real life situations.	Works out temperature in degrees Celsius and Kelvin in real life situations but lacks depth in connecting	Works out temperature in degrees Celsius and Kelvin in real life situations but lacks clarity in connecting

	temperature conversions.		temperature conversions.	temperature conversions.
Ability to calculate discount, percentage discount, commission and percentage commission in real life situations.	Calculates discount, percentage discount, commission and percentage commission within a variety of real life situations.	Calculates discount, percentage discount, commission and percentage commission in real life situations.	Calculates discount, percentage discount, commission and percentage commission partially in real life situations.	Calculates discount, percentage discount, commission and percentage commission with errors in real life situations.

STRAND 4.0: GEOMETRY

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
4.0 GEOMETRY	**4.1 ANGLES** (10 lessons)	By the end of the sub-strand, the learner should be able to; a) sign vocabularies related to angles for learning, b) relate different types of angles on a straight line in real life situations, c) calculate angles at a point in learning situations, d) relate angles on a transversal in different situations, e) calculate angles in a parallelogram in different situation, f) identify angle properties of polygons up to hexagon in different situations, g) relate interior angles, exterior angles and the	● In purposive groups, learners are guided to fingerspell and sign angles, interior angles, exterior angles, transverse angle, polygon, hexagon, pentagon, nonagon, octagon, heptagon. ● In purposive groups, learners are guided to discuss positions of objects in the immediate environment in relation to angles. ● In purposive groups, learners are guided to observe pictures and photographs of figures with different types of angles. ● In purposive groups, learners are guided to identify vocabularies related to angles from the pictures observed.	1. How are angles calculated? 2. Why do we use angles in real life situations?

		number of sides of a polygon up to hexagon in different situations, h) calculate angles and sides of polygons up to hexagon in learning situations, use digital devices to learn more about angles and for leisure.	● In the purposive groups, learners are guided to draw straight lines with different angles, measure and relate them. ● In purposive groups, learners are guided to draw different angles at a point, measure, relate and work out angles at point. ● In purposive groups, learners are guided to draw transversals, measure and relate angles. ● In purposive groups, learners are guided to draw parallelograms, measure and relate various angles. ● In purposive groups, learners are guided to use cut-outs or drawings of different polygons up to hexagon, measure the interior angles and relate to the number of right angles.	

			● In purposive groups, learners are guided to use cut-outs or drawings of different polygons up to hexagon, measure interior and exterior angles and relate to the number of sides. ● In purposive groups, learners are guided to work out angles and sides in different polygons up to hexagon. In the purposive groups, learners are guided to draw angles at a point and in parallelograms using digital devices.	
Core Competencies to be developed: ● Communication and collaboration: Supports others in a group activity; as the learner discusses, in groups, positions of objects in the immediate environment in relation to angles. ● Critical thinking and problem solving: Interpretation and inference; as the learner draws, measures and related angles. ● Digital literacy: Operating digital devices; as the learner learns using digital devices to learn more on algebraic inequalities and play digital games.				
Values ● Responsibility: As the learner explores positions of objects in the immediate environment in relation to angles. ● Unity: As the learner works in groups to use cut-outs or drawings of different polygons up to hexagon.				

Pertinent and Contemporary Issues (PCIs): ● Socio-Economic and Environmental Issues: Safety; as the learner works in groups to use cut-outs or drawings of different polygons up to hexagon.
Link to other learning areas: The learner is able to relate the skills of using cut-outs to draw to drawing using tracing in Creative Arts.
Suggested learning resources Unit angles, protractors, rulers, straight edges

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
4.0 GEOMETRY	**4.2 GEOMETRICAL CONSTRUCTIONS** (12 lessons)	By the end of the sub-strand, the learner should be able to; a) sign terms related to measurement of angles, b) measure different angles in learning situations, c) bisect angles using a ruler and a pair of compasses only in learning situations, d) construct 90^0, 45^0 60^0, 30^0 and other angles that are multiples of 7.5^0 using a ruler and a pair of compasses only in learning situations,	● In a group, learners are guided to fingerspell, sign and measure different angles. ● In purposive groups, learners are guided to draw and bisect different angles. ● In the purposive groups, learners are guided to construct 90^0, 45^0 60^0, 30^0 including 120^0, 105^0 and practice with angles that are multiples of 7.5^0 using a pair of compasses and rulers. ● In purposive groups, learners be guided to construct triangles using a pair of compasses and rulers.	1. How do we use geometric constructions in real life situations? 2. Why do we use geometric constructions?

		e) construct different triangles using a ruler and a pair of compasses only in different situations, f) construct circles using a ruler and a pair of compasses only in different situations, g) use digital devices to learn about geometric constructions for skills development, h) recognise the use of geometric constructions of different shapes in objects.	● In purposive groups, learners are guided to construct circles using a pair of compasses and rulers. ● In purposive groups, learners are guided to use digital devices on graphics to draw angles and circles, watch videos of bisecting angles and construct angles and circles.	
Core Competencies to be developed: ● Creativity and imagination: Generates ideas when given a clear brief; as the learner constructs angles, triangles and circles. ● Digital literacy: operating digital devices; As the learner uses digital devices to learn more about construction of angles, triangles and circles.				

● Critical thinking: Completes tasks by following instructions; When using ruler and a pair of compasses only to construct angles of multiples of 7.5^0.
Values ● Responsibility: As the learner uses geometrical instruments for construction of angles and circles. ● Unity: As the learner works in groups to draw and measure different angles.
Pertinent and Contemporary Issues (PCIs): ● Socio-Economic and Environmental Issues: Safety; as the learner uses geometrical instruments such as a pair of compasses and dividers.
Link to other subjects The learner is able to relate the skill of constructing angles, triangles and circles to making geometrical patterns in Creative Arts and Sports.
Suggested learning resources ● Pair of compasses, rulers

Level / Indicators	Exceeds Expectation	Meets Expectation	Approaches Expectation	Below expectation
Ability to sign terms related to angles, geometrical construction.	signs terms related to angles, geometrical construction with accuracy demonstrating signing proficiency.	signs terms related angles, geometrical construction accurately.	signs terms related to angles, geometrical construction with noticeable errors.	Signs terms related to angles, geometrical construction inaccurately lacking clarity.
Ability to relate interior angles, exterior angles and the number of sides of a polygon up to hexagon in different situations.	Relates interior angles, exterior angles and the number of sides of a polygon up to hexagon effectively connecting polygon properties to different situations.	Relates interior angles, exterior angles and the number of sides of a polygon up to hexagon in different situations.	Relates interior angles, exterior angles and the number of sides of a polygon up to hexagon with minimal assistance in different situations.	Relates interior angles, exterior angles and the number of sides of a polygon up to hexagon with difficulties in different situations.
Ability to construct 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a pair of	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of $7.5^{0,}$ triangles and circles using a ruler and a	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of $7.5^{0,}$ triangles and circles using a ruler and a	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a

compasses only in learning situations.	pair of compasses only in learning situations effectively utilising appropriate tools and techniques.	pair of compasses only in learning situations.	pair of compasses only in learning situations but occasionally struggle to use appropriate tools and techniques.	pair of compasses only in learning situations but frequently struggle to use appropriate tools and techniques.
Ability to construct 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a pair of compasses only in learning situations.	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a pair of compasses only in learning situations effectively utilising appropriate tools and techniques.	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of $7.5^{0,}$ triangles and circles using a ruler and a pair of compasses only in learning situations.	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of $7.5^{0,}$ triangles and circles using a ruler and a pair of compasses only in learning situations but occasionally struggle to use appropriate tools and techniques.	Constructs 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, triangles and circles using a ruler and a pair of compasses only in learning situations but frequently struggle to use appropriate tools and techniques.
Ability to Interpret tactile 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, tactile triangles and circles using a tactile ruler	Interprets tactile 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, tactile	Interprets tactile 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, tactile	Interprets tactile 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, tactile	Interprets tactile 90^0, 45^0, 60^0, 30^0 and other angles that are multiples of 7.5^0, tactile

and a pair of compasses only in learning situations.	triangles and circles using a tactile ruler and a pair of compasses only in learning situations systematically in different situations.	triangles and circles using a tactile ruler and a pair of compasses only in learning situations.	triangles and circles using a tactile ruler and a pair of compasses only in learning situations with minimal errors in different situations.	triangles and circles using a tactile ruler and a pair of compasses only in learning situations with frequent errors in different situations.

STRAND 5.0: DATA HANDLING AND PROBABILITY

Strand	Sub-Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
5.0 DATA HANDLING AND PROBABILITY	**5.1 DATA HANDLING (**10 lessons)	By the end of the sub-strand, the learner should be able to; a) sign for vocabularies related to data handling for real life situations, b) state the meaning of data in learning situation, c) collect data from different situations, d) draw frequency distribution table of data from different sources, e) determine a suitable scale for graphs of data from different situations, f) draw pictographs of data from real life situations, g) draw bar graphs of data from different sources,	● In purposive groups, learners are guided to watch a signed video clip or video with captions on data collection and analysis. ● In purposive groups, learners are guided fingerspell and sign the vocabularies such as data, tally, frequency, graph, pie chart, scale, data collection and recording. ● In purposive groups, learners are guided to discuss, collect and organise data from the immediate environment. ● In purposive groups, learners are guided to tally and represent the data in a frequency table.	1. Why do we collect data? 2. How do we represent data? 3. How do we interpret data?

		h) interpret bar graphs of data from real life situations, i) draw pie charts of data from real life situations, j) interpret pie charts of data from real life situations, k) draw a line graph of data from different situations, l) interpret travel graphs from real life situations, m) use digital devices or other resources to represent data, n) promote use of data in real life situations.	● In purposive groups, learners are guided to discuss and come up with a suitable scale to represent data in graphs. ● In purposive groups, learners are guided to discuss and use a suitable scale to draw pictographs from data. ● In purposive groups, learners are guided to discuss and use a suitable scale to draw bar graphs from data. ● In purposive groups, learners are guided to discuss and interpret bar graphs of data. ● In purposive groups, learners are guided to discuss and represent data on pie charts. ● In purposive groups, learners are guided to	

			discuss and interpret pie charts of data. ● In purposive groups, learners are guided to use a suitable scale to represent data on line graphs. ● In purposive groups, learners are guided to discuss and interpret travel graphs from real life situations. ● In the purposive group learners are guided to draw pie charts, pictographs and read data from bar graphs using digital devices or watch videos relating to data.	
Core Competencies to be developed: ● Creativity and imagination: Combines different concepts to generate ideas; as the learner presents data in the form of pie charts and pictograms. ● Critical thinking and problem solving: Interpretation and inference; as the learner interprets data from bar graphs, pictograms and pie charts.				
Values: ● Responsibility: As the learner collects and presents data in pictograms that may involve different resources. ● Peace: As the learner works in groups to collect and present data.				

Pertinent and Contemporary Issues (PCIs): Decision making as the learner presents data that can be used to make informed decisions.
Link to other learning areas: The learner is able to relate the skill of data handling to presenting data in pie charts and pictographs that may involve populations in Social Studies.
Suggested Learning Resources: ● Data from different sources, digital devices, charts, graph books or graph papers.

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to interpret pictographs, bar graphs and bar charts of data from real life situations.	Interprets pictographs, bar graphs and bar charts of data from real life situations systematically in different situations.	Interprets pictographs, bar graphs and bar charts of data from real life situations.	Interprets pictographs, bar graphs and bar charts of data from real life situations with minimal errors in different situations.	Interprets pictographs, bar graphs and bar charts of data from real life situations with frequent errors in different situations.

GUIDELINES ON COMMUNITY SERVICE LEARNING CLASS ACTIVITY

Community Service Learning (CSL) is an experiential learning strategy that integrates classroom learning and community service to enable learners reflect, experience and learn from the community. CSL is expected to benefit the learner, the school and the local community. Knowledge and skills on how to carry out a CSL project have been covered under Life Skills Education (LSE).

All learners in Grade 7 will be expected to participate in only one CSL class activity. The activity will give learners an opportunity to practice the CSL project skills covered under LSE. This activity will be undertaken in groups for purposes of learning. Learners will be expected to apply knowledge and skills on steps of the CSL project to carry out an activity of their choice as per the guidelines provided in the template. The learning approach will take the form of a whole school approach, where the entire school community will be engaged in the learning process. Teachers will guide learners to execute a simple school based integrated CSL class activity. This activity can be done in 4 to 6 weeks outside the classroom time.

CSL Skills to be covered:

i) **Research:** Learners will develop research skills as they investigate PCIs to address the activity, ways and tools to use in collecting the data, and the manner in which they will analyse information and present their findings.

ii) **Communication:** Learners will develop effective communication skills as they engage with peers and school community members. These will include listening actively, asking questions, presentation skills using varied modes etc.

iii) **Citizenship:** Learners will be able to explore opportunities for engagement as members of the school community and provide a service for the common good.

iv) **Leadership**: Learners develop leadership skills as they take up various roles within the CSL activity.

v) **Financial Literacy Skills:** Learners consider how they can undertake the project as well as sourcing and utilising resources effectively and efficiently.

vi) **Entrepreneurship**: Learners consider ways of generating income through innovation for the CSL class activity.

Suggested PCIs	Specific Learning Outcomes	Suggested Learning Experiences	Suggested key Inquiry Questions
The learners will be guided to consider the various PCIs provided in the various subjects in Grade 7 and choose one suitable to their context and reality	By the end of the CSL class activity, the learner should be able to; a) identify a problem in the school community through research, b) plan to solve the identified problem in the community, c) design solutions to the identified problem, d) implement solutions to the identified problem, e) share the findings with relevant actors, f) reflect on own learning and relevance of the project, g) appreciate the need to belong to a community.	● In purposive groups, brainstorm on /pertinent and contemporary issues in their school that need attention. ● In purposive groups, choose a PCI that needs immediate attention and explain why. ● In purposive groups, learner's guide to discuss possible solutions to the identified issue. ● In purpose groups, learners are guided to propose the most appropriate solution to the problem. ● In purposive groups, learners are guided to discuss ways and tools they can use to collect information on a problem (questionnaires, interviews, observation).	1. How does one determine community needs? 2. Why are digital devices necessary to be part of a community?

		• In purposive groups, learners are guided to develop tools for collecting the information/data. • In purposive groups, learners are guided to identify resources they need for the activity. • In purposive groups, learners are guided to collect the information/data using various means. • In purposive groups, learners are guided to develop various reporting documents on their findings. • In purposive groups, learners are guided to use the developed tools to report on their findings. • In purposive groups, learners are guided to implement the project. • Collect feedback from peers and the school community regarding the CSL activity. • In groups, learners are guided to share the report on activity	

		through various media to peers and school community. ● In purposive groups, learners are guided to discuss the strengths and weaknesses of the implemented project and lessons learnt. ● In purposive groups, learner is guided to reflect on how the project enhanced own learning while at the same time facilitating service on an issue in the school community.	
Key Component of CSL developed: a) Identification of a problem in the community through research. b) Planning to solve the identified problem. c) Designing solutions to the identified problem.			
Core competencies to be developed: ● Communication and collaboration: A learner develops speaking skills and teamwork as they make the preparations in groups and conduct discussions on best ways of carrying out the project. ● Self-efficacy: A learner develops the skills of self-awareness and leadership as they undertake the CSL project ● Creativity and imagination: A learner will come up with creative ways of solving the identified community problem ● Critical thinking and problem solving: A learner will demonstrate autonomy in identifying a community need, exploring plausible solutions and making necessary preparations to address the problem.			

● Digital literacy: A learner can use technology as they research on a community problem that they can address. ● Learning to learn: A learner gains new knowledge and skills as they identify a community problem to be addressed and make preparations to carry out the project. Citizenship: A learner enhances love for a country as they choose a PCI that needs immediate attention in the community.
Values: ● Integrity: A learner enhances discipline as they carry out research using digital devices and print media as they identify a community problem to address. • Respect: A learner enhances patience as they brainstorm on pertinent and contemporary issues in their community that need attention.
Pertinent and Contemporary Issues (PCIs): ● Social cohesion: A learner discusses possible solutions to the identified issue. • Critical thinking: A learner discusses possible solutions to the identified issue.
Suggested Learning Resources: Digital devices with assistive technology

Suggested Assessment Rubric				
Level Indicator	**Exceeds Expectation**	**Meets Expectation**	**Approaches Expectation**	**Below Expectation**
Ability to design solutions to the identified problem.	Designs solutions to the identified problem elaborately.	Designs solutions to the identified problem.	Designs solutions to the identified problem with minimal prompting.	Designs solutions to the identified problem with cues.

APPENDIX 1: LIST OF ASSESSMENT METHODS, LEARNING RESOURCES AND NON-FORMAL ACTIVITIES

Strand	Sub-Strand	Suggested Assessment Methods	Suggested Learning Resources	Suggested Non-Formal Activities
Numbers	Whole Numbers	Class activities Class written tests Out of school/home assignments or activities	Place value apparatus, number charts, number cards, multiplication table	Prepare or improvise number charts and different place value apparatus.
	Factors	Class activities Class written tests Out of school/home assignments	Multiplication tables	
	Fractions	Class activities Class written tests Out of school/home assignments	Multiplication tables	
	Decimals	Class activities Class written tests Out of school/home assignments	Equivalent fraction board, circular and rectangular cut-outs, counters	
	Squares and square roots	Class written tests Class activities	Place value charts, number cards	
Algebra	Algebraic Expressions	Class activities Class written tests	Information from different sources	Carry out activities involving classifying objects in their immediate

		Out of school/home assignments or activities		environment according to given attributes such as similarities or differences. This can be done at home. Take photos and share with class or school. Use the concept of classification of objects or things at school and home to be orderly.
	Linear Equations	Class activities Class written tests Out of school/home assignments or activities	Information from different sources	
	Inequalities	Class written tests Class activities	Information from different sources	
Measurement	Pythagorean Relationship	Class activities Class written tests Out of school/home assignments	Ladder, stairs, square cut-outs, 1cm squares, 1m squares	
	Length	Class written tests Class activities	Metre Rule, 1 metre ticks, tape measure	
	Area	Class written tests Out of school/home assignments or activities	Square cut-outs, 1cm squares, 1m squares	

	Volume and Capacity	Class written tests Class activities Out of school/home assignments or activities	Cubes, cuboids, cylinders, pyramids, Spheres, cut-outs of rectangles, circles, and triangles of different sizes	Measure volume of liquids using containers of different sizes from smallest to biggest. Relate this to packaging of goods such as water, milk and other things in the marketplace and how this affects consumer awareness and protection.
	Mass	Class written tests Class activities	Teaspoons, soil or sand, manual/electronic weighing machine, beam balance,	Make an improvised weighing machine/beam balance that can be used in markets to weigh 1 or 1/2 kgs
	Time, distance and speed	Class written tests Out of school/home assignments or activities	Analogue and digital clocks, digital watches, stop watches	
	Temperature	Class activities Out of school/home assignments or activities	Thermometer, weather charts	Record weather changes for a period of time, for example a month/term, and discuss how this affects the way one dresses.
	Money	Class written tests Class activities	Price list, classroom shop, electronic money tariffs charts	

		Out of school/home assignments or activities		
Geometry	Angles	Class activities Class written tests Out of school/home assignments or activities	Unit angles, protractors, rulers, straight edges	
	Geometric constructions	Class activities Class written tests	Pair of compasses, rulers	
Data handling and probability	Data handling	Class activities Class written tests	Data from different sources	Undertake a project that may involve data collection and presentation

APPENDIX 2: USE OF DIGITAL DEVICES

The following digital devices may be used in the teaching and learning of mathematics at this level:

1. Learner digital devices (LDD),
2. Teacher digital devices (TDD),
3. Mobile phones,
4. Digital clocks (use of other clocks is also encouraged)
5. Television sets,
6. Videos,
7. Cameras,
8. Projectors, Internet and others.
9. Radios,
10. DVD players and CDs,
11. Scanners,