REPUBLIC OF KENYA
MINISTRY OF EDUCATION

UPPER PRIMARY CURRICULUM DESIGN

MATHEMATICS

FOR LEARNERS WITH HEARING IMPAIRMENT

GRADE 6

KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

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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 six curriculum designs for learners with Hearing Impairment build on competencies attained by learners at Grade 5. Emphasis at this grade is the development of basic literacy, numeracy and skills for interaction with the environment.

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.

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CABINET SECRETARY,
MINISTRY OF EDUCATION

PREFACE

The Ministry of Education (MoE) nationally implemented Competency Based Curriculum (CBC) in 2019. Grade one is the first grade of Primary education level while Grade 6 is the final grade of the level in the reformed education structure.

The reviewed Grade six curriculum furthers implementation of the CBC from Grade 5. The curriculum provides opportunities for learners to focus in a field of their choice to form a foundation for further education and training and/or gain employable skills. This is very critical in the realisation of the Vision and Mission of the on-going curriculum reforms as enshrined in the Sessional Paper No. I of 2019 whose title is: Towards Realizing Quality, Relevant and Inclusive Education and Training for Sustainable Development in Kenya. The Sessional Paper explains the shift from a content-focused curriculum to a focus on **nurturing every learner's potential.**

Therefore, the Grade six curriculum designs for learners with Hearing Impairment are intended to enhance the learners' development in the CBC core competencies, namely: Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Imagination, Citizenship, Digital Literacy, learning to Learn and Self-efficacy.

The curriculum designs provide suggestions for interactive and differentiated learning experiences linked to the various sub strands and the other aspects of the CBC. They also offer several suggested learning resources and a variety of assessment techniques. It is expected that the designs will guide teachers to effectively facilitate learners to attain the expected learning outcomes for Grade six and prepare them for smooth transition to Junior school. Furthermore, it is my hope that teachers will use the adapted designs to make learning interesting, exciting and enjoyable.

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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 six 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 panellists; the Semi-Autonomous Government Agencies (SAGAs) and representatives of various stakeholders for their roles in the development and adaptation of the Grade six 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 six and preparation of learners with Hearing Impairment for transition to Junior school.

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TABLE OF CONTENTS

Contents

NATIONAL GOALS OF EDUCATION

1. **Foster nationalism, patriotism, and promote national unity**

   Kenya's people belong to different communities, races and religions and should be able to live and interact as one people. Education should enable the learner to acquire a sense of nationhood and patriotism. It should also promote peace and mutual respect for harmonious coexistence.

2. **Promote social, economic, technological and industrial needs for national development**

   Education should prepare the learner to play an effective and productive role in the nation.

   a) **Social Needs**

      Education should instil social and adaptive skills in the learner for effective participation in community and national development.

   b) **Economic Needs**

      Education should prepare a learner with requisite competencies that support a modern and independent growing economy. This should translate into high standards of living for every individual.

   c) **Technological and Industrial Needs**

      Education should provide the learner with necessary competences for technological and industrial development in tandem with changing global trends.

3. **Promote individual development and self-fulfillment**

   Education should provide opportunities for the learner to develop to the fullest potential. This includes development of

one’s interests, talents and character for positive contribution to the society.

4. **Promote sound moral and religious values**

   Education should promote acquisition of national values as enshrined in the Constitution. It should be geared towards developing a self- disciplined and ethical citizen with sound moral and religious values.

5. **Promote social equity and responsibility**

   Education should promote social equity and responsibility. It should provide inclusive and equitable access to quality and differentiated education; including learners with special educational needs and disabilities. Education should also provide the learner with opportunities for shared responsibility and accountability through service learning.

6. **Promote respect for and development of Kenya's rich and varied cultures**

   Education should instil in the learner appreciation of Kenya's rich and diverse cultural heritage. The learner should value, own and respect other people's culture as well as embrace positive cultural practices in a dynamic society.

7. **Promote international consciousness and foster positive attitudes towards other nations**

   Kenya is part of the interdependent network of diverse peoples and nations. Education should therefore enable the learner to respect, appreciate and participate in the opportunities within the international community. Education should also facilitate the learner to operate within the international community with full

   knowledge of the obligations, responsibilities, rights and benefits that this membership entails.

8. **Good health and environmental protection**

   Education should inculcate in the learner the value of physical and psychological well-being for self and others. It should promote environmental preservation and conservation, including animal welfare for sustainable development

LESSON ALLOCATION AT UPPER PRIMARY

S/ No.	Learning Area	No. of Lessons
1	English for Learners with Hearing Impairment	5
2	Kiswahili for Learners with Hearing Impairment / Kenyan Sign Language	4
3	Mathematics for Learners with Hearing Impairment	5
4	Religious Education	3
5	Science & Technology for Learners with Hearing Impairment	4
6.	Agriculture & Nutrition for Learners with Hearing Impairment	4
7.	Social Studies for Learners with Hearing Impairment	3
8	Creative Arts for Learners with Hearing Impairment	6
9.	Pastoral/ Religious Instruction Programme	1
	Total	**35**

UPPER PRIMARY SCHOOL EDUCATION LEARNING OUTCOMES

By the end of upper primary School education, the learner should be able to:

a) Communicate appropriately using signing, verbal and non-verbal in a variety of contexts.
b) Demonstrate mastery of number concepts to solve problems in day to day life
c) Demonstrate social skills, moral and religious values for positive contribution to the society.
d) Develops one's interests and talents for personal fulfilment
e) Make informed decisions as local and global citizens of a diverse, democratic society in an independent world.
f) Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development.
g) Acquire digital literacy skills for learning and enjoyment.
h) appreciation of the country's rich and diverse cultural heritage for harmonious living

ESSENCE STATEMENT

Mathematics is a vehicle of development and improvement of a country's economic development. By learning mathematics, learners with hearing impairment develop an understanding of numbers, logical thinking skills and problem solving skills. Mathematics is applied in business, social and political worlds. At this level, Mathematics will build on the competences acquired by the learner in the Early years of Education. Learning Mathematics will also enhance the learner's competencies in numeracy as a foundation of Science Technology Engineering and Mathematics (STEM) at the higher levels of education cycle. Mathematics is also a subject of enjoyment and excitement as it gives learners opportunities for creative work and fun. 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.

MATHEMATICS GENERAL LEARNING OUTCOMES

1) Demonstrate mastery of number concepts by working out problems in day to day life.
2) Apply measurement skills to find solutions to problems in a variety of contexts.
3) Describe properties of geometrical shapes and spatial relationships in real life experiences.
4) Collect, represent and analyze data to solve problems.
5) Analyze information using algebraic expressions in real life situations.
6) Apply mathematical ideas and concepts to other learning areas or subjects and in real life contexts.
7) Develop confidence and interest in mathematics for further learning and enjoyment.
8) Demonstrate values, competencies and management of pertinent and contemporary issues for healthy relationships.

SUMMARY OF STRANDS AND SUB STRANDS GRADE 6

S/No	Strand	SUB-STRAND	Suggested Number of Lessons
1.0	**Numbers**	1.1 Whole Numbers	20
		1.2 Multiplication	6
		1.3 Division	6
		1.4 Fractions	12
		1.5 Decimals	12
		1.6 Inequalities	8
2.0	**Measurement**	2.1 Length	14
		2.2 Area	6
		2.3 Capacity	6
		2.4 Mass	14
		2.5 Time	10
		2.6 Money	8
3.0	**Geometry**	3.1 Lines	6
		3.2 Angles	6
		3.3 3-D Objects	6
4.0	**Data Handling**	4.1 Bar Graphs	10
			150
Note: The suggested number of lessons per sub strand may be less or more depending on the context.			

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 terms related to whole numbers, b) Use place value and total value of digits up to millions in real life, c) Use numbers up to millions in symbols in real life, d) Read by signing and write numbers up to 100,000 in words in real life, e) Order numbers up to 100,000 in real life	● In pairs or groups learners are guided to identify fingerspell, sign and write the terms related to whole numbers such as place value, total value, digits and million.) ● Observe the teacher's demonstration or watch a captioned or signed video on how to identify the place value of digits up to millions using place value apparatus and work out on place value of digit up to million. ● In pairs or groups	How are squares and square roots used in real life?

		situations, f) round off numbers up to 100,000 to the nearest thousand in different situations, g) Apply squares of whole numbers up to 100 in different situations, h) Apply square roots of perfect squares up to 10,000 in different situations, i) Use digital devices for learning more on whole numbers and for enjoyment, j) appreciate use of whole numbers in real life situations.	or as individuals' learners to are guided to sign read numbers up to hundreds of thousands of millions in symbols, then develop number charts or cards and keep in portfolios ● In pairs or groups or as individuals' learners are guided to form different number patterns and keep this work in portfolios. ● In pairs or groups, learners discuss numbers up to a thousand then develop number cards and share with other groups. ● In pairs or groups or as individuals, learners can observe the teacher demonstrating or watch a captioned or signed video on multiplying a given	

			number by itself and identify the answer as the square of the number. ● In pairs or groups or as individuals, learners to refer to or use print text or digital devices or any available resources to play games involving whole numbers.	

Core competencies to be developed:

- Critical thinking and problem solving: Explanation skills as learners solve different mathematical problems in order to identify the square and square root of given numbers.
- Learning to learn: Self-discipline as learners is engaged in self-driven tasks of practising singing and writing the symbols of squares and square roots.

Values:

Unity: Cooperating in pairs or groups identifying total value of digits up to millions using place value apparatus

Pertinent and Contemporary Issues (PCIs):

Social cohesion: as learners in pairs or groups identify the square root of a given number as a value which when multiplied by itself results in the given number.

Learner Support Programme: As a learner enhances peer education and mentorship to support one another in identifying place, total value, square and square roots of whole numbers.

Link to other Subjects The learner is able to relate reading and writing numbers in words to writing numbers in words in Languages.
Suggested resources: • Digital devices, charts, flash cards, illustration, multiplication table

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 Numbers	**1.2 Multiplication** (6 Lessons)	By the end of the Sub Strand, the learner should be able to: a) Sign terms related to multiplication b) multiply up to a 4-digit number by a 2-digit number in real life situations, c) estimate products by rounding off numbers being multiplied to the nearest ten	● In pairs, groups or individually, learners are guided to identify, fingerspell and sign words related to multiplication. ● In purposive groups learners are guided to multiply up to 4-digit numbers by a 2 – digit number using; (fact families, skip counting, multiplication chart.) ● In pairs or groups learners are guided to observe teachers' demonstration or watch a captioned or signed video on rounding off numbers being multiplied to the nearest ten ● In pairs, groups or individually, learners are	1. How is multiplication used in real life? 2. How can you estimate products of numbers?

		in real life situations, d) make patterns involving multiplication of numbers not exceeding 10,000 in different situations, e) use digital devices with assistive technology to multiply up to a 4-digit number by a 2-digit number in different situations, f) appreciate the use of	guided to estimate products using; (rounding off factors, compatibility of numbers, own strategies). ● In pairs or groups, learners are guided to make patterns involving multiplication with product not exceeding 10,000 using number cards and share with other groups. ● In pairs, groups or individually, learners use digital devices with assistive technology to play digital games involving multiplication for learning and enjoyment.	

		multiplication in real life.		

Core Competencies to be developed:

- Critical thinking and Problem solving: Explanation and reasoning skills as they multiply up to 4-digit numbers by a 2 – digit number.
- Digital literacy**:** Learners develop **interacting and connecting skills** as they use digital devices with assistive technology to play digital games involving multiplication.

Values:

- Responsibility: Accountability taking care of the learning resources used when multiplying up to 4-digit numbers by a 2 – digit number.

Pertinent and Contemporary Issues (PCIs):

Safety and security: Learners care for learning resources like abacus, Taylor frames with plastic types, cubes and cubarithm arithmetic boards and keep them safely after use.

Links to other Learning Areas:

The learner is able to relate skills making patterns involving multiplication with product not exceeding 10 000 using number cards in Creative arts.

Suggested learning resources

- Cubes and cubarithm boards, abacus, number board, charts and cards,
- Signs dictionary, Digital devices

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 NUMBERS	1.3 Division **(6 Lessons)**	By the end of the Sub Strand the learner should be able to; a) sign terms related to division, b) Divide up to a 4-digit number by up to a 3-digit number where the dividend is greater than the divisor in real life situations, c) Estimate quotients by rounding off the dividend and divisor to the nearest ten in real life situations, d) Perform combined	• Learners are guided to identify fingerspell signs and write terms related to division. • Learners are guided to observe charts or teacher's demonstration or watch captioned or signed videos on division of up to 4-digit number by up to 3-digit number. • In pairs or groups or as individuals, learners are guided to refer to text print out provided to	1. How can you estimate quotients?

		operations involving addition, subtraction, multiplication and division up to 3-digit number in different situations, e) Use digital devices for learning more on division of whole numbers and for enjoyment, f) Appreciate the use of division of whole numbers in real life.	divide up to a 4-digit number by up to a ● 3-digit number and present their answers. ● In pairs or groups, learners are guided to use the available digital devices/print texts to research and present on the relationship between multiplication and division. ● Learners in pairs or groups or as individuals, learners are guided to observe the teacher demonstrating on how to work out quotients by rounding the dividend and divisor to the nearest ten, and then solve the given exercises. ● Learners to use the	

			available digital/electronic devices such as calculators or any other available resources to divide whole numbers using digital devices.	

Core Competencies to be developed:

Communication and collaboration: Observing and Signing in pairs or groups discuss the relationship between multiplication and division

Values

Respect working harmoniously in pairs or groups divide up to a 4-digit number by up to a 3 digit number and share answers.

Pertinent and Contemporary Issues (PCIs):

Safety and security: learners care for learning resources like abacus, cubes, digital devices and keep them safe after use.

Links to other Learning Areas:

The learner is able to relate making patterns involving multiplication with product not exceeding 10,000 using number cards to knowledge learned in creative arts.

Suggested learning resources;

- Multiplication table, Cubes, Digital devices, Abacus, Realia, Signs dictionary

Strand	Sub-Strand	Specific Learning Outcome	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 Numbers	**1.4 Fractions (12 Lessons)**	By the end of the sub-strand the learner should be able to; a) sign terms related to fractions, b) add fractions using LCM in different situations, c) subtract fractions using LCM in different situations, d) add mixed numbers in different situations, e) subtract mixed numbers in different situations, f) identify reciprocal of proper fractions up to a 2-digit number in different situations, g) work out squares of fractions with a numerator of one digit and denominator of 2-digit number different situations, h) convert fractions to equivalent fractions with denominator 100 in different situations, i) identify percentage as a	● Learners to are guided to identify fingerspell, sign and write terms related to fraction ● Learners to observe the teacher's demonstration or watch a captioned or signed video on how to add fractions with the same denominators and work out the exercises given. ● Learners to observe the teacher demonstrating or watch a captioned or signed video on how to subtract fractions with different denominators using LCM, then work out the exercises given. ● Learners in groups are guided to refer to previous work on subtraction of fractions with different denominators, discuss in addition to the same fractions then do a presentation. ● Learners are guided to refer to	1) Why is the knowledge of squares of fractions important?

		fraction for use in different situations, j) convert fractions to percentages in different situations, k) convert percentage to fractions in different situations, l) use IT devices for learning more on fractions, m) Appreciate the use of fractions in real life.	print texts or digital devices available to add and subtract mixed fractions by converting the fractions to improper fractions. ● Learners are guided to refer to previous work in addition to mixed fractions and apply the same concept to subtract given fractions. ● In pairs or groups /individually, learners are guided to refer to a given printout and list the inverse of numbers between 1 and 10. ● Learners in pairs or groups or as individuals, learners are guided to calculate the reciprocal by dividing one by the number. They should always start by working out the reciprocal of whole numbers before solving the reciprocal of proper fractions up to a 2-digit number. ● In pairs or groups or as individuals, learners are guided to refer to charts provided and	

			discuss and write the various reciprocals of a proper fraction. ● In pairs or groups or as individuals, learners are guided to refer to the illustration chart provided to discuss and calculate squares of fractions through multiplication. ● Learners observe the teacher demonstration or watch a captioned or signed video on how to change fractions to equivalent fractions with denominator 100 through multiplication, then work out the exercises given. ● In pairs or groups, learners are guided to refer to the chart provided to discuss and write on how to convert percentage as a fraction with denominator being 100. ● In pairs or groups or as individuals' learners are guided to change fractions to percentages and vice versa, and then write on a chart for	

			presentation. ● In pairs or groups, learners are guided to use the available resources (print/digital) to discuss and write where percentages are applied in day to day life. ● Learners to use print texts/ digital devices or any other available resource to play digital games involving fractions.	

Core Competencies to be developed:

Learning to learn: work out assigned tasks on the reciprocal of whole numbers before solving the reciprocal of proper fractions

Values:

Unity: Display cooperation in pairs or groups discussing where percentages are used in day to day life.

Pertinent and Contemporary Issues (PCIs):

- Social cohesion as learners in groups or pairs calculate squares of fractions through multiplication or practically.

Link to other subjects:

- The learner is able to relate observing and signing skills when discussing new mathematical terms in fractions to knowledge learned in English.

Suggested learning resource;

- Equivalent fraction board, Circular and rectangular cut-out, Counters, Digital devices,

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 NUMBERS	**1.5 Decimals** **(12 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) sign terms related to decimals, b) write the place value of numbers up to ten thousandths in different situations, c) round off decimals up to 3 decimal places in different situations, d) Convert decimals to fractions in different situations, e) Convert fractions to decimals in different situations, f) Convert decimals to percentages in different	• Learners are guided to identify fingerspell, sign and write terms related to decimals to observe the teacher demonstrating on place value of decimals up to ten thousandths using place value apparatus, then work on some given exercises. • Learners to observe teacher's demonstration or watch a signed or captioned video on how to relate place value of decimals up to ten thousandths • to the number of	How can we use decimals in leisure play?

		situations, g) Convert percentages to decimals in different situations, h) add decimals up to 4-decimal places in different situations, i) subtract decimals up to 4-decimal places in different situations, j) Use it devices for more learning on decimals and leisure, k) Appreciate use of decimals in real life situations.	decimal places. ● In pairs or groups, learners ● are guided to discuss while referring to the charts provided or any other resource available to round off decimals up to 3 decimal places. ● In pairs or groups or as individuals, learners are guided to change decimals to fractions using a square/ rectangular grid provided. ● In pairs/ groups, learners are guided to discuss how to change fractions to decimals using a square/ rectangular grid, then workout the exercise	

			given. ● In pairs or groups or as individuals, learners are guided to use the provided chart and discuss and practice in addition of decimals up to 4-decimal places. ● In pairs or groups, learners are guided to use the available print text or digital devices to research and present on how to subtract decimals up to 4-decimal places using place value apparatus. ● In pairs or groups or as individuals, learners are guided to use print texts/digital devices or any other available	

			resources to play digital games involving decimals.	

Core Competencies to be developed:

Communication and collaboration: Observing and Signing in pairs or groups the place value of decimals places up to ten thousandths.

Self-Efficacy: self-driven when carrying out addition and subtraction on decimals using various learning resources.

Values:

Responsibility: Persistence in adding decimals up to 4-decimal places using place value apparatus.

Pertinent and Contemporary Issues (PCIs):

Peer education; as learners add decimals up to 4-decimal places using shared place value apparatus.

Link to other subjects:

Learner relates skills in place value with weighing machines when measuring the masses of different substances in decimals during practical Science and Technology and Agriculture and Nutrition.

Suggested learning resources:

- Place value charts, place value number card**s,**
- Digital devices, signs dictionary

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
1.0 NUMBERS	1.6 Inequalities **(8 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) sign terms related to inequalities b) solve one unknown in algebraic expression involving real life situations, c) Simplify simple inequalities in one unknown involving real life situations, d) Solve simple inequalities in one unknown involving real life situations	● Learners to are guided to identify, fingerspell, sign and write terms related to inequalities ● Learners observe the teacher demonstrating on formation of algebraic inequalities in one unknown using different operations, then work out the exercises given. ● In pairs or groups, learners observe the teacher demonstrating	How are inequalities solved?

		e) Use its devices to simplify inequalities and play digital games involving inequalities. f) Appreciate use of algebraic expressions in real life.	or watch a signed or captioned video on how to simplify algebraic inequalities in one unknown, then work out sample exercises on a chart and present. ● In pairs or groups or as individuals, learners work out simple inequalities involving one unknown in their exercise books then peer review. ● In pairs or groups or as individuals, learners refer to print texts or digital devices to simplify algebraic inequalities, then	

			present.	

Core Competencies to be developed:

Self-efficacy: Practice self-drive working in groups, pairs or individually confidently to solve simple inequalities involving one unknown.

Values

Responsibility: Caring for digital devices when simplifying algebraic inequalities and play digital games.

Pertinent and Contemporary Issues (PCIs):

Citizenship: Learners display social cohesion as they work in groups to form algebraic inequalities that represent different aspects of life within the environment.

Link to other subjects:

Learner relates the skills with amount of fertilizers and other production inputs to be used on a school farm projects in Agriculture and Nutrition.

Suggested learning resources:

- Digital devices
- Flash cards with greater than, less than or equal to,
- sorting cards.
- Course books

Suggested Assessment Rubric

Level / Criteria	Exceeds Expectation	Meets Expectation	Approaches Expectation	Below Expectation
Ability to sign terms related to numbers of whole numbers, multiplication, division, fractions, decimals and inequalities	signs terms related to numbers, whole numbers, multiplication, division, fractions, decimals and inequalities with exceptional accuracy demonstrating signing proficiency	signs terms related to numbers, whole numbers, multiplication, division, fractions, decimals and inequalities accurately	signs terms related to numbers, whole numbers, multiplication, division, fractions, decimals and inequalities with noticeable errors	Signs terms related to numbers, whole numbers, multiplication, division, fractions, decimals and inequalities inaccurately lacking clarity
Ability to find place value, total value, squares and square roots of whole numbers	Finds place value, total value, squares and square roots of whole numbers correctly and consistently.	Finds place value, total value, squares and square roots of whole numbers correctly	Finds place value, total value, squares and square roots of whole numbers with minimal errors.	Finds place value, total value, squares and square roots of whole numbers with major errors.

Ability to multiply up to a 4-digit number by a 2-digit number	Multiplies up to a 4-digit number by a 2-digit number accurately with precision.	Multiplies up to a 4-digit number by a 2-digit number accurately.	Multiplies up to a 4-digit number by a 2-digit number with noticeable errors.	Multiplies up to a 4-digit number by a 2-digit number with difficulty.
Ability to divide up to a 4-digit number by up to a 3-digit number	Divides up to a 4-digit number by up to a 3-digit number correctly and accurately.	Divides up to a 4-digit number by up to a 3-digit number accurately.	Divides up to a 4-digit number by up to a 3-digit number with minimal errors.	Divides up to 4-digit numbers by up to a 3-digit number with major errors.
Ability to use LCM in addition and subtraction of fractions	Uses LCM in addition and subtraction of fractions correctly and systematically.	Uses LCM in addition and subtraction of fractions	Uses LCM in addition and subtraction of fractions with minimal difficulties.	Uses LCM in addition and subtraction of fractions with assistance.
Ability to find reciprocals and percentages of fractions	Finds reciprocals and percentages using fractions correctly and can explain the process.	Finds reciprocals and percentages using fractions accurately with precision.	Finds reciprocals and percentages using fractions with some errors	Finds reciprocals and percentages using fractions with significant errors.

Ability to convert decimals into fractions and percentages	Converts decimals into fractions and percentages correctly and systematically.	Converts decimals into fractions and percentages correctly.	Converts decimals into fractions and percentages with some errors.	Converts decimals into fractions and percentages with difficulty resulting in major errors.
Ability to use decimals of up to 4 decimal places in addition and subtraction	Uses decimals of up to 4 decimal places in addition and subtraction correctly and rounds off the answer to 3 decimal places.	Uses decimals of up to 4 decimal places in addition and subtraction correctly.	Uses decimals of up to 4 decimal places in addition and subtraction with minimal errors.	Uses decimals of up to 4 decimal places in addition and subtraction with significant errors.
Ability to solve simple inequalities in one unknown	Solves simple inequalities in one unknown correctly and logically.	Solves simple inequalities in one unknown.	Solves simple inequalities in one unknown partly.	Solves simple inequalities in one unknown with assistance.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEA-SUREMENT	2.1 **Length** **(14 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) sign terms related to length, b) recognise millimetre (mm) as a unit of measuring length in different situations, c) Establish the relationship between the millimetre and centimetre in different situations, d) Convert centimetres to millimetres in different situations, e) Convert millimetres to centimetres in different situations,	● Learners are guided to identify, fingerspell and write terms related to length. ● In pairs or groups learners observe the teacher demonstrate various activities involving use of ruler to measure length in millimetres and conversion of mm into cm and vice versa then record their observations . ● Learners to draw a ruler on a chart and calibrate 'mm' ●	1. How can we measure distances from home to school? 2. How do we measure the length of different walls at school?

		f) add centimetres and millimetres in different situations, g) Subtract centimetres and millimetres in different situations, h) Multiply centimetres and millimetres by whole numbers in real life situations, i) Divide centimetres and millimetres by whole numbers in real life situations, j) determine the circumference of a circle practically, k) Identify the relationship between circumference and diameter in different situations, l) Use it devices for	● In pairs or groups or as individuals, learners are guided to use a ruler to measure and record a given length in cm and mm to establish the relationship between the two. ● In pairs or groups or as individuals, learners are guided to convert mm to cm and vice versa when measuring lengths of different objects. ● In groups, learners are guided to choose appropriate units to measure and record lengths of different objects in the environment. ● In pairs/ groups or as	

		learning more on length and for enjoyment, m) Appreciate use of length in real life situations.	individuals, learners are guided to discuss and refer to a print text/chart/signed or captioned video on the conversion and addition of length from mm to cm and vice versa, and then make a chart for peer review. ● In purposive groups learners are guided to discuss and present on division of length and work out some given exercises. ● In pairs or groups or as individuals, learners are guided to sketch the circumference, diameter and radius of a circular object. ● In pairs or groups or as	

			individuals, learners are guided to measure and record the circumference of provided circular objects. ● In pairs or groups, learners are guided to divide circumference by diameter to get pi (π), and derive the formula C= πd ● In groups, learners are guided to discuss and present on using the formula **C=πd** while referring to the print texts or other resources available. ● In pairs or groups or as individuals, learners are guided to play digital games involving length in mm and cm.	

Core Competencies to be developed:

- Creativity and imagination: Skilfully sketching the circumference, diameter and radius of a circle practically.
- Communication and Collaboration: Signing and Observing skills embracing teamwork as they establish the relationship between centimetres and millimetres.

Values:

- Unity: Cooperatively working in pairs or groups determines lengths in mm and cm in addition, subtraction, multiplication and division and discusses the answers.

Pertinent and Contemporary Issues (PCIs):

- Environmental education**;** as the learners choose appropriate units to measure lengths of different objects in the environment.

Link to other subjects:

Learner relates skills on circumference of a circle radius and diameter of a circle to drawing and sketching in Creative arts.

Suggested assessment method:

Written exercise, signed work, Observation and Group discussions

Suggested learning resources;

- Metre ruler
- metre sticks
- tape measure.
- Signs dictionary

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEA-SUREMENT	**2.2 Area** **(6 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to area. b) Work out area of triangles in square centimetres (cm^2) in different situations, c) Work out area of combined shapes involving squares, rectangles and triangles in cm^2 in different situations, d) Estimate the area of	• Learners are guided to fingerspell and sign terms related to area. Such as (rectangle, squares, triangle.). • In pairs or groups or as individuals, learners are guided to use paper cut outs to establish that the area of a triangle is equal to a half of the area of a rectangle • Learners observe the teacher demonstrating the relationship between a rectangle and a triangle (Area of a triangle is equal to ½ area of a rectangle or square,	How can we calculate the area of the school playground?

		circles by counting squares, e) Use digital devices for learning more on area and for enjoyment, f) Appreciate the use of cm^2 in working out area in real life	to derive the formula for calculating area -A = ½ (Lx W). learners to write the steps in their portfolios. ● In pairs or groups, learners are guided to discuss and to Work out the area of triangles in cm^2 applying the formula A = ½ (Lx W), then make class presentations. ● In purposive groups, learners are guided to draw a regular circle on a unit square grid and count the full squares to estimate the area of circles and compare answers. ● In pairs or groups or as individuals, learners are guided to come up with their own combined shapes involving rectangles, squares, triangles and ask	

			other pairs or groups to determine the area. ● In pairs or groups, learners are guided to use the print text/digital devices or available resources to play digital games involving area.	

Core Competencies to be developed:

- Creativity and imagination: Making clear observations in pairs or groups /individually working out the area of triangles in cm^2 using the relationship between a rectangle and a triangle.

Values:

- Love: Caring for each other in groups, sketching circles on a unit square grid and count the full squares to estimate the area of circles and compare answers.

Pertinent and Contemporary Issues (PCIs):

- Self-esteem: as learners establish that the area of a triangle is equal to a half of the area of a rectangle or a square when the rectangle or the square is divided by a diagonal.
- Learner Support Programme**:** as a learner enhances peer education and mentorship to support one another in establishing that the area of a triangle is equal to a half of the area of a rectangle or a square when the rectangle or the square is divided by a diagonal.

Links to Other Learning Areas: Learner relates skills for area calculation to area of different geographical fields in Social Studies.
Suggested learning resources; ● Square cut-out,1cm square and 1m square, Digital devices, Course books, Signs dictionary

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEA-SUREMENT	2.3 Capacity **(6 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to capacity. b) Identify the relationship among cubic centimetres (cm^3), millilitres and litres in real life, c) Convert litres to millilitres in different situations, d) Convert capacity in millilitres to litres in different situations, e) Use it devices and other	• In pairs or groups, learners Identify, fingerspell and sign terms related to capacity such as (millilitres, litres, cubic centimetres). • Learners to observe a teacher's demonstration or watch a captioned or signed video on the relationship between cm^3, mililitres and litres through measuring. • In groups, learners are guided to work on the task of measuring capacity using standard containers	1. How is capacity measuring and recording used in real life?

		resources for more learning on capacity and for enjoyment, f) Appreciate use of cm^3 and litres in measuring capacity in real life.	in millilitres and litres, record and compare their answers. ● Purposive groups learners to are guided to conduct various activities to establish the relationship between litres and millilitres using standard containers, then present their recordings ● In purposive groups, learners are guided to apply tables of conversion of capacity (millilitres and litres), then do an exercise in their exercise books ● In pairs or groups or as individuals, learners are guided to play various games involving capacity using digital devices or	

			any other resources available. • Learners to draw the table of capacity inter-conversion in their portfolio.	

Core Competencies to be developed:

Critical thinking and problem solving: Observation and Evaluation skills as learners work out the relationship between cm^3, mililitres and litres through measuring practically.

Values:

Respect: Appreciates efforts of others when identifying the relationship among cubic centimetres (cm^3), millilitres and litres practically.

Pertinent and Contemporary Issues (PCIs):

- **Learner Support Programme:** As a learner enhances peer education and mentorship to support one another in identifying the relationship among cubic centimetres (cm^3), millilitres and litres practically.
- **Environmental education and climate change:** As learners change capacity in litres to millilitres using containers collected from the environment.

Links to Other Learning Areas: Learners relate taking accurate measurements of liquids and chemicals during practical to the knowledge in in Science and Technology.
Suggested learning resources; ● Teaspoon ● containers of different sizes, ● water, sand/soil ● Digital devices

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEASUREMENT	**2.4 Mass** **(14 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to measurement of mass. b) Identify the tonne as a unit for measuring mass in real life, c) Identify items measured in tonnes in real life, d) Identify the relationship between the kilogram and the tonne practically, e) Estimate mass in tonnes in different situations,	● Learners' fingerspell and sign terms related to mass such as (gram, kilogram, tonne, mass). ● Learners to observe and write teacher's demonstration or watch a captioned or signed video on tonne as a unit of measuring mass, ● In pairs or groups, learners are guided to identify and write names of objects/items in the environment such as loaded lorries, whose mass may be	1. How can we measure large amounts of mass?

		f) Convert kilograms to tonnes and tonnes to kilograms in real life situations, g) Add tonnes and kilograms in real life situations, h) subtract tonnes and kilograms in real life situations, i) multiply tonnes and kilograms by whole numbers in real life situations, j) Divide tonnes and kilograms by whole numbers in real life situations, k) Use digital devices for learning more on mass and for enjoyment, l) Appreciate use of the kilogram and tonne in	measured in tonnes ● In pairs or groups or as individuals, learners are guided to observe and write on the teacher's demonstration aimed at establishing the relationship between kilogram and the tonne (1000kg = 1 tonne). ● In pairs, learners take turns practising interconversion of kilograms and tonnes, while referring to print or digital devices available. ● In pairs, learners to estimate masses in tonnes of various objects found in the	

		measuring mass.	environment, then compare their estimations. ● In pairs or groups individuals, learners observe and discuss the charts showing conversion tables for kilograms to tonnes and vice versa. ● In pairs or groups or as individuals, learners refer to print or other available devices, or as well observe the teacher demonstrating on determination of mass of items in tonnes and kilograms using different operations including: -Addition -Subtraction, - Multiplication and	

			Division. ● Learners to are guided to visit an enterprise(s) within their locality with weighing machines, to observe and record mass measurement processes.	

Core Competencies to be developed:

- Digital literacy: Interacting with digital technology weighing machines to measure masses of different items.
- Critical thinking and problem solving: Active listening and communication in solving questions dealing with mass.

Values:

- Integrity: Consistency in determining mass of items in tonnes and kilograms using different operations involving addition, subtraction, multiplication and division.

Pertinent and Contemporary Issues (PCIs):

- **Environmental education:** as learners discuss items in the environment such as loaded lorries, whose mass may be measured in tonnes.
- **Learner Support Programme:** as a learner enhances peer education and mentorship to support one another in identifying the relationship among cubic centimetres (cm^3), millilitres and litres practically.

Links to Other Learning Areas:
Learner relates skills used for measuring to measurement in Science and Technology.
Suggested learning resources ● Teaspoon, ● soil/sand manual/electronic weighing machine and beam balance. ● Course books ● Signs dictionary

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEA-SUREMENTS	**2.5 Time** (10 Lesson)	By the end of the sub-strand, the learner should be able to; a) Sign terms related to time. b) identify time in a.m. and p.m. in day to day life experiences, c) Write time in a.m. and d) p.m. In day to day life experiences, e) c) Relate time in a.m. And f) p.m. to the 24h clock system, g) Convert time from 12h to 24h and 24h to 12h system,	• Learners are guided to fingerspell sign and write terms related to time. Such as (a.m., p.m., and clock). • Learners to observe teachers' demonstration on identification of a.m. and p.m. using digital/analogue clocks, then take turns practising the same • In pairs or groups, learners are guided to discuss and write on how to determine and write time in a.m. and p.m., from digital and analogue clocks • In pairs or groups, learners are guided to refer to a chart or any other resource while discussing	Why is it important to have knowledge of a.m., p.m. and 24 hr clock systems when discussing travelling time?

		h) Interpret travel timetable in different situations, i) Use digital devices for learning more on reading time and for leisure, j) Appreciate use of time in both 12h and 24h systems.	matching time in a.m. or p.m. (12hr system) with the corresponding representation in a 24h clock system. • In purposive groups, learners are guided to make charts and present on conversion of time from 12 hr to 24 hr systems and vice versa. • In groups, learners are guided to observe given charts or prints outs and interpret travel timetables. • In pairs or groups • Or as individuals, learners are guided to determine time durations of travelling using travel timetables within the country. • In pairs or groups • Or as individuals, learners are guided to use print texts/digital	

			devices or any available resources to play games involving time on 12h and 24 h systems.	

Core Competencies to be developed:

Learning to learn: as learners determine time in a.m. and p.m. from digital and analogue clocks.

Values:

- Integrity: as learners observe time in various activities.
- Responsibility: as learners in pairs or groups / individuals equate time in a.m. and p.m.to the 24h clock system using a chart and observe time in their day to day life.
- Unity: As learners collaborate with others to interpret travel timetables

Pertinent and Contemporary Issues (PCIs):

- Citizenship: as learners determine time durations of travelling using travel timetables within the country.
- Learner Support Programme: A learner enhances peer education and mentorship to support one another to convert time from 12h to 24h and 24h to 12h system.

Link to other learning areas:

- **Home science and science:** Learners relates recording time taken to perform given activities to time recording in Home science.

Suggested learning resources:

Analogue clock, Digital clock, Digital watch, Stopwatch, signed video, Signs dictionary

Strand	Sub Strand	Specific Learning Outcome	Suggested Learning Experiences	Suggested Key Inquiry Questions
2.0 MEA-SUREMENT	2.6 **Money** **(8 lessons)**	By the end of the Sub Strand, the learner should be able to; a) Identify signed terms related to money. b) prepare simple budget in different situations c) Determine buying and selling prices of different items in the community d) Work out profit from sales of different items in the community.	• Learners in pairs or groups, are guided to identify fingerspell and write terms related to money • Learners in pairs, are guided to collect different shopping items in the community and draw a simple budget. • In purposive groups or as individuals, learners are guided to observe a demonstration or watch a captioned or signed video discussing the meaning of buying and selling price. • In pairs or groups or individuals, learners are guided to determine buying and selling prices of	How can you make profit or loss in a business?

		e) Calculate loss realised from sales of different items in the community f) Identify types of taxes in different situations, g) Use it devices to learn about profit and loss, h) Appreciate profit and loss in real life situations.	different items in the community. ● In pairs or groups or as individuals, learners are guided to discuss the meaning of profit and loss in real life situations and share with other groups. ● In pairs or groups or as individuals, learners are guided to determine profit and loss. In pairs or groups or as individuals, learners are guided to discuss income and value added tax (VAT) as a form of tax. ● In pairs or groups, learners are guided to use digital devices to play digital games.	

Core Competencies to be developed:

- Communication and collaboration: as learners discuss the meaning of profit and loss in real life situations and share with other groups.

Values:

- Honesty: as learners determine buying and selling prices of different items.
- Integrity**:** as learners show honesty when determining buying and selling prices of different items from their locality.

Pertinent and Contemporary Issues (PCIs):

- Financial literacy: as learners discuss income and value added tax (VAT) as a form of tax.
- Socio-economic Issues: Learners enhance their financial literacy skills as they discuss and learn more about income and value added tax (VAT) as a form of tax.

Link to other subjects:

Learners relate mathematics Signs terms related to money in discussions to signing skills in English.

Learners relate participating in making budgets for buying food at home to knowledge in Home Science.

Suggested learning resources:

- price list, classroom shop, electronic money, tariffs and charts, Digital devices, Course books

Suggested Assessment Rubric

Level / Criteria	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to sign terms related to measurement of mass	Signs terms related to the measurement, length, area, capacity, mass, time and money with exceptional accuracy, displaying excellent signing skill.	Signs terms related to measurement, length, area, capacity, mass, time and money accurately.	Signs terms related to measurement, length, area, capacity, mass, time and money with negligible errors.	Signs the terms related to measurement, length, area, capacity, mass, time and money with notable struggles and errors.
Ability to solve mathematical problems involving millimetres and centimetres.	Solves mathematical problems involving millimetres and centimetres accurately with precision.	Solves mathematical problems involving millimetres and centimetres correctly.	Solves mathematical problems involving millimetres and centimetres partly with some noticeable minor errors.	Solves mathematical problems involving millimetres and centimetres with significant errors despite prompts.
Ability to establish the relationship between	Establishes the relationship between circumference and	Establishes the relationship between	Establishes the relationship between circumference and	Establishes the relationship between

circumference and diameter	diameter accurately with much ease.	circumference and diameter correctly.	diameter with some minor mistakes.	circumference and diameter with major errors.
Ability to calculate area of combined shapes involving squares, rectangles and triangles in cm^2	Calculates area of combined shapes involving squares, rectangles and triangles in cm^2 correctly and procedurally	Calculates area of combined shapes involving squares, rectangles and triangles in cm^2 .	Calculates area of some combined shapes involving squares, rectangles and triangles in cm^2.	Calculates area of some combined shapes involving squares, rectangles and triangles in cm^2 when guided.
Ability to calculate capacity in cm^3, millilitres and litres	Calculates capacity in cm^3, millilitres and litres. Correctly and accurately.	Calculates capacity in cm^3, millilitres and litres.	Calculates capacity in cm^3, millilitres and litres minimal errors.	Calculates capacity in cm^3, millilitres and litres when guided.
Ability to estimate mass in kilograms and tonnes	Estimates mass in kilograms and tonnes with accuracy and systematically.	Estimates mass in kilograms and tonnes correctly.	Estimates mass in kilograms and tonnes with minimal errors.	Estimates mass in kilograms and tonnes when assisted.
Ability to solve mathematical problems involving mass in kilograms and tonnes.	Solves mathematical problems involving mass in kilograms and tonnes accurately and consistently.	Solves mathematical problems involving mass in kilograms and tonnes correctly.	Solves mathematical problems involving mass in kilograms and tonnes with minimal errors.	Solves mathematical problems involving mass in kilograms and tonnes with major errors.

Ability to calculate time in a.m., p.m. and 24h clock system	Calculate time in a.m., p.m. and 24h clock system accurately and systematically.	Calculates time in a.m., p.m. and 24h clock system.	Calculates time in a.m., p.m. and 24h clock system with minimal errors.	Calculates time in a.m., p.m. and 24h clock system with significant errors.
Ability to work out profit and loss from sales	Works out profit and loss from sales accurately and clearly determines buying and selling price of items.	Works out profit and loss from sales.	Works out profit and loss from sales with minimal challenges.	Works out profit and loss from sales inaccurately.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Questions
3.0 GEOMETRY	3.1 Lines **(6 Lessons)**	By the end of the sub- strand, the learner should be able to; **a)** Sign terms related to lines**,** b) Draw parallel lines in different situations, c) Bisect lines by construction, d) Construct perpendicular lines in different situations, e) Use digital devices and other resources for more learning on lines and leisure, f) Appreciate use of lines in daily life.	● Learners are guided to fingerspell sign and write terms related to lines such as parallel, perpendicular, bisector. ● Learners are guided to observe a chart or teacher's demonstration or captioned or signed video on operations on lines then draw on their own and display in class. ● In pairs/ groups or as individuals, learners are guided to construct parallel lines using geometrical	1. Why is line construction skill important? 2. How can you construct a line?

			instruments. ● In purposive groups, learners are guided to bisect lines using geometrical instruments. ● In pairs or groups, learners are guided to draw perpendicular lines using geometrical instruments. ● In pairs or groups or as individuals, learners are guided to share digital devices and other resources to draw parallel lines.	

Core Competencies to be developed:

- Creativity and imagination: Active and communication skills as learners in pairs or groups / individually bisect lines by construction.
- Communication and Collaboration: as learners develop signing and observing skills as they collaboratively work to come up with different types of lines.

Values: Responsibility: as learners in pairs or groups or as individuals share digital devices and other resources to draw parallel lines.
Pertinent and Contemporary Issues (PCIs): Safety and Security: as learners observe internet safety and security by accessing safe online mathematical sites to learn more on lines.
Link to other subjects; Creative arts: learners relate interaction with various lines in the environment and appreciate use of parallel, vertical and perpendicular lines in daily life to knowledge in Creative Arts.
Suggested assessment method: Written exercise, signed work, Observation and Group discussions. **Suggested learning resources:** ● Chalkboard ruler ● 30cm ruler ● straight edges ● Signs dictionary

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
3.0 GEOMETRY	**3.2 Angles (6 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to angles on a straight line. b) identify angles on a straight line at a point in different situations, c) measure angles on a straight line at a point in different situations, d) work out sum of angles on a straight line in different situations, e) determine the sum	• Learners are guided to fingerspell and sign terms related to angles such as isosceles, right angled, equilateral. • Learners are guided to observe charts/captioned or signed video on different angles and draw/measure them using the right instruments. • In purposive groups, learners are guided to discuss angles on a	How do we apply the knowledge of different angles in real life?

		of angles in rectangles and triangle s f) Construct equilateral, right angled and isosceles triangles and measure their interior angles accurately, g) use digital devices for learning more on angles and for enjoyment, h) appreciate the use of angles in real life.	straight line practically. ● In pairs or groups or as individuals, learners are guided to draw a line that cuts the straight to form an angle. Measure and write the angle formed by the size(s) of angles formed. Compare the sizes of angles with your classmates. ● In purposive groups, learners are guided to determine the sizes of various angles. ● In pairs or groups or individuals, learners are guided to practically establish the sum of angles in a	

			triangle and rectangles from different objects in the environment. ● In purposive groups, learners are to identify and draw equilateral, right angled and isosceles triangles using geometrical instruments. ● In purposive groups, learners are guided to practically establish the sum of the interior angles in a rectangle and triangle. ● In pairs or groups or as individuals, learners play digital games involving	

			angles.	

Core Competencies to be developed:

- Self-efficacy: as learners practically establish the sum of the interior angles in a rectangle and triangle.
- Communication and Collaboration: Learners develop **signing and observing skills** and also embrace teamwork as they work in groups to identify angles on a straight line.

Values

- **Unity:** as learners in pairs or groups compare the sizes of angles with their classmates.

Pertinent and Contemporary Issues (PCIs):

- Environmental education: as learners in pairs or groups /individually practically establish the sum of angles in a triangle and rectangles from different objects in the environment.

Links to Other Learning Areas:

- **Creative Arts:** Learners relate concepts of shapes to faces, vertices and edges of 3-D objects in the environment.

Suggested learning resources;

- unit angles
- protractor
- straight edges

Strand	Sub Strand	Specific Learning Outcome	Suggested Learning Experiences	Suggested Key Inquiry Questions
3.0 GEOMETRY	**3**.3 3-D Objects **(6 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to 3-D objects. b) Identify vertices, faces and edges in cuboids, cubes in different situations. c) Identify faces and edges of cylinders in different situations d) Describe plane figures in 3- D objects in the environment e) Use digital devices and other resources for learning more on f) 3-D objects and for enjoyment,	• Learners to are guided to fingerspell and sign terms related 3-D objects (cuboids, cubes, vertices, faces). • Learners are guided to observe real objects/charts/watch captioned or signed videos on different 3-D objects identifying their faces then draw them. • In purposive groups, learners are guided to discuss and collect 3-D objects and safely keep them as part of their role in environmental conservation.	How do you use 3 -D objects for enjoyment?

		g) c) Appreciate use of 3-D objects in real life.	• in purposive groups, learners are to are guided to identify and relate cuboids and cylinders in the environment • In pairs or groups /individually, learners are guided to open up nets of cuboids, cubes and cylinders. • In pairs or groups / individually, learners are guided to discuss the rectangular, square and circular shapes on the nets. • In pairs or groups • or as individuals, learners are guided to play digital games.	
Core Competencies to be developed: Creativity and imagination; as learners open up nets of cuboids, cubes and cylinders.				

Values:

- Patriotism: as learners discuss and collect 3-D objects and safely keep them as part of their role in environmental conservation.

Pertinent and Contemporary Issues (PCIs):

- Social Cohesion: as learners in pairs or groups discuss the rectangular, square and circular shapes on the nets.

Link to other subjects;

- Creative Arts and language as learners establish and discuss the difference between.3D objects.

Suggested learning resources;

- Cubes, cuboids, cylinders, Spheres, Rectangles, circles, triangles cut-outs, triangles of different sizes, pyramids, Boxes, cylindrical containers, Cut-out of rectangles, circles and triangles, geometrical shapes of different sizes, Course books

Link to other subjects:

Creative Arts and language as learners establish and discuss the difference between.3D objects.

Suggested Assessment Rubric

Level / Criteria	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to sign terms related to measurement, length, area, capacity, mass, time and money	Signs terms related to the measurement, length, area, capacity, mass, time and money with exceptional accuracy, displaying excellent signing skill.	Signs terms related to measurement, length, area, capacity, mass, time and money accurately.	Signs terms related to measurement, length, area, capacity, mass, time and money with negligible errors.	Signs the terms related to measurement, length, area, capacity, mass, time and money with notable struggles and errors.
Ability to interpret parallel, perpendicular and bisected lines	Interprets parallel, perpendicular and bisected lines accurately with much ease	Interprets parallel, perpendicular and bisected lines.	Interprets parallel, perpendicular and bisected lines with minimal difficulties.	Interprets parallel, perpendicular and bisected lines with difficulties even when guided.
Ability to construct parallel and perpendicular lines	Constructs parallel and perpendicular lines accurately and consistently with much ease.	Constructs parallel and perpendicular lines.	Constructs parallel and perpendicular lines with minimal difficulties.	Constructs parallel and perpendicular lines with difficulties even when guided.

Ability to work out sum of angles on a straight line, in rectangles and triangles.	Works out sum of angles on a straight line, in rectangles and triangles accurately and with ease.	Works out sum of angles on a straight line, in rectangles and triangles.	Works out sum of angles on a straight line, in rectangles and triangles with minimal errors.	Works out sum of angles on a straight line, in rectangles and triangles with difficulties even when guided.
Ability to identify vertices, faces and edges in 3 D objects.	Identifies vertices, faces and edges in 3 D objects correctly with much ease citing names of the 3 D objects.	Identifies vertices, faces and edges in 3 D objects.	Identifies a few vertices, faces and edges in 3 D objects with minimal difficulties.	Identifies vertices, faces and edges in 3 D objects when guided.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Questions
4.0 DATA HANDLING	4.1 Bar Graphs **(10 Lessons)**	By the end of the Sub Strand, the learner should be able to; a) Sign terms related to bar graphs. b) Draw a frequency table of real-life situation data, c) Represent data from real life situations using pictographs d) Represent data from real life situation through piling, e) Represent data from real life situations using bar graphs, f) Interpret information from bar graphs,	• Learners to are guided to fingerspell sign and write terms related to bar graphs such as frequency table, pictographs. • Learners observe charts or watch captioned or signed videos showing bar graphs and draw simple ones representing small data in class. • In pairs or groups or as individuals, learners are guided to collect data and organise them in	How can bar graphs be used in real life situations?

		g) Use digital devices for learning more on bar graphs and for leisure, h) Appreciate use of bar graphs in real life.	pictographs. • In pairs or groups or as individuals, learners are guided to pile similar objects such as match boxes vertically. • In pairs or groups, learners are guided to refer to print texts/digital devices to discuss and organise data in the form of bar graphs and interpret it. • In pairs or groups, learners are guided to discuss information represented on bar graphs. • In pairs or groups or as individuals, learners are guided to use digital	

			devices to learn more on representing data using bar graphs.	

Core Competencies to be developed:

- Creativity and imagination: Learners make connections when collecting data and organizing them in pictographs, frequency tables, bar graphs or by piling.
- Digital literacy: Learners develop interactive and connecting skills when using digital devices with assistive technology to learn more on data representation using bar graphs.

Values:

- Integrity; as learners pile similar objects such as match boxes vertically.
- Responsibility: As learners take care of the various learning resources used in collecting, recording and representing data.

Pertinent and Contemporary Issues (PCIs):

- **Safety** as learners use digital devices to learn more on representing data and take care of themselves and others when collecting data from the environment.

Link to other learning areas:

Creative arts: As learners collect data from the environment and represent it in pictographs or bar graphs.

English: as learners sign various terms related to data collection as they work in groups.

Suggested learning resources:

- bar graph worksheet
- data graph worksheets
- data sample from different sources.
- course books
- signs dictionary

Suggested Assessment Rubric

Level / Criteria	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to sign terms related to bar graphs.	Signs terms related to bar graphs correctly exhibiting exceptional fluency, clarity, precision and pace,	Signs terms related to bar graphs correctly with fluent and signs.	Signs terms related to bar graphs with occasional errors in specific signs.	Signs terms related to bar graphs with notable inconsistencies and inaccuracies that significantly affects understanding.
Ability to represent data using bar graphs	Represents data using bar graphs accurately and comprehensively	Represents data using bar graphs accurately	Inaccurately represents data using bar graphs	Represents data using bar graphs with support
Ability to interpret information from frequency table and bar graph	Interprets data information from frequency table and bar graph clearly and systematically.	Interprets data information from frequency table and bar graph.	Interprets data information from frequency table and bar graph with some difficulties.	Interprets data information from frequency table and bar graph when guided.

SUGGESTED RESOURCES

Strand	Sub Strand	Resources
NUMBERS	Whole numbers	Place value apparatus, number charts, number cards, multiplication table
	Multiplication	Multiplication tables
	Division	Multiplication tables
	Fractions	Equivalent fraction board, circular and rectangular cut outs, counters
	Decimals	Place value charts, number cards
MEASUREMENT	Length	Metre rule, 1metre ticks, tape measure
	Area	Square cut outs, 1cm squares, 1m squares
	Capacity	Teaspoons, containers of different sizes, water, sand, soil,
	Mass	Teaspoons, soil or sand, manual/electronic weighing machine, beam balance,
	Time	Analogue and digital clocks, digital watches, stop watches
	Money	Price list, classroom shop, electronic money tariff charts
GEOMETRY	Lines	Chalkboard ruler, 30cm ruler, straight edges
	Angles	Unit angles, protractors, rulers
	3-D objects	Cubes, cuboids, cylinders, pyramids, spheres, cut outs of rectangles, circles, and triangles of different sizes

DATA HANDLING	Bar graphs	Bar graph worksheets, data graph worksheets, data samples from different sources
ALGEBRA	Inequalities	Digital inequality worksheets; greater than, less than or equal to, sorting cards.

Note

The following ICT devices may be used in the teaching/learning of mathematics at this level;

Learner digital devices (LDD), teacher digital devices (TDD), mobile phones, digital clocks, television sets, videos, cameras, projectors, radios, DVD players, CD's, scanners, internet among others.