REPUBLIC OF KENYA
MINISTRY OF EDUCATION

PRIMARY SCHOOL CURRICULUM DESIGN

MATHEMATICS

GRADE 6

FOR LEARNERS WITH PHYSICAL IMPAIRMENT

KENYA INSTITUTE OF CURRICULUM DEVELOPMENT
A Skilled and Ethical Society

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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 physical 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.

HON. EZEKIEL OMBAKI MACHOGU, CBS
CABINET SECRETARY,
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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 physical 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 physical 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 six curriculum designs for learners physical 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 physical impairment for transition to Junior school.

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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 acquire a sense of nationhood and patriotism. It should also promote peace and mutual respect for harmonious co-existence.

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 instill 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 competences 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	Number of Lessons
1.	English	5
2.	Kiswahili / Kenya Sign Language	4
3.	Mathematics	5
4.	Religious Education	3
5.	Science & Technology	4
6.	Agriculture and Nutrition	4
7.	Social Studies	3
8.	Creative Arts	6
9.	Pastoral/Religious Instruction Programme	1
Total		**35**

GENERAL LEARNING OUTCOMES FOR PRIMARY EDUCATION

By the end of the Primary Education, the learner should be able to:

a) Communicate appropriately using verbal and or non-verbal modes in a variety of contexts.
b) Apply acquired knowledge, skills, values and attitudes in everyday life
c) Demonstrate social skills, moral and religious values for positive contribution to society.
d) Exploit one's talents for individual development and self-fulfillment
e) Explore, manipulate, manage and conserve the environment for learning and sustainable development.
f) Use digital literacy skills for learning and enjoyment.
g) Value Kenya's rich and diverse cultural heritage for harmonious living.
h) Appreciate the need for, and importance of interdependence of people and nations

ESSENCE STATEMENT

Mathematics is a learning area that involves computation in numbers and arithmetic, shapes, spatial relations and information processing in the form of data. It is a vehicle of development and improvement of a country's economic development. By learning mathematics, learners develop a 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 competencies acquired by the learner in the early years of education. Learning mathematics will also enhance the learner' competencies in numeracy as a foundation of STEM at the higher levels of Education cycle. Mathematics is also a subject of enjoyment and excitement a it gives learners opportunities for creative work and fun.

SUBJECT GENERAL LEARNING OUTCOMES

By the end of Primary Education, the learner should be able to:

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) Apply properties of geometrical shapes and spatial relationships in real life experiences.
4) Apply data handling skills to solve problems in day-to-day life.
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) Develop values and competencies for a cohesive harmonious living in the society.
9) Manage pertinent and contemporary issues for enhanced inter-personal relationships.

SUMMARY OF STRANDS AND SUB STRANDS

STRANDS	SUB STRANDS	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
Total number of lessons		**150**
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 LearningExperiences	Suggested Key Inquiry qıestion
1.0 Numbers	**1.1 Whole Numbers** (20 Lessons)	By the end of the Sub Strand, the learner should be able to; a) use place value and total value of digits upto millions in real life, b) use numbers up to millions in symbols in real life, c) read and write numbers up to 100,000 inwords in real life, d) order numbers up to 100,000 in real life situations, e) round off numbers up to 100,000 to the nearest thousand in different situations, f) apply squares of whole numbers up to 100 in different situations,	The learner is guided to: ● Identify in purposive groups/pairs or as individuals place value of digits up to millions using place value apparatus. Lower place value charts for learners with short stature. Learners with speech difficulties could identify place value and total value of numbers using residual speech as they are lip-read by peers/ teacher, by pointing, writing, typing or stamping using appropriate assistive technology such as adapted computer and or multipurpose stamps respectively. ● In teams to read numbers up to millions in symbols from number charts/ cards,	How do we read and write numbers in symbols and in words?

		g) apply square roots of perfect squares upto 10,000 in different situations, h) appreciate use of whole numbers in real life situations.	• Read and write numbers up to hundred thousand in words from number charts/ cards. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. Those with postural deformities could be strapped/ splinted on positioning devices such as special seats as they perform the task. • Discuss/share and read numbers up to millions in symbols from number charts or cards, • Discuss with peers and form different numbers by rearranging digits of up to 100,000. Learners with poor motor coordination could also use assistive technology such as head or mouth pointers to mount /arrange number cards or be supported by peers.	

			• Discuss in purposive teams/pairs and round off numbers up to hundred thousand to the nearest 1,000 from number cards and share with other groups. • Multiply a given number by itself and identify the answer as the square of the number, • Work out in purposive groups/pairs or as individuals the square root of a given number and recognize the value which when multiplied by itself results in the given number. Learners with speech difficulties could use alternative and augmentative modes of communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) to express their views. • Play games involving whole number using adapted digital devices or other resources.	

			Adjust glare on the screens of the ICT devices appropriately for learners with epilepsy and those who may experience difficulties in vision.	
Core competencies to be developed: Critical thinking and problem solving: learners form different numbers by rearranging digits of a given number.				
Values: Unity: learners in pairs or groups harmoniously identify total value of digits up to millions using place value apparatus.				
Pertinent and Contemporary Issues (PCIs): Learners work cohesively with peers and identify the square root of a given number as a value which when multiplied by itself results in the given number to enhance Social cohesion.				
Link to other subjects: Learners read and write numbers in words which is enhanced from skills in Languages.				

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) multiply up to a 4-digit number by a 2-digit number in real life situations, b) estimate products by rounding off numbers being multiplied to the nearest ten in real life situations, c) make patterns involving multiplication of numbers not exceeding 1,000 in different situations, d) appreciate use of multiplication in real life.	The learner is guided to: • Multiply up to a 4- digit number by a 2-digit number in purposive pairs/groups or as individuals using; - Fact families - Skip counting - Multiplication chart - Expanded form - Digital device Learners with motor coordination difficulties could use any alternative functional part of the body or appropriate assistive such as adapted pencils to write/ stamp/ mount or arrange numbers and multiplication operation cards. They could also use adapted digital devices to perform the task. • Estimate products using;	How do we multiply numbers?

			- Rounding off factors - Compatibility of numbers. Learners with speech difficulties could use alternative and augmentative modes of communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) to express their views • Make patterns involving multiplication with products not exceeding 1,000 in purposive pairs/groups or as individuals using number cards. Tables charts and working tops or surfaces should be lowered for learners with short stature. • Work in purposive pairs/groups or as individuals with peers and play games involving multiplication using digital/ adapted digital devices or other	

			resources such as number cards. Regulate the screen resolution or light intensity to support learners who are sensitive to light.	

Core Competencies to be developed:
Creativity and imagination: learner makes patterns involving multiplication with products not exceeding 1,000 using number cards.

Values:
Integrity: Learner multiplies up to a 4-digit number by a 2-digit number using skip counting and demonstrate honesty in their results.

Pertinent and Contemporary Issues (PCIs):
Learner develops confidence as they estimate products using rounding off factors that builds self-esteem.

Link to other subjects:
Learner estimates quantities of seeds or fertilizer required for planting different crops as learnt from Agriculture and nutrition.

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) Divide up to a 4-digit number by up to a 3-digit number where the dividend is greater than	The learner is guided to: • Divide up to a 4-digit number by up to a 3-digit number and share the answers where the dividend is greater than the divisor using;	How is division used in real life?

		the divisor in reallife situations, b) Estimate quotients by rounding off the dividend and divisor to the nearest ten in real life situations, c) Perform combined operations involving addition, subtraction, multiplication and division up to 3-digit number, d) appreciate use of division of whole numbers in real life.	- Relationship between multiplication and division - Long method. Learners with speech difficulties could use alternative and augmentative modes of communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) to express their views. • Work out quotients by rounding off the dividend and divisor to the nearest ten. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task. They could also use assistive technology to carry out the activity. • Work out in purposive pairs/groups or individually questions involving two, three or four operations up to 3 digit numbers. Those with postural deformities should be	

			preferentially and appropriately positioned to avoid secondary conditions. • Divide whole numbers using digital/adapted digital devices l or other resources. Adjust glare on the screens of the adapted ICT devices appropriately for learners with epilepsy and those who may be experiencing difficulties in vision.	
Core Competencies to be developed: Communication and collaboration: learner discusses with peers the relationship between multiplication and division using examples.				
Values: Unity: learner works together with others amicably to divide up to a 4-digit number by up to a 3-digit number and share answers.				
Pertinent and Contemporary Issues (PCIs): Learner divides whole numbers using digital devices or other resources as they observe safety.				
Link to other subjects: Learner divides quantities such as ingredients for cooking as learnt from Agriculture and nutrition.				

Strand	Sub-Strand	Specific Learning Outcomes	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) add fractions using LCM in different situations, b) subtract fractions using LCM in different situations, c) add mixed numbers in different situations, d) subtract mixed numbers in different situations, e) identify reciprocal of proper fractions up to a 2-digit number in different situations, f) work out squares of fractions with a numerator of one digit and denominator of 2-digit number different situations, g) express a fraction as a percentage in different situations, h) convert percentage to fractions in different situations,	The learner is guided to: ● Identify LCM of numbers given from number cards. Learners with speech difficulties could use Alternative and Augmentative modes of Communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) to perform the task. • Add and subtract fractions using LCM by listing multiples. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task. They could also use assistive technology to carry out the activity. • Add and subtract mixed fractions by converting the fractions to improper fractions.	1. How do we add or subtract fractions? 2. How is percentage used in day to day life?

		i) appreciate use of fractions in real life.	• Add and subtract mixed fractions by adding and subtracting whole number and fraction parts separately. • List the inverse of numbers between 1 and 10. • Calculate the reciprocal of a number by dividing 1 (one) by the number. Always start by working out the reciprocal of whole numbers before solving the reciprocal of proper fractions up to a 2-digit number. • Discuss in purposive pairs/groups the various reciprocals of a proper fraction. • Calculate squares of fractions through multiplication or practically. • Change fractions to equivalent fractions with denominator 100 through multiplication. • Identify a percentage as a fraction with denominator 100.	

			• Work with peers in purposive pairs/groups or as individuals on how to change fractions to percentages and vice versa. ● Play digital games involving fractions. Regulate the screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and be provided with positioning devices, adjustable seats and working surfaces to enable them access the digital device and play games.	
Core Competencies to be developed: Learning to learn: learner works out the reciprocal of whole numbers before solving the reciprocal of proper fractions.				
Values: Unity: learner works together harmoniously and discuss reciprocals of proper fractions.				
Pertinent and Contemporary Issues (PCIs): Learner cohesively works together with others to calculate squares of fractions through multiplication to enhance social cohesion.				
Link to other subjects: Learner uses fractional parts of a canvas or drawing materials to draw different patterns as learnt from Creative Arts.				

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key InquiryQuestion
1.0 Numbers	**1.5 Decimals** **(**12 Lessons**)**	By the end of the Sub Strand, the learner should beable to; a) identify decimals upto ten thousandths indifferent situations, b) round off decimals up to 3 decimal places indifferent situations, c) convert decimals to fractions and fractions to decimals in different situations, d) convert decimals to percentages and percentages to decimals in different situations, e) add decimals up to4-decimal places indifferent situations, f) subtract decimals up to 4-decimal places indifferent situations, g) appreciate use of decimals in real lifesituations.	The learner is guided to: • Work out place value of decimals up to ten thousandths using place value apparatus. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task. They could also use assistive technology to carry out the activity. • Relate place value of decimals up to ten thousandths to the number of decimalplaces. Learners with speech difficulties could use alternative and augmentative modes of communication-(AAC) (residual speech/ digital devices with text-to-speech application/	How are decimals applicable in reallife?

			point/sign/write) to express their views. • Discuss and round off decimals up to 3 decimal places. Learners with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Change decimals to fractions using a square/rectangular grid. • Change fractions to decimals using a square/rectangular grid. • Add decimals up to 4-decimalplaces using shared place value apparatus. • Subtract in purposive pairs/groups decimals up to 4- decimal places using place value apparatus. • Play games involving decimals using adapted digital devices or other resources. Regulate the	

			screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and be provided with positioning devices, adjustable seats and working surfaces to enable them play games.	
Core Competencies to be developed: Communication and collaboration: learner discusses and relate place value of decimals up to ten thousandths to the number of decimal places.				
Values: Responsibility: Learner adds decimals up to 4-decimal places using place value apparatus and show responsibility by taking care of the apparatus.				
Pertinent and Contemporary Issues (PCIs): Learner adds decimals up to 4-decimal places using place value apparatus and share answers or working strategies with one another as part of Peer education.				
Link to other subjects: Learner acquires new mathematical terms as they discuss and round off decimals up to 3 decimal places as acquired from Languages.				

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key InquiryQuestion
1.0 Numbers	**1.6 Inequalities** (8 Lessons)	By the end of the Sub Strand, the learner should be able to; a) Form simple inequalities in one unknown involving real life situations, b) Simplify inequalities in one unknown involving reallife situations, c) Solve simple inequalities in one unknown involving real life situations, d) Appreciate use of inequalities in real life situations.	The learner is guided to: • Discuss meaning of inequality symbols '> 'and '< '.Learners with speech difficulties could use Alternative and Augmentative modes of Communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. • Form inequalities in one unknown using different operations. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task • Simplify inequalities in one unknown using cards or charts. • Work out simple inequalities involving one unknown. • Play games involving inequalities in purposive groups/pairs or as	How do we solve simple inequalities?

			individuals using digital/adapted digital devices or other resources. Regulate the screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and be provided with positioning devices, adjustable seats and working surfaces to enable them to play games.	
Core Competencies to be developed: Self-efficacy: learner confidently works out simple inequalities involving one unknown.				
Values: Responsibility: as learner works with peers to use IT devices carefully to simplify inequalities.				
Pertinent and Contemporary Issues (PCIs): Learner works together with others harmoniously to form inequalities in one unknown to enhance Social cohesion.				
Link to other subjects: Learner uses new terms used in inequalities to enhance vocabulary in **Languages.**				

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to use place value and total value of digits up to millions	The learner uses place value and total value of digits up to millions correctly and systematically	The learner uses place value and total value of digits up to millions correctly	The learner uses place value or totalvalue of digits up to millions correctly	The learner uses place value or total value of digits up to hundreds of thousands correctly
Ability to read and write numbers in symbols and in words	The learner reads and writes numbers in symbols and in words accurately and fluently.	The learner reads and writes numbers in symbols and in words accurately	The learner reads or writes numbers in symbols or in words accurately	The learner reads or writes numbers in symbols or in words partially accurately
Ability to order and round off numbers up to 100,000	The learner orders and rounds off numbers up to 100,000 correctly and systematically.	The learner orders and rounds off numbers up to 100,000 correctly	The learner orders or rounds off numbers up to 100,000 correctly	The learner orders or rounds off numbers up to 50,000 correctly
Ability to apply squares and square roots of whole numbersup to 100	The learner applies squares and square roots of whole numbers up to 100 correctly and consistently	The learner applies squares and square roots of whole numbers up to100 correctly	The learner applies squares or square roots of whole numbers up to 100 correctly	The learner applies squares or square roots of whole numbers up to 70 correctly
Ability to Multiply up to a 4digit number by a 2-digit number	The learner multiplies up to a 4 digit number by a 2 digit number correctly and consistently	The learner multiplies up to a 4-digit number by a 2 digit number correctly	The learner multiplies up to a 3-digit number by a 2 digit number correctly	The learner multiplies up to a 2-digit number by a 1 digit number correctly

Ability to round off decimals up to 3 decimal places	The learner rounds off decimalsup to 3 decimal places correctly and logically	The learner rounds off decimals up to 3 decimal places correctly	The learner rounds off decimals up to 2 decimal places correctly	The learner rounds off decimals to 1 decimal place correctly
Ability to create patterns involving addition, subtraction and multiplication	The learner creates patterns involving addition, subtraction and multiplication accurately and creatively.	The learner creates patterns involving addition, subtraction and multiplication accurately.	The learner creates patterns involving any two of; addition, subtraction or multiplication accurately	The learner creates patterns involving any one of; addition, subtraction or multiplication accurately
Ability to divide up to a 4-digit number by up to a 3-digit number	The learner divides up to a 4-digit number by upto a 3 digit number correctly and consistently	The learner divides up to a 4-digit number by upto a 3 digit number correctly	The learner divides upto a 4-digit number by up to a 2-digit number correctly	The learner divides up to a 3-digit number by a 1-digit number correctly
Ability to add and subtract fractions using LCM	The learner adds and subtracts fractions using LCM correctly and proficiently	The learner adds and subtracts fractions using LCM correctly	The learner adds or subtracts fractions using LCM correctly	The learner Adds or subtracts fractions using LCM partially correctly
Ability to convert fractions to percentages and percentages to fractions	The learner converts fractions to percentages and percentages to fractions correctly and systematically	The learner converts fractions to percentages and percentages to fractions correctly	The learner converts fractions to percentages or percentages to fractions correctly	The learner Converts fractions to percentages correctly

Ability to Identify decimals up to ten thousandths	The learner identifies decimals up to ten thousandths correctly and fluently	The learner identifies decimals up to ten thousandths correctly	The learner identifies decimals upto thousandths correctly	The learner identifies decimals up to hundredths correctly
Ability to convert decimals to fractions and fractions to decimals	The learner converts decimals to fractions and fractions to decimals correctly and logically	The learner converts decimals tofractions and fractions to decimals correctly	The learner converts decimals to fractions or fractions to decimals correctly	The learner converts decimals to fractions or fractions to decimals partially correctly
Ability to convert decimals to percentages and percentages to decimals	The learner converts decimals to percentages and percentages to decimals correctly and logically	The learner converts decimals to percentages and percentages to decimals correctly	The learner converts decimals to percentages or percentages to decimals correctly	The learner converts decimals to percentages or percentages to decimals partially correctly.
Ability to add and subtract decimals up to 4-decimal places	The learner adds and subtracts decimals up to 4- decimal places correctly and logically	The learner adds and subtracts decimals up to 4- decimal places correctly	The learner adds or subtracts decimals up to 4-decimal places correctly	The learner adds or subtracts decimals up to 4-decimal places partially correctly
Ability to form, simplify and solve inequalities in one unknown	The learner forms, simplifies and solves inequalities in one unknown accuratelyand logically	The learner forms, simplifies and solves inequalities in one unknown accurately	The learner forms, simplifies or solves inequalities in one unknown accurately	The learner forms inequalities in one unknown accurately

STRAND 2.0: MEASUREMENT

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key InquiryQuestions
2.0 Measurement	**2.1 Length (**14 Lessons**)**	By the end of the Sub Strand, the learner should be able to; a) use the millimetre (mm) as a unit of measuring length indifferent situations, b) establish the relationship between the millimetre and centimetres in different situations, c) convert centimetres and millimetres to millimetres in different situations, d) add centimetres and millimetres in different situations, e) subtract centimetres and millimetres in different situations, f) multiply centimetres and millimetres by whole numbers in reallife	The learner is guided to: ● Discuss in purposive groups/pairs and identify the millimetre as a unit of measuring length using a ruler. Learners with speech difficulties could use alternative and augmentative modes of communication-(AAC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. ● Measure length of objects in millimetres using a rule in purposive groups/pairs or as individuals. Learners with manipulation difficulties could use any other alternative functional part of the body or assistive technology to measure lengths using adapted metre	1. Why do we measure distances inday to day life? 2. How do we use length in real life?

		situations, g) divide centimetres and millimetres by whole numbers in real life situations, h) determine the circumference of a circle practically, i) identify the relationship between circumference and diameter in different situations, j) appreciate use of length in real lifesituations.	rule or be assisted by peers, learner support assistants or teacher. • Measure a given length in cm and mm to establish the relationship between mm and cm in purposive groups/pairs or as individuals. • Convert mm to cm and cm to mm when measuring lengths of different objects and comparing results. • Measure lengths of objects in the environment. • determine lengths In mm and cm in addition, subtraction,multiplication and division and discuss the answers in purposive groups/pairs or as individuals. • Sketch in purposive groups/pairs or as individuals the circumference, diameter and radius of a circle practically. • Measure the circumference of a circle practically in purposive	

			groups/pairs or as individuals. • Divide circumference by diameter to get pi (π). • Play games involving length in centimetres and millimetres in purposive groups/pairs or as individuals using digital/adapted digital devices or other resources. Regulate the screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and be provided with positioning devices, adjustable seats and working surfaces to enable them access digital devices to play games.	
Core Competences to be developed: **Creativity and imagination**: learner sketches the circumference, diameter and radius of a circle practically.				
Values: **Unity**: learner works amicably with peers to determine lengths in centimetres and millimetres in addition, subtraction, multiplication and division and discuss the answers.				

Pertinent and Contemporary Issues (PCIs): Learner chooses appropriate units for measuring lengths of different objects in the environment as enhanced from Environmental Education.
Link to other subjects: Learner handles objects with care when measuring lengths of different objects in the school compound for play activities in Creative Arts.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question
2.0 Measurement	**2.2 Area** (6 Lessons)	By the end of the Sub Strand, the learner should be able to; a) work out area of triangles in square centimetres (cm^2), b) work out area of combined shapes involving squares, rectangles and triangles in cm^2, c) estimate the area of circles by counting squares, d) appreciate the use of cm^2 in working out area in real life.	The learner is guided to: ● 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 in purposive groups/pairs or as individuals. Learners with manipulation difficulties could use any other alternative functional part of the body or assistive technology such as adapted measurement tools or be physically supported by peers or teacher.	How do we use area in real life situations?

			• Work out in purposive groups/pairs or as individuals the area of triangles in cm^2 using the relationship between a rectangle and a triangle (area of a triangle is equal to ½ area of a rectangle or square. A = ½ (lx w). Learners with short stature should be preferentially and appropriately positioned in this activity and the working tops or tables should be lowered for them. • Sketch a circle in purposive groups/pairs or as individuals on a unit square grid and count the full squares to estimate the area of circles and compare answers. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to	

			perform the task. • Prepare own combined shapes involving rectangles, squares, triangles and ask other peers to determine the area, • Play games in purposive groups/pairs or as individuals involving area using digital tools or other resources. Regulate the screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and be provided with positioning devices, adjustable seats and working surfaces to enable them access digital devices to play games.	
Core Competencies to be developed: **Creativity and imagination**: learner works out the area of triangles in cm^2 using the relationship between a rectangle and a triangle.				

Values: **Love**: learner sketches a circle on a unit square grid and count the full squares to estimate the area of circles and compare answers with one another.
Pertinent and Contemporary Issues (PCIs): Learner confidently establishes that the area of a triangle is equal to a half of the areaof a rectangle or a square when the rectangle or the square is divided by a diagonal to enhance self-esteem.
Link to other subjects: Learner explores their environment to calculate area of different places such as play fields within the community as enhanced by Social Studies.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Questions**
2.0 Measurement	**2.3 Capacity (**6 Lessons**)**	By the end of the Sub Strand, the learner should be able to; a) identify the relationship among cubic centimetres (cm^3), milliliters and liters in real life, b) convert liters to milliliters in different situations, c) convert capacity in milliliters to liters in different situations,	The learner is guided to: • Work out the relationship between cm^3, milliliters and liters through measuring practically in purposive groups/pairs or as individuals. Learners with poor motor coordination or missing limbs could use adapted writing materials or appropriate adapted digital devices to perform the task.	1. How can we measure capacity? 2. How is capacity applicable in real life?

		d) appreciate use of cm^3 and liters in measuring capacity in real life.	• Measure capacity in milliliters and liters in purposive groups/pairs or as individuals, discuss answers and share with others. Learners with manipulation difficulties could use any other alternative functional part of the body to hold adapted containers with padded handles or be physically assisted by peers or teacher to perform the activity. • Change capacity in litres to millilitres using containers from the environment by comparing sizes of different containers. • Work out conversions of capacity of milliliters to liters. • Play games in purposive groups/pairs or as individuals involvingcapacity using containers of different	

			capacities. Create a conducive environment and adequate space as they play games especially for learners using mobility devices and ensure safety standards are upheld for all learners.	
Core Competencies to be developed: Critical thinking and problem solving: learner works out the relationship between cm^3, milliliters and liters in measuring capacities practically.				
Values: Peace: learner works together with others harmoniously to measure capacity in milliliters and liters and agree on answers.				
Pertinent and Contemporary Issues (PCIs): Learner changes capacity in litres to millilitres using containers from the environment as part of Environmental education.				
Links to other subjects: Learner takes accurate measurements of liquids using different containers from the immediate environment as part of Science and Technology.				

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested LearningExperiences**	**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) identify the tonne as a unit for measuring mass in real life,	The learner is guided to: ● Discuss tonne as a unit of measuring mass in purposive groups/pairs or as individuals. Those with	1. How can we measure large amounts of mass?

		b) identify items measured in tonnes in real life, c) identify the relationship between the kilogram and the tonne, d) estimate mass in tonnes in differentsituations, e) convert kilograms totonnes and tonnes to kilograms in real lifesituations, f) add tonnes and kilograms in real lifesituations, g) subtract tonnes and kilograms in real life situations, h) multiply tonnes and kilograms by whole numbers in real life situations, i) divide tonnes and kilograms by wholenumbers in real life situations, j) appreciate use of the kilogram and tonne in measuring mass.	speech difficulties could use alternative and augmentative modes of communication-(acc) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. • Discuss in purposive pairs or groups items in the environment such as loaded lorries, whose mass may be measured in tonnes. Allow more time for learners with speech difficulties to express their views during the discussion. • Establish the relationship between the kilogram and the tonne (1000kg =1 tonne) in purposive groups/pairs. • Estimate masses in tonnes of various objects found in the environment in purposive groups/pairs or as individuals. • Change kilograms to tonnes	

			and tonnes to kgs. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task • Determine mass of items in tonnes and kilograms using different operations involving addition, subtraction, multiplication and division in purposive groups/pairs or as individuals. • Use digital weighing machines to measure masses of different items in purposive groups/pairs or as individuals.	
Core Competencies to be developed: **Digital literacy**: learner uses digital weighing machines to measure masses of different items.				
Values: **Integrity**: learner honestly determines mass of items kilograms using different operations involving addition, subtraction, multiplication and division.				

Pertinent and Contemporary Issues (PCIs): Learner discusses with others items in the environment such as loaded lorries, whose mass may be measured in tonnes and their impact on roads as enhanced in Environmental education.
Link to other subjects: Learner discusses with others about transit trucks that carry grains in tonnes to different places as learnt from Social Studies.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key InquiryQuestion
2.0 Measurements	**2.5 Time** (10 Lessons)	By the end of the sub-strand, the learner should be able to; a) identify time in a.m. and p.m. in day-to-day life experiences, b) write time in a.m. and p.m. in day-to-day life, c) relate time in a.m. and p.m. to the 24h clock system, d) convert time from 12h to 24h and 24h to 12h system, e) interpret travel timetable in different situations,	The learner is guided to: ● Discuss in purposive groups/pairs time in a.m. And p.m. From digital and analogue clocks. Learners with speech difficulties could use alternative and augmentative modes of communication-(acc) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. ● Determine time in a.m. And P.m. From digital and analogue clocks in purposive groups/pairs or	How do we read and tell time?

		f) appreciate use of time in both 12h and 24h systems.	as individuals. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task • Equate time in a.m. And p.m.to the 24h clock system using a chart. • Change time from the 12h to 24h system and 24h to 12h using a chart. • Interpret travel timetables in purposive groups/pairs or as individuals to create travel schedules for different events. • Determine time durations of traveling using travel timetables within the country. • Check local time using digital clock or analogue in 12h and 24 h systems in purposive groups/pairs.	

Core Competencies to be developed: **Learning to learn**: learner determines time in a.m. and p.m. from digital and analogue clocks.
Values: **Integrity**: Learner observes time in various activities and be punctual.
Pertinent and Contemporary Issues (PCIs): Learner discusses the transit trucks that carry grains in tonnes to different places as learnt from Social Studies. Learners determine time durations of travelling using travel timetables within the country as enhanced in Citizenship.
Link to other subjects: Learn records time taken to perform in different games such as athletics as done in Creative Arts.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question**
2.0 Measurements	**2.6 Money** (8 lessons)	By the end of the Sub Strand, the learner should be able to; a) prepare simple budget in different situations, b) determine buying and selling prices of different items in the community, c) work out profit from sales of different items in the community, d) calculate loss realized from sales of different items in the	The learner is guided to: • Identify different shopping items in the community or at home especially food items and prepare a simple budget in purposive groups/pairs or as individuals. Learners with speech difficulties could use alternative and augmentative modes of communication-(acc) (residual speech/ digital devices with text-to-speech	How can you make profit in a business?

		community, e) identify types of taxes in different situations, f) appreciate use of money in real life situations.	application/ point/sign/write) during the discussion. • Discuss in purposive groups/pairs the meaning of buying and selling price. • Determine buying and selling prices of different items in the community. Learners with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task. • Discuss the meaning of profit and loss in real life situations and share with peers. • Discuss and determine profit and loss by practicing buying and selling from the classroom model shop. Allow more time for learners with speech difficulties to express their views during the discussion. • Discuss income and value added tax (vat) from receipts	

			issued by shops and retailers asa form of tax. • Use it devices/adapted it devices or other resources to explore more on money. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	
Core Competencies to be developed: **Communication and collaboration**: Learner discusses with others the meaning of profit and loss in real life situations and share with peers.				
Values: **Integrity**: Learner honestly determines buying and selling prices of different items in their classroom model shop.				
Pertinent and Contemporary Issues (PCIs): Learner discusses with others income and value added tax (VAT) as a form of tax as part of Financial literacy.				
Links to other subjects: Learner participates in making budgets for buying food at home as learnt from Agriculture and nutrition.				

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to convert centimetres to millimetres and millimetres to centimetres	The learner converts centimetres to millimetres and millimetres to centimetres correctly and proficiently	The learner converts centimetres to millimetres and millimetres to centimetres correctly	The learner converts centimetres to millimetres or millimetres to centimetres correctly	The learner converts centimetres to millimetres correctly
Ability to add, subtract, multiply and divide centimetres and millimetres	The learner adds, subtracts, multiplies and divides centimetres and millimetres correctly and proficiently	The learner adds, subtracts, multiplies and divides centimetres and millimetres correctly	The learner adds, subtracts, multiplies or divides centimetres or millimetres correctly	The learner adds or subtracts centimetres ormillimetres correctly
Ability to measure the circumference of a circle	The learner measures the circumference of a circle correctly and efficiently	The learner measures the circumference of a circle correctly	The learner measures the circumference of a circle less efficiently	The learner measures the circumference of a circle partially correctly
Ability to work out area of triangle and combined shapes	The learner works out area of triangle and combined shapes correctly and systematically	The learner works out area of triangle and combined shapes correctly	The learner works out area of triangle or combined shapes correctly	The learner works out area of triangle correctly
Ability to identify the relationship among cm^3, millilitres and	The learner identifies the relationship among cm^3, millilitres andlitres	The learner identifies the relationship among cm^3, millilitres	The learner identifies the relationship between millilitres and litres	The learner Identifies the relationship between millilitres

litres	correctly and logically	and litres correctly	correctly	andlitres partially correctly
Ability to convert litres to millilitres and millilitres to litres	The learner converts litres to millilitres and millilitres to litres correctly and logically	The learner converts litres to millilitres and millilitres to litres correctly	The learner converts litres to millilitres or millilitres to litres correctly	The learner converts litres to millilitres correctly
Ability to identify the relationship between the kilograms and the tonne and converts tonnes to kilograms and kilograms to tonnes	The learner identifies the relationship between the kilograms and the tonne and converts tonnes to kilograms and kilograms to tonnes correctly and logically	The learner identifies the relationship between the kilograms and the tonne and converts tonnes to kilograms and tonnes to kilograms correctly	The learner identifies the relationship between the kilograms and the tonne or converts tonnes to kilograms or tonnes to kilograms correctly	The learner identifies the relationship between the kilograms and the tonne correctly
Ability to add, subtract, multiply and divide tonnes and kilograms	The learner adds subtracts, multiplies and divides tonnes and kilograms accurately and proficiently	The learner adds subtracts, multiplies and divides tonnes and kilograms accurately	The learner adds subtracts, multiplies or divides tonnes or kilograms accurately	The learner adds or subtracts tonnes or kilograms accurately
Ability to identify and write time in a.m. and p.m.	The learner identifies and writes time in a.m. and p.m. accurately and consistently	The learner identifies and writes time in a.m. and p.m. accurately	The learner identifies or writes time in a.m. or p.m. accurately	The learner identifies time in a.m. or p.m. accurately
Ability to convert timefrom 12h to 24h and 24h to 12h system and interpret travel	The learner converts time from 12h to 24h and 24h to12h system and Interprets travel	The learner converts time from 12h to 24h and 24h to12h system and Interprets travel	The learner converts time from 12h to 24h or 24h to 12h system or Interprets travel timetables accurately	The learner converts time from 12h to 24h system or Interprets travel timetables

timetables	timetables accurately and logically	timetables accurately		partially accurately
Ability to prepare a simple budget and determine buying and selling prices	The learner prepares a simple budget and determines buying and selling price accurately and comprehensively	The learner prepares a simple budget and determines buying and selling price accurately	The learner prepares a simple budget or determines buying or selling price accurately	The learner prepares a simple budget or determines buying or selling price partially accurately
Ability to work out profit and loss from sales and identify types of taxes	The learner works out profit and loss from sales and Identifies types of taxes accurately and consistently	The learner works out profit and loss from sales and Identifies types of taxes accurately	The learner works out profit or loss from sales or Identifies types of taxes accurately	The learner works out profit or loss from sales or Identifies types of taxes partially accurately

STRAND 3.0: GEOMETRY

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question
3.0 Geometry	**3.1 Lines** (6 Lessons)	By the end of the sub- strand, the learner should be able to; a) Draw parallel lines in different situations, b) Bisect lines by construction, c) Construct perpendicular lines indifferent situations, d) Appreciate use of linesin daily life.	The learner is guided to: • Construct parallel lines using geometrical instruments and other writing materials in purposive groups/pairs or as individuals. Learners with poor motor coordination or missing limbs could use adapted geometrical instruments or appropriate adapted digital devices to perform the task. Learners with poor motor coordination or missing limbs could also be supported by peers or teachers to perform the task. ● Bisect lines using geometrical instruments in purposive groups/pairs or as individuals. Tables, charts and working tops or surfaces should be lowered for learners with	Why do we need to draw lines?

			short stature. • Draw/stamp/trace perpendicular lines using geometrical instruments in purposive groups/pairs. • Share digital/adapted digital devices and other resources to draw parallel lines. Regulate the screen resolution or light intensity to support learners who are sensitive to light. Those with postural defects could be preferentially positioned and could be supported with positioning devices, adjustable seats and working surfaces to enable them access displayed content.	
Core Competencies to be developed: **Creativity and imagination**: as learner bisects lines by construction using ruler and compasses.				
Values: **Responsibility**: Learner carefully shares digital devices and other resources to draw parallel lines.				
Pertinent and Contemporary Issues (pcis): Learner exercises caution as they use geometrical instruments in construction of parallel lines as they observe safety measures.				

Link to other subjects: Learner constructs lines that can be used in creative drawing as part of Creative Arts.				
Strand	**Sub Strand**	**Specific Learning outcomes**	**Suggested learningexperiences**	**Suggested key inquiryquestions**
3.0 **Geometry**	**3.2 Angles** (6 Lessons**)**	By the end of the Sub Strand, the learner should be able to; a) identify angles on a straight line at a point in different situations, b) measure angles on a straight line at a point in different situations, c) work out sum of angles on a straight line in different situations, d) determine the sum of angles in rectangles and triangles , e) construct equilateral, right angled and isosceles triangles, f) measure the interior angles of equilateral, right angled and isosceles triangles,	The learner is guided to: ● Discuss angles on a straight line using concrete objects that have straight edges in purposive groups/pairs or as individuals. Learners with speech difficulties could use Alternative and Augmentative modes of Communication-(ACC) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. ● Draw/ stamp/ trace a line that cuts the straight line to form an angle. Measure and write the size(s) of angles formed. Compare the sizes of angles with	How do we use angles in real life?

		g) appreciate use of angles in real life.	your classmates. Learners with poor motor coordination or missing limbs could use adapted drawing materials or adapted digital devices to perform the task. • Work out the sizes of various angles on a straight line in purposive groups/pairs or as individuals. • Practically establish the sum of angles in a triangle and rectangles using different objects in the environment in purposive groups/pairs or as individuals. • Identify and draw/trace equilateral, right angled and isosceles triangles using geometrical instruments. • Practically establish the sum of the interior angles in	

			a rectangle and triangle in purposive groups/pairs or as individuals. • Use geometrical instruments or digital/adapted digital resources to practice drawing different lines and angles. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	
Core Competencies to be developed: Self-efficacy: Learner confidently and practically establishes sum of the interior angles in a rectangle and triangle.				
Values: Unity: Learner works harmoniously with others to compare the sizes of angles with their classmates.				
Pertinent and Contemporary Issues (PCIs): Learner practically establishes the sum of angles in a triangle and rectangles from different objects in the environment as enhanced in Environmental education.				
Link to other subjects: Learner draws lines and angles that can be used in drawing and painting in Creative Art.				

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key InquiryQuestion
3.0 Geometry	**3.3 3-D Objects** (6 Lessons**)**	By the end of the Sub Strand, the learner shouldbe able to; a) identify vertices, faces and edges in cuboids and cubes in different situations, b) identify faces and edges of cylinders in different situations, c) describe plane figures in 3- d objects in the environment, d) appreciate use of 3-D objects in real life.	The learner is guided to: • Discuss and collect 3-D objects and safely keep them as part of their role in environmental conservation in purposive groups/pairs or as individuals. Learners with speech difficulties could use Alternative and Augmentative modes of Communication-(ACC) during the discussion. • Identify in purposive groups/pairs and relate cuboids and cylinders in the environment. • Open up nets of cuboids, cubes and cylinders and sketch the layout in purposive groups/pairs or as individuals. Learners with manipulation difficulties could use alternative functional parts of the body or appropriate assistive devices or be assisted by peers, learner	How do we use containers in daily life?

			support assistants or teacher to perform the task. • Discuss the rectangular, square and circular shapes on the nets in purposive groups/pairs or as individuals. • Manipulate 3- D objects using containers or digitally using IT devices/adapted IT devices in purposive groups/pairs or as individuals. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	
Core Competencies to be developed: Creativity and imagination; Learner opens up nets of cuboids, cubes and cylinders.				
Values: Learner discusses with others and collect 3-D objects and safely keep them as part of their role in environmental conservation to enhance Patriotism.				
Pertinent and Contemporary Issues (PCIs): Learner discusses with others rectangular, square and circular shapes on the nets and respect each other's views as part of social cohesion.				
Link to other subjects: Learner discusses with others the differences between 3-D objects in terms of faces, edges and vertices in drawing and improve language skills.				

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to construct parallel and perpendicular lines	The leaner constructs parallel and perpendicular lines accurately and systematically	The leaner constructs parallel and perpendicular lines accurately	The leaner constructs parallel or perpendicular lines correctly	The leaner constructs parallel lines correctly
Ability to bisect lines through construction, identify and measure angles on a straight line at a point	The learner bisects lines through construction, Identifies and measures angles on a straight line at a point correctly and consistently	The learner bisects lines through construction, Identifies and measures angles on a straight line at a point correctly.	The learner bisects lines through construction, Identifies or measures angles on a straight line at a point correctly.	The learner bisects lines through construction or Identifies angles on a straight line at a point correctly
Ability to work out sum of angles on a straight line, rectangles and triangles	The learner works out sum of angles on a straight line, rectangles and triangles accurately and correctly	The learner works out sum of angles on a straight line, rectangles and triangles accurately	The learner works out sum of angles on a straight line, rectangles or triangles accurately	The learner works out sum of angles on a straight line accurately
Ability to construct equilateral, right angled and isosceles triangles and	Constructs equilateral, right angled and isosceles triangles and measure their interior	Constructs equilateral, right angled and isosceles triangles and measure their interior	Constructs equilateral, right angled or isosceles triangles or measure their interior angles accurately	Constructs equilateral, right angled or isosceles triangles accurately.

measure their interior angles	angles accurately and systematically	angles accurately		
Ability to identify vertices, faces and edges in cuboids and cubes	The learner identifies vertices, faces and edges in cuboids and cubes correctly and systematically	The learner identifies vertices, faces and edges in cuboids and cubes correctly	The learner identifies any two of; vertices, faces or edges in cuboids or cubes correctly	The learner identifies any one of; vertices or faces or edges in cuboids or cubes correctly
Ability to identify faces and edges of cylinders	The learner identifies and edges of cylinders correctly and systematically	The learner identifies faces and edges of cylinders correctly	The learner identifies faces or edges of cylinders correctly	The learner identifies faces or edges of cylinders partially correctly.

STRAND 4.0: DATA HANDLING

Strand	Sub Strand	Specific LearningOutcomes	Suggested LearningExperiences	Suggested Key InquiryQuestions
4.0 Data Handling	**4.1 Bar Graphs (**10 Lessons**)**	By the end of the Sub Strand, the learner should be able to; a) draw a frequency table of real-life situation data, b) represent data from real life situations using pictographs, c) represent data from real life situation through piling, d) represent data from real life situations using bar graphs, e) interpret information from bar graphs, f) appreciate use of bar graphs in real life.	The learner is guided to: • Discuss in purposive groups/pairs or as individuals and collect data on identified topic from immediate environment and organize the data in a frequency table. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistants or teacher to perform the task. • Collect data, discuss and organize it in pictographs in purposive groups/pairs or as individuals. • Pile similar objects such as match boxes vertically to represent data. • Discuss in purposive	How can bar graphs be used in real life situations?

			groups/pairs and organize data in form of bar graphs. • Discuss in purposive groups/pairs or as individuals informationrepresented on bar graphs and explain what it represents. Learners with speech difficulties could use alternative and augmentative modes of communication-(acc) (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. • Use digital/adapted digital devices or other resources to draw bar graphs and other charts to present data in purposive groups/pairs or as individuals. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	

Core Competencies to be developed: **Creativity and imagination**: as learner discusses with others and collect data and organize it using pictographs.
Values: **Integrity**: Learner piles similar objects such as match boxes vertically to honestly represent data.
Pertinent and Contemporary Issues (PCIs): Learner collects data on identified topic from immediate environment to address community issues as part of non-formal education.
Link to other subjects: Learner gathers information on any items in the environment that will enhance learning in Science and technology.

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to draw a frequency table	The learner draws a frequency table accurately with all details	The learner draws a frequency table accurately	The learner draws a frequency table accurately with most details	The learner draws a frequency table with minimal details
Ability to represent data using pictographs, piling and bar graphs	The learner represents data using pictographs piling and bar graphs correctly and accurately	The learner represents data using pictographs piling and bar graphs correctly	The learner represents data using pictographs piling or bar graphs correctly	The learner represents data using pictographs or piling partially correctly
Ability to interpret information from bar graphs	The learner interprets information from bar graphs correctly and comprehensively	The learner interprets information from bar graphs correctly	The learner interprets information from bar graphs with most details	The learner interprets information from bar graphs with minimal details

APPENDICES

APPENDIX I: SUGGESTED RESOURCES

Strand	Sub Strand	Resources
NUMBERS	Whole numbers	Place value apparatus, number charts, number cards, multiplicationtable, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Multiplication	Multiplication tables, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Division	Multiplication tables, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Fractions	Equivalent fraction board, circular and rectangular cut outs, counters, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Decimals	Place value charts, number cards, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
MEASUREMENT	Length	Metre rule, 1metre ticks, tape measure, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Area	Square cut outs, 1cm squares, 1m squares, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Capacity	Tea spoons, containers of different sizes, water, sand, soil, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,

	Mass	Tea spoons, soil or sand, manual/electronic weighing machine, beambalance, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Time	Analogue and digital clocks, digital watches, stop watches, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Money	Price list, classroom shop, electronic money tariff charts, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
GEOMETRY	Lines	Chalk board ruler, 30cm ruler, straight edges, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	Angles	Unit angles, protractors, rulers, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
	3-D objects	Cubes, cuboids, cylinders, pyramids, spheres, cut outs of rectangles,circles, and triangles of different sizes, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
DATA HANDLING	Bar graphs	Bar graph worksheets, data graph worksheets, data samples fromdifferent sources, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,
ALGEBRA	Inequalities	Digital inequality worksheets; greater than, less than or equal to,sorting cards, adapted writing materials such as heavy gauge papers and pens/pencils in grip, universal cuffs, splints,

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,
- Adapted digital devices with larger screens, touch screens, expanded key boards (with key guards, trackballs, larger keys, sticky keys, embedded touch pads), appropriate applications (for text creation, text-to-speech conversion, speech recognition, eye-tracking for operation), ergonomic and head operated mouse, footboards among others among others.

APPENDIX II: SUGGESTED ASSESSMENT METHODS AND TOOLS

a) Written tests and quizzes
b) Rating scales
c) Projects
d) Observation Schedules
e) Portfolios
f) Assessment Rubric
g) Questionnaires

NOTE: Assessment methods may be modified to accommodate a learner's diverse needs so that he/she can participate and achieve the learning outcomes. The table below shows how modes of assessment may be adapted for learners with physical impairment:

S/No	**Assessment Methods/Modes And Suggested Adaptations**	
	Methods	**Suggested Adaptations**
1.	Written assessment	• Typing, stamping or signing • Description of the task as a scribe or learner support assistant writes Audio visual recording of the learner as he/she makes oral responses • Provision of Adapted digital devices and writing/drawing resources • Adjustment of time according to individual needs • Providing illustrations to be interpreted for activities that involve drawing • Use of worksheets

2.	Oral or Aural assessment	• Written responses • Use of (ACC) (Augmentative and Alternative modes of Communication) e.g. talking books, gestures, body movement, sign language, alphabet cards, facial expressions • Adjustment of time according to individual needs
3.	Portfolio	• Use of E-Portfolio • Provision of physical support • Use of assistive technology • Provision of Adapted digital devices and writing/drawing resources • Adjustment of time according to individual needs • Description of how to carry out a practical activity while being audio/video recorded
4.	Practical assessment/ Experiments	• Provision of physical support • Provision of Adapted resources (learner specific) • Description of how to carry out a practical activity while being audio/video recorded • Adjustment of time according to individual needs • Rest intervals according to individual needs • Environmental adaptation
5.	Project	• Provision of physical support • Provision of Adapted resources (learner specific) • Description of how to carry out a practical activity while being audio/video recorded • Adjustment of time according to individual needs • Environmental adaptation

APPENDIX III: CSL GUIDELINES FOR UPPER PRIMARY (GRADE 4-6)

At this level, the goal of the CSL activity is to provide linkages between concepts learnt in the various Learning Activities and the real life experiences. Learners begin to make connections between what they learn and the relevance to their daily life. CSL is hosted in the Social studies learning area. The implementation of the CSL activity is a collaborative effort where the class teacher coordinates and works with other subject teachers to design and implement the integrated CSL activity. Though they are teacher-guided, the learners should progressively be given more autonomy to identify problems and come up with solutions. The safety of the learners should also be taken into account when selecting the CSL activity. The following steps for the integrated CSL activity should be staggered across the school terms:

Steps in carrying out the integrated CSL activity
1) Preparation ● Map out the targeted core competencies, values and specific learning areas skills for the CSL activity ● Identify resources required for the activity (locally available materials) ● Stagger the activities across the term (Set dates and time for the activities) ● Communicate to learners, parents/caregivers/guardians, school administration, teachers and other relevant stakeholders in the school community ● Identify and develop assessment tools
2) Implementation CSL Activity ● Assigning roles to learners. ● Ensure every learner actively participates in the activity ● Observe learners as they carry out the CSL activity and record feedback**.** ● Use an appropriate assessment tool to assess both the process and the product (Assess learner's work from the beginning to the end product) ● Assess the targeted core competencies, values and subject skills.

3) Reflection on the CSL Activity

Conduct a self-evaluation session with learners on the integrated CSL activity undertaken by discussing the following:

- what went well and why
- what did not go well and why,
- what can be done differently next time
- what they have learnt.

There will be **one** integrated CSL activity that will be conducted **annually.** The thematic areas for the integrated CSL activity will be derived from the broader categories of the PCIs and concepts from the various Learning Areas. Teachers are expected to vary the themes yearly to allow learners to address different PCIs within their contexts. There should be a linkage between the skills from the learning areas and the themes.

The integrated CSL activity will take a Whole School Approach (WSA) where the entire school community is involved (learners, parents/caregivers/guardians, school administration, teachers). Parents/caregivers/guardians are key stakeholders in the planning and execution of the CSL activity. Although the teacher takes the lead role in the planning and integration of the CSL activity, learners will be expected to participate actively in the whole process.

The CSL activity provides an opportunity for the development of core competencies and the nurturing of various values. The teacher is expected to vary the core competencies and values emphasised in the activity yearly.

ASSESSMENT OF THE CSL ACTIVITY

Assessment of the integrated CSL activity will focus on 3 components namely: skills from various learning areas applied in carrying out the activity, and core competencies and values demonstrated. Assessment should focus on both the process and end product of the CSL activity. The teacher will assess learners in groups using various tools such as an observation schedule, checklist or rating scale or any other appropriate tool.