REPUBLIC OF KENYA
MINISTRY OF EDUCATION

PRIMARY SCHOOL CURRICULUM DESIGN

MATHEMATICS
GRADE 4

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 four curriculum designs for learners with physical impairment build on competencies attained by learners at Grade three. 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,
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 four curriculum furthers implementation of the CBC from Grade three in Primary level. 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 four curriculum designs for learner 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 four and prepare them for smooth transition to Grade five. 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 four curriculum designs for learner with physical impairment with 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 four curriculum designs for learners with 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 four and preparation of learners with physical impairment for transition to Grade five.

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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 instill 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 per week
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**

LEVEL LEARNING OUTCOMES

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) 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 society
d) Develop one's interests and talents for personal fulfilment
e) Make informed decisions as local and global citizens of a diverse, democratic society in an interdependent 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) Appreciate the country's rich, diverse cultural heritage for harmonious living

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 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 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 as 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

S/ No	Strand	Sub Strand	Suggested Number of Lessons
1	1.0 Numbers	1.1 Whole Numbers	10
		1.2 Addition	8
		1.3 Subtraction	8
		1.4 Multiplication	8
		1.5 Division	8
		1.6 Fractions	6
		1.7 Decimals	10
		1.8 Use of letters	6
2	2.0 Measurement	2.1 Length	10
		2.2 Area	8
		2.3 Volume	8
		2.4 Capacity	8
		2.5 Mass	8
		2.6 Time	10
		2.7 Money	8
3	3.0 Geometry	3.1 Position and Direction	5
		3.2 Angles	5
		3.3 Plane Figures	6
4	4.0 Data Handling	4.1 Data	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 Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.1 Whole Numbers** (10 Lessons)	By the end of the sub strand, the learner should be able to; a) use place value and total value of digits up to tens of thousands in daily in daily life situations, b) read and write numbers up to 10,000 in symbols in real life situations, c) read and write numbers up to 1,000 in words in day to day activities, d) order numbers up to 1,000 in different situations,	The learner is guided to: • Share tasks in identifying place value of up to tens of thousands using place value apparatus in purposive pairs and groups. Learners with speech difficulties could identify orally / by writing/ stamping / through total communication / use appropriate adapted digital devices or typing the place value of numbers using any functional part of the body • Jointly with others identify total values of digits up to ten thousand. Lower total value charts for learners with short stature and those on positioning devices. • Read numbers up to 10,000 in symbols in real life situations/ read/point and write/stamp/ mount/ type numbers up to 10,000 in	1. How do you write numbers in words? 2. How do we determine the place value of a digit in a number?

		e) round off numbers up to 1,000 to the nearest ten in different situations, f) identify factors of numbers up to 50 in different contexts, g) identify multiples of numbers up to 100 in different situations, h) apply even and odd numbers up to 100 in different situations, i) make patterns involving even and odd numbers in real life situations, j) represent Hindu Arabic numerals using Roman numerals up to 'X' in different situations,	symbols. Those with speech difficulties could use augmentative and alternative communication modes (aac) to perform the task. • Team up in purposive pairs or groups to read and write numbers up to 1,000 in words from a number chart. Learners with manipulation difficulties could use adapted writing materials or appropriate assistive technology. Those with postural deformities could be strapped/ splinted on positioning devices such as special seats as they perform the task. • Work in purposive pairs/ groups and arrange numbers up to 1,000 in order from smallest to largest and largest to smallest using number cards and share with other groups. Those with poor motor coordination could use an assistive technology to arrange the numbers. • Team up in purposive pairs and groups to round off numbers up to 1,000 to the nearest ten and share	

		k) appreciate use of whole numbers in real life situations.	with other groups. • Jointly with peers identify factors/divisors of numbers up to 50 and share with other groups. • Team up in purposive pairs/groups to identify multiples of numbers up to 100 and share with other groups. • Team up to identify in purposive pairs/groups Even and odd numbers up to 100 and share with others. • Team up with peers in purposive pairs/groups to use number cards to make patterns involving even and odd numbers, • Jointly with peers write Hindu Arabic numerals using Roman numerals up to 'X' using number charts. Read/ point and write/stamp/ mount/ type roman numbers up to x using any functional part of the body or appropriate Assistive technology with physical support. • Team up with peers to use adapted digital devices to play digital games involving whole	

			numbers in purposive pairs/ groups. The digital devices used should be adapted with special accessibility features and software with appropriately adjusted screen light intensity/glare or volume vis-a-vis individual learner's unique characteristics/ needs.	

Core Competencies to be developed:

- Critical thinking and problem solving: learner uses place value apparatus to identify place value of numbers up to tens of thousands.
- Learning to learn: learner rounds off numbers up to 1,000 to the nearest ten and share experiences with others.

Values:

- Respect: learner takes turn to represent Hindu Arabic numerals using Roman numerals up to 'X' using number charts.
- Unity: learner works amicably with peers to identify multiples of numbers up to 100 and share with others.

Pertinent and Contemporary Issues (PCIs):

Learner works harmoniously in identifying factors/divisors of numbers up to 50 to enhance social cohesion.

Link to other subjects

The learner is able to relate rounding off numbers up to 1,000 to the nearest ten to rounding off distances on a map in Social Studies.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.2 Addition** (8 Lessons)	By the end of the sub strand, the learner should be able to; a) add up to two 4-digit numbers with single regrouping up to a sum of 10,000 in different situations, b) add up to two 4-digit numbers with double regrouping up to a sum of 10,000 in real life situations, c) estimate sum by rounding off numbers to the nearest ten in different situations, d) create patterns involving addition up to a sum of 10,000 in real life situations, e) appreciate application of addition of numbers	**The learner is guided to:** • Jointly work with others to add up to two 4-digit numbers with single regrouping up to a sum of 10,000 using number cards, charts or place value apparatus. Those 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. • Team up in purposive pairs and groups with others to add up to two 4-digit numbers with double regrouping up to a sum of 10,000 in real life situations. Learners with postural difficulties could have tables or worktops heights appropriately adjusted.	1. How do you use addition in real life? 2. How do you make number patterns involving addition?

		in real life situations.	• Discuss in purposive pairs and groups and estimate sum by rounding off numbers to be added to the nearest ten in different situations. Those 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. • Jointly with peers generate patterns involving addition up to a sum of 10,000. 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. • Play digital games involving addition in purposive pairs and groups. 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 successfully uses number cards, place value charts or place value apparatus to add up to two 4- 4-digit numbers with single regrouping with the sum not exceeding 10,000.
- Creativity and imagination: learner in groups generates patterns involving addition up to a sum of 10,000.

Values:

Unity: learner works jointly to add up to two 4-digit numbers with double regrouping up to a sum of 10,000 in real life situations.

Pertinent and Contemporary Issues (PCIs):

- Learner amicably teams up in adding up to two 4-digit numbers with single regrouping up to a sum of 10,000 to enhance social cohesion.
- Learner supports one another in generating patterns involving the addition of numbers up to a sum of 10,000 to enhance peer education.

Link to other subjects:

Learner relates adding up to two 4-digit numbers with single regrouping to adding quantities in Science and Technology.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.3 Subtraction** (8 Lessons)	By the end of the sub strand, the learner should be able to:	The learner is guided to: • Work with peers in purposive groups/pairs to subtract numbers up to 4-digit numbers without regrouping in real life situations. Those with poor	1. How do you estimate the difference between given numbers?

		a) subtract up to 4-digit numbers without regrouping in real life situations, b) subtract up to 4-digit numbers with regrouping in real life situations, c) estimate difference by rounding off numbers to the nearest ten in different contexts, d) create patterns involving subtraction from up to 10,000, e) appreciate application of subtraction of numbers in real life situations.	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. • Jointly with peers to subtract up to 4-4-digit numbers with regrouping using number cards made of heavy gauge paper for learners with poor finger dexterity. • Share tasks in purposive groups/pairs to approximate and work out differences by rounding off the numbers to the nearest ten. Those with poor motor coordination or missing limbs could use adapted writing materials or adapted digital devices to perform the task. • Work with peers to generate patterns involving subtraction of numbers from up to 10,000. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistant or teacher to perform	2. How do you create patterns involving subtraction?

			the task. • Jointly work with peers in purposive pairs or groups to play games involving subtraction using digital devices. 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 generates patterns involving subtraction of numbers from up to 10,000
- Digital literacy: learner in pairs plays games involving subtraction using digital devices.

Values:

Respect: learner patiently works with peers to subtract numbers up to 4-digit numbers without regrouping using number cards.

Pertinent and Contemporary Issues (PCIs):

Learner uses locally available materials to prepare place value apparatus for subtracting numbers up to 4-digit numbers without regrouping to enhance environmental education.

Link to other subjects

The learner is able to relate reading and writing numbers up to 10,000 in symbols to preparing planting site and planting costs in Agriculture and Nutrition.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.4 Multiplication** (8 Lessons)	By the end of the sub strand, the learner should be able to; a) multiply up to a two-digit number by multiples of 10 in different situations, b) multiply up to a two-digit number by two-digit number with and without regrouping, c) estimate products by rounding off numbers to the nearest 10 with product not exceeding 1,000, d) create patterns involving multiplication with product not exceeding 100, e) appreciate application of multiplication of numbers in real life situation.	**The learner is guided to:** • Team with peers in purposive pairs/groups to multiply up 2-digit number by multiples of 10 using number cards. Those 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. • Team up to multiply up to a two-digit number by two-digit number without regrouping using counters and prepare a multiplication chart. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support	1. How do you use multiplication in real life? 2. How do you create patterns involving multiplication?

			assistants or teachers to perform the task. • Work with peers to estimate and work out product by rounding off numbers to the nearest ten with product not exceeding 1,000. Those 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. • Share tasks while generating patterns in purposive pairs or groups involving multiplication with product not exceeding 100 and prepare charts using local materials to display their patterns. • Team up with peers to play digital games on multiplication in purposive pairs or groups. 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 generates patterns involving multiplication with a product not exceeding 100.

Values:
Unity: learner collaborates with others to estimate and work out answers by rounding off numbers to the nearest ten with a product not exceeding 1,000.

Pertinent and Contemporary Issues (PCIs):
Learner prepares multiplication charts using locally available materials to enhance environment education.

Link to other subjects
The learner is able to relate multiplication to square plot for gardening skills in Agriculture and Nutrition.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1. 0 Numbers	**1.5 Division** (8 Lessons)	By the end of the sub strand, the learner should be able to: a) divide up to a two-digit number by a one-digit number with and without remainder b) relate multiplication of numbers to division of same numbers in different situations,	**The learner is guided to:** • Discuss in purposive pairs or groups and carry out division of up to a two-digit number by a one digit number without remainder using number cards. Those with speech difficulties could use Alternative and Augmentative modes of Communication. Those with poor	How do you use division in real life?

		c) use digital resources to learn division of numbers, d) appreciate the use of division in day to day life.	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. • Jointly with peers in purposive pairs or groups to carry out division up to a two-digit number by a one-digit number with and without remainder and prepare division charts. Learners with postural difficulties could have tables or worktops heights appropriately adjusted. • Team up with peers in purposive pairs or groups to carry out division and multiplication of same numbers to establish relationship between multiplication and division. • Jointly with peers play games involving division using digital devices in purposive pairs or groups. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	

Core Competencies to be developed: • Learning to learn: learner carries out division and multiplication of same numbers in group to establish relationship between multiplication and division. • Digital literacy: learner jointly with peers play games involving division using digital device.
Values: Love: learner respects others group members opinions while carrying out division and multiplication of same numbers to establish relationship between multiplication and division.
Pertinent and Contemporary Issues (PCIs): Learner contributes in group discussions on establishing relationship between multiplication and division to enhance peer education.
Link to other subjects Learner relates the concept of division to concept of mixtures in Science and Technology.

Strand	**Sub Strand**	**Specific Learning Outcome**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
1.0 Numbers	**1.6 Fractions** (6 Lessons)	By the end of the sub strand, the learner should be able to: a) identify the numerator and denominator in a fraction in different situations, b) represent a fraction with denominators not exceeding 12 as part of a whole and as part of a group,	The learner is guided to: • Discuss in purposive pairs or groups the top (numerator) and bottom (denominator) numbers in a fraction and share with other groups. Those with speech difficulties could use Alternative and Augmentative modes of Communication-AAC (residual speech/ digital devices	1. How do you use fractions in real life? 2. How can you represent fractions?

		c) identify different types of fractions in real life situations, d) convert improper fractions to mixed fractions in different situations, e) convert mixed fractions to improper fractions in different contexts, f) use digital devices and other resources for learning more on fractions, g) appreciate application of fractions in real life situations.	with text-to-speech application/ point/sign/write) during the discussion. • Illustrate fractions as part of whole or part of a group in purposive pairs or groups. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistants or teachers to perform the task. • Illustrate fractions as part of a whole or part of a group using cut outs, counters or clock face. Those 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	

			groups/pairs proper, improper and mixed fractions as part of a whole or as part of a group using paper cut outs or counters, • Discuss in purposive pairs or groups changing of improper fractions to mixed fractions, • Discuss in purposive pairs or groups changing of mixed fractions to improper fractions, • Play digital games involving fractions. 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 illustrates fractions as part of a whole or part of a group using cut outs, counters or clock face.				
Values: Responsibility: Learner shares roles while illustrating proper, improper and mixed fractions as part of a whole or as part of a group using paper cut outs or counters.				

Pertinent and Contemporary Issues (PCIs): Learner assists each other to change mixed fractions to improper fractions to enhance peer education.
Link to other subjects The learner is able to relate fractions as part of a whole or part of a group using cut outs, counters or clock face to mixtures in Science and Technology

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.7 Decimals** (10 Lessons)	By the end of the sub strand, the learner should be able to; a) identify a tenth and a hundredth in real life situations, b) represent decimals using decimal notation in given situations, c) identify place value of decimals up to hundredths in real life, d) order decimals up to hundredths in different contexts, e) use digital devices or other resources for learning about	The learner is guided to: • Discuss in purposive pairs or groups where tenths and hundredths are used in real life situations. Those 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. • Illustrate in decimals using place value charts or other resources. Lower place value charts for learners with short stature and those on positioning devices. • Represent decimals using place	How do you use decimals in real life situations?

		decimals in different situations, f) appreciate the use of decimals in reallife situations.	value charts and reuse charts for other activities in purposive groups/pairs. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistants or teachers to perform the task. • Individually write tenths and hundredths using decimal notation on a place value chart. 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. • Order given decimals in ascending and descending order. • Play digital games involving decimals. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	

Core Competencies to be developed: Learning to learn: learner discusses with peers where tenths and hundredths are used in real life situations.
Values: Peace: learner in a group works in harmony to represent tenths and hundredths using place value charts.
Pertinent and Contemporary Issues (PCIs): Learner represents decimals using place value charts and reuse charts for other activities to enhance environmental awareness.
Link to other subjects The learner is able to relate tenths and hundredths to the concept of mixtures in Science and Technology.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested key Inquiry Question(s)**
1.0 Numbers	**1.8 Use of letters** (6 Lessons)	By the end of the sub strand, the learner should be able to: a) represent information using letters in real life situations, b) form simple expressions to represent real life situations, c) simplify expressions representing real life	The learner is guided to: • Represent various items from diverse geographical locations using letters. Those 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	Why do we represent information using letters?

		situations, d) appreciate the use of expressions.	activity. • Form expressions to illustrate real life situations in purposive groups/pairs. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers or teacher to perform the task. • Work with peers in purposive groups/pairs to simplify expressions representing real life situations. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Play digital games involving expressions in purposive pairs or groups. Adjust light/ glare on the screens of the digital devices appropriately for learners who are sensitive to light.	

Core competencies to be developed: • Citizenship: learner represents various items from diverse geographical locations using letters. • Communication and collaboration: learner forms expressions to represent real life situation.
Values: Respect: learner gives each other a chance to play digital games involving expressions.
Pertinent and Contemporary Issues (PCIs): Learner works harmoniously in a group to represent various items from diverse geographical locations using letters to enhance social cohesion.
Link to other subjects: The learner is able to relate the concept of letters to the skills of reading and writing 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 tens of thousands.	The learner uses place value and total value of digits up to tens of thousands correctly and systematically.	The learner uses place value and the total value of digits up to tens of thousands correctly.	The learner uses place value or the total value of digits up to tens of thousands correctly.	The learner uses place value or the total value of digits less than tens of thousands correctly.
Ability to read and write numbers in symbols and words.	The learner reads and writes numbers in symbols and words accurately and fluently.	The learner reads and writes numbers in symbols and words accurately.	The learner reads or writes numbers in symbols and words accurately.	The learner reads or writes numbers in symbols or words accurately.

Ability to order and round off numbers up to 1000.	The learner orders and rounds off numbers up to 1000 correctly and systematically.	The learner orders and rounds off numbers up to 1000 correctly.	The learner orders or rounds off numbers up to 1000 correctly.	The learner orders or rounds off numbers up to 500 correctly
Ability to identify factors and multiples of numbers up to 50.	The learner identifies factors and multiples of numbers up to 50 correctly and methodically.	The learner identifies factors and multiples of numbers up to 50 correctly.	The learner identifies factors or multiples of numbers up to 50 correctly.	The learner identifies factors and multiples of numbers less than 50 correctly
Ability to make patterns involving even and odd numbers up to 100.	The learner makes patterns involving even and odd numbers up to 100 correctly and creatively.	The learner makes patterns involving even and odd numbers up to 100 correctly.	The learner makes patterns involving even or odd numbers up to 100 correctly.	The learner makes patterns involving even or odd numbers up to 50 correctly.
Ability to Represent Hindu Arabic numerals using Roman numerals up to 'X'.	The learner represents Hindu Arabic numerals using Roman numerals up to 'X' correctly and naturally.	The learner represents Hindu Arabic numerals using Roman numerals up to 'X' correctly.	The learner represents Hindu Arabic numerals using Roman numerals up to 'VII' correctly.	The learner represents Hindu Arabic numerals using Roman numerals up to 'IV'.
Ability to add up to two 4-digit numbers with single and double regrouping.	The learner adds up to two 4-digit numbers with single and double regrouping correctly and systematically.	The learner adds up to two 4-digit numbers with single and double regrouping correctly.	The learner adds up to two 4-digit numbers with single regrouping.	The learner adds up to two 4-digit numbers without regrouping.

Ability to create patterns involving addition, subtraction and multiplication.	The learner creates patterns involving addition, subtraction and multiplication accurately and innovatively.	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 subtract up to two 4-digit numbers with single and double regrouping.	The learner subtracts up to two 4-digit numbers with single and double regrouping correctly and systematically.	The learner subtracts up to two 4-digit numbers with single and double regrouping correctly.	The learner subtracts up to two 4-digit numbers with single regrouping correctly.	The learner subtracts up to two 3-digit numbers without regrouping correctly.
Ability to Multiply up to a two-digit number by a two digit number with and without regrouping.	The learner multiplies up to two 4-digit numbers with single and double regrouping correctly and thoroughly.	The learner multiplies up to two 4-digit numbers with single and double regrouping correctly.	The learner multiplies up to two 4-digit numbers with single regrouping.	The learner multiplies up to two 4-digit numbers without regrouping.

Ability to divide up to a two digit number by a one digit number with and without remainder.	The learner divides up to a two-digit number by a one-digit number without remainder accurately and thoroughly.	The learner divides up to a two-digit number by a one-digit number without remainder accurately.	The learner divides up to a two-digit number by a one-digit number without remainder accurately.	The learner divides a one digit number by a one digit number without remainder correctly.
Ability to identify different types of fractions.	The learner identifies types of fractions correctly and systematically.	The learner identifies types of fractions correctly.	The learner identifies some types of fractions correctly.	The learner identifies fractions correctly.
Ability to convert improper fractions to mixed fractions and mixed fractions to improper fractions.	The learner converts improper fractions to mixed fractions and mixed fractions to improper fractions accurately and methodically.	The learner converts improper fractions to mixed fractions and mixed fractions to improper fractions accurately.	The learner converts improper fractions to mixed fractions or mixed fractions to improper fractions accurately.	The learner converts improper fractions to mixed fractions accurately.
Ability to identify a tenth and a hundredth in a decimal number.	The learner identifies a tenth and a hundredth in a decimal number accurately and methodically.	The learner identifies a tenth and a hundredth in a decimal number accurately.	The learner identifies a tenth or a hundredth in a decimal number accurately.	The learner identifies a tenth in a decimal number accurately.

STRAND 2.0: MEASUREMENT

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.1 Length** (10 Lessons)	By the end of the sub strand, the learner should be able to; a) identify the centimetre as a unit of measuring length in real life situations, b) measure length in centimetres in real life situations, c) establish the relationship between metres and centimetres practically, d) convert metres to centimetres and centimetres to metres in real life situation, e) work out perimeter of plane figures in different contexts,	The learner is guided to: • Team up with peers in purposive groups/pairs to identify the centimetre and mark out lengths of one centimetre using a ruler. Those with speech difficulties could use Alternative and Augmentative modes of Communication-*AAC*. • Work with peers in purposive groups/pairs to measure the length of a given object in centimetres using a metre ruler or a tape measure. Those with poor motor coordination or missing limbs could use adapted measuring tools to perform the task.	1. How can you measure distance? 2. Why do we measure distance in real life?

		f) work out addition involving length in metres and centimetres in real life situations, g) work out subtraction involving length in metres and centimetres in real life situations, h) carry out multiplication involving metres and centimetres in real life situations, i) carry out division involving metres and centimetres in real life situations, j) appreciate use of metres and centimetres in measuring distance in real life.	They could also use assistive technology to carry out the activity. • Jointly work with peers to estimate the length of a given object in centimetres. Those 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. • Measure the actual length of the estimated length in centimetres in purposive pairs or groups. Those who use mobility devices could be given physical support by peers, learner support assistant or teacher as they carry out the activity. • Share tasks while measuring the length of objects in classrooms in metres and centimetres and	

			establish the • volving metres and centimetres. • Play digital games involving length. 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 positrelationship between the units. • Work with peers to use the relationship between centimetres and metres. • Convert metres into centimetres and centimetres into metres using whole numbers, decimals or fractions. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Team up with peers to	

			calculate the perimeter of plane figures. Adapted working surfaces should be provided. Extra time could be allowed for learners to complete the task. • Perform addition and subtraction involving metres and centimetres, • Work out multiplication involving metres and centimetres. • Team up with peers to work out division inioning devices, adjustable seats and adapted working surfaces to enable them access displayed content.	
Core Competencies to be developed: • Learning to learn: learner measures length of objects in classrooms in metres and centimetres and establish the relationship between the units. • Critical thinking and problem solving: learner demonstrates autonomy in measuring the length of a given object in centimetres using a metre ruler or a tape measure.				
Values: Responsibility: learner takes care of metre ruler and a tape measure while measuring lengths of objects.				

Pertinent and Contemporary Issues (PCIs): Learner estimates and measures the length of a given object in centimetres using a metre ruler or a tape measure to enhance self-awareness.
Link to other subjects The learner is able to relate the measurement of the length of objects to preparing planting sites and planting in Agriculture and Nutrition.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
2.0 Measurement	**2.2 Area** (8 Lessons)	By the end of the sub strand, the learner should be able to; a) compare the area of given surfaces by direct manipulation, b) calculate the area of squares and rectangles by counting unit squares, c) calculate the area of squares and rectangles as a product of number	The learner is guided to: • Collaboratively compare area of two surfaces directly by placing one surface on the other. Those 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. • Team up with peers while using different unit square cut outs to cover a given surface. Those with poor motor coordination or missing limbs could use adapted	How do you work out area of different surfaces?

		of rows and columns d) appreciate the use of rows and columns in calculating the area of squares and rectangles in real life situations.	writing materials or adapted digital devices to perform the task. They could also use assistive technology to carry out the activity. • Share tasks with peers in purposive groups/pairs while counting the number of unit square cut outs used to cover the surface. • Jointly work with peers in purposive groups/pairs to establish that area of a rectangle or a square is same as number of rows multiplied by number of columns. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Work out area of squares and rectangles by multiplying number of rows by number of columns, for example in tiled or paved floors. • Team up with peers to play games involving area of rectangles and squares using digital devices	

			and 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 displayed content.	

Core Competencies to be developed:

- Critical thinking and problem solving: learner works independently to calculate the area of squares and rectangles by multiplying number of rows by the number of columns.
- Digital literacy: learner in pairs plays games involving area of rectangles and squares using digital resources.

Values:

- Unity: learner works with peers harmoniously to establish that the area of a rectangle or a square is the same as the number of rows multiplied by the number of columns.
- Integrity: learner gives honest answers while counting the number of unit square cutouts used to cover the surface.

Pertinent and Contemporary Issues (PCIs):

Learner counts the number of unit square cutouts prepared from locally available materials to cover the surface to enhance environmental education.

Link to other subjects

The learner is able to relate counting of the number of unit square cutouts prepared from locally available resources to properties of matter in Science and Technology.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.3 Volume** (8 Lessons)	By the end of the sub strand, the learner should be able to: a) pile objects into stacks of cubes and cuboids in real life situations, b) work out volume of cuboids by piling blocks to form a cuboid, c) calculate the volume of cubes by piling blocks to form a cubes, d) appreciate use of pilling method in working out volume in real life.	The learner is guided to: • Discuss in purposive pairs or groups and carefully arrange blocks or objects on top of each other into cuboid and cube shape. Practice stacking objects or blocks to form cubes and cuboids of different sizes. Those 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. • Share tasks while counting the number of objects in the pile that makes a cuboid to determine the volume. • Team up with peers to count the number of objects in the	How do we apply the volume of cubes and cuboids in real life situations?

			pile that makes a cube to determine the volume. • Play digital devices or other resources to safely play games involving stacking blocks to form cubes and cuboids. 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 displayed content.	
Core Competencies to be developed: • Learning to learn: learner practices stacking objects or blocks to form cubes and cuboids of different sizes. • Critical thinking and problem solving: learner explores new ways of counting the number of objects in the pile that makes a cube to determine the volume.				

Values: Self-awareness: learner discusses and carefully arranges blocks or objects on top of each other into cuboid and cube shape.
Pertinent and Contemporary Issues (PCIs): Learner observes safety precautions while stacking blocks to form cubes and cuboids to enhance safety.
Links to other subjects The learner is able to relate arranging blocks or objects on top of each other into cuboid and cube shapes to the Construction of food preservation equipment in Agriculture and Nutrition.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
2.0 Measurement	**2.4 Capacity** (8 Lessons)	By the end of the sub strand, the learnershould be able to; a) measure capacity in litres in real life situations, b) measure capacity in $\frac{1}{2}$ litres and $\frac{1}{4}$litres in real life situations, c) work out addition and subtraction of capacity in litres in real life	The learner is guided to: • Measure capacity of containers using a 1 litre container in real life situations in purposive pairs or groups. Those with poor motor coordination or missing limbs could also use assistive technology or be supported by peers ot teacher to carry out the activity. • Make ½ litre containers from locally available materials	How can you measure capacity using arbitrary units?

		situations, d) appreciate use of the litre as a unit of measuring capacity in real life situations.	through filling and emptying the container with substances such as water or sand using a 1 litre container in purposive pairs or groups. • Make ¼ litre containers through filling and emptying using a 1 litre container. • Team up with peers to use ½ litre and ¼ litre containers to measure capacity of other containers. • Add capacity involving litres in real life situations. • Subtract capacity involving litres in real life situations. Those 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. • Play games involving capacity using containers of different	

			capacities or digital devices for digital games. 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 displayed content.	

Core Competencies to be developed:

- Learning to learn: as learner makes ½ litre containers from locally available materials through filling and emptying the container with substances such as water or sand using a one litre container.
- Self-efficacy: learner shows confidence in measuring capacity of ½ litre and ¼ litre.

Values:

Responsibility: learner makes ¼ litre containers from locally available materials through filling and emptying the container with substances such as water or sand using a one litre container.

Pertinent and Contemporary Issues (PCIs):

- Learner observes precautionary measures as they determine ½ litre and ¼ litre containers to enhance safety.
- Learner uses ½ litre containers from locally available materials to enhance environmental education.

Link to other subjects

The learner is able to relate practical activities involving measurement of liquids to properties of matter in Science and Technology.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question
2.0 Measurement	**2.5 Mass** (8 Lessons)	By the end of the sub strand, the learner should be able to: a) use a kilogram mass to measure masses of different objects practically, b) use ½ kg and ¼ kg masses to measure masses of different objects practically, c) add mass involving kilograms in real life situations, d) subtract mass involving kilograms in real life situations, e) appreciate kilogram as a unit of measuring mass.	The learner is guided to: • Use one-kilogram masses to measure masses of given objects using a beam balance in purposive pairs or groups. Those with poor motor coordination or missing limbs could also use assistive technology or be supported by peers or teacher to carry out the activity. • Work with peers in making a ½ kg mass and use it to measure mass of given objects using a beam balance. • Share tasks while making a ¼ kg mass and use it to measure mass of given objects using a beam balance and an electronic balance. • Add mass involving kilograms (kg) in real life situations. Those with poor motor coordination or missing limbs could use adapted	How do we measure mass in kilograms?

			writing materials or adapted digital devices to perform the task. They could also use assistive technology to carry out the activity. • Carry out subtraction of mass involving kilograms (kg). • Play digital games involving mass. 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 displayed content.	
Core Competencies to be developed: Digital literacy: learner makes a ¼ kg mass and use it to measure mass of given objects using a beam balance and an electronic balance.				
Values: Integrity: learner displays humility in teams while making a ½ kg mass and accurately use it to measure the mass of given objects using a beam balance.				

Pertinent and Contemporary Issues (PCIs): Learner shares resources equitably as they use beam balance to enhance social justice.
Link to other subjects The learner is able to relate the measurement of the mass of given objects using a beam balance to properties of matter in Science and Technology.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
2.0 Measurement	**2.6 Time** (10 Lessons)	By the end of the sub strand, the learner should be able to: a) read and tell time in a.m. and p.m. in real life situations, b) estimate time using a.m. and p.m. in real life situations, c) convert units of time in real life situations, d) record time durations in hours and minutes in real life situations, e) work out time	The learner is guided to: • Work with peers in reading and tell time in a.m. And p.m. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers or teacher to perform the task. • Use digital and analogue clocks. Those with speech difficulties could use Alternative and Augmentative modes of Communication-AAC (residual speech/ digital	How do we estimate time?

		duration in real life situations, f) use digital clock to tell and record time of different activities, g) appreciate time in day to day activities.	devices with text-to-speech application/ point/sign/write) during the discussion. • Estimate time of the day using the shadow of a building or a tree that is in a convenient location. • Convert hours to minutes and minutes to hours in real life situations. Those 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. • Convert hours to days and days to hours in real life situations. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Convert days to weeks and weeks to days in real life	

			situations. • Measure and record duration of events in hours and minutes using digital and analogue clocks. • Work out addition involving units of time in real life situations. • Team up with peers to work out subtraction involving units of time in real life situations. • Discuss in purposive pairs or groups, tell and record time using electronic clock. 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 displayed content.	

Core Competencies to be developed: • Imagination and creativity: learner explores new ways of estimating time using shadows of objects within the environment. • Digital literacy: learner discusses collaboratively with others and records time using digital devices.
Values: Integrity: learner consistently measures and records accurately the duration of events in hours and minutes using digital or analogue clocks.
Pertinent and Contemporary Issues (PCIs): Learner adheres to simple safety rules when telling and recording time using electronic clock to enhance safety and security.
Link to other subjects Learner relates estimation of time of the day to weather and climate in Social Studies.

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
2.0 Measurement	**2.7 Money** (8 Lessons)	By the end of the sub strand, the learner should be able to: a) convert shillings into cents and cents into shillings in different contexts, b) prepare a shopping	The learner is guided to: • Discuss in purposive pairs or groups and convert shillings into cents and cents into shillings using real/ imitation money in different contexts. Those with speech difficulties could use Alternative and Augmentative	Why do we prepare shopping list?

		list of three items in real life situation, c) work out total cost of items in the shopping list for value not more ten thousand shillings, d) appreciate the use of money in real life situation.	modes of Communication-AAC (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. • Team up with peers in purposive groups/pairs to come up with a shopping list of items that they may require at school. Those 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. • Calculate the total cost of items in the shopping list. Those with postural deformities should be preferentially and appropriately positioned to avoid secondary conditions. • Work with peers to come up with a class or school model shop and role play shopping	

			activities as buyers and shopkeepers. • Take video clips of their groups as they role shopping activities. 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 displayed content.	

Core Competencies to be developed:

- Communication and collaboration: learner discusses with others and converts shillings into cents and cents into shillings using actual currency.
- Self-efficacy: learner exhibits responsibility while calculating the total cost of items in the shopping list.

Values:

Integrity: Learner shows accountability while calculating the total cost of items in the shopping list.

Pertinent and Contemporary Issues (PCIs):

Learner exhibits financial knowledge and skills while calculating the total cost of items in the shopping list to enhance financial literacy.

Link to other subjects

The learner is able to relate shopping list for food items to the concept of Resources and Economic Activities in Social Studies.

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below expectations
Ability to estimate and measure length in centimetres.	The learner estimates and measures length in centimetres accurately and creatively.	The learner estimates and measures length in centimetres accurately.	The learner estimates or measures some length in centimetres accurately.	The learner estimates or measures length in centimetres partially accurately.
Ability to establish the relationship between metres and centimetres.	The learner establishes the relationship between metres and centimetres accurately and appropriately.	The learner establishes the relationship between metres and centimetres accurately.	The learner establishes some relationship between metres and centimetres accurately.	The learner establishes the relationship between metres and centimetres partially accurately.
Ability to convert centimetres to metres and metres to centimetres.	The learner converts centimetres to metres and metres to centimetres accurately and logically.	The learner converts centimetres to metres and metres to centimetres accurately.	The learner converts centimetres to metres or metres to centimetres accurately.	The learner convert centimetres to metres or metres to centimetres partially accurately.
Ability to add, subtract, multiply and	The learner adds, subtracts, multiplies and divides length	The learner adds, subtracts, multiplies and	The learner adds and subtracts or multiplies or divides length in	The learner adds and subtracts length in centimetres and

divide length in centimetres and metres.	in centimetres and metres accurately and methodically.	divides length in centimetres and metres accurately.	centimetres and metres accurately.	metres accurately.
Ability to calculate the area of squares and rectangles as a product of number of rows and columns.	The learner calculates the area of squares and rectangles as a product of the number of rows and columns correctly and creatively.	The learner calculates the area of squares and rectangles as a product of the number of rows and columns correctly.	The learner calculates areas of squares or rectangles as a product of the number of rows and columns correctly	The learner calculates areas of some squares or rectangles as a product of the number of rows and columns partially correctly.
Ability to work out the volume of cubes and cuboids by piling blocks.	The learner works out the volume of cubes and cuboids by piling blocks correctly and methodically.	The learner works out the volume of cubes and cuboids by piling blocks correctly.	The learner works out the volume of cubes or cuboids by piling blocks correctly.	The learner works out the volume of cubes or cuboids by piling blocks partially correctly.
Ability to measure, add and subtract capacity in litres.	The learner measures, adds and subtracts capacity in litres accurately and systematically.	The learner measures, adds and subtracts capacity in litres accurately.	The learner measures or adds and subtracts capacity in litres accurately.	The learner measures or adds or subtracts capacity in litres partially accurately.

Ability to measure, add and subtract mass of different objects in kilograms.	The learner measures, adds and subtracts the mass of different objects in kilograms accurately and systematically.	The learner measures, adds and subtracts the mass of different objects in kilograms accurately.	The learner measures or adds and subtracts the mass of different objects in kilograms accurately.	The learner measures or adds or subtracts the mass of different objects in kilograms accurately.
Ability to read, tell and estimate time in a.m. and p.m.	The learner reads, tells and estimates time in a.m. and p.m. correctly and creatively.	The learner reads, tells and estimates time in a.m. and p.m. correctly.	The learner reads or tells and estimates time in a.m. and p.m. correctly.	The learner reads or tells or estimates time in a.m. and p.m. correctly.
Ability to work out addition and subtraction involving units of time.	The learner works out addition and subtraction involving units of time accurately and thoroughly.	The learner works out addition and subtraction involving units of time accurately.	The learner works out addition or subtraction involving units of time accurately.	The learner works out either addition or subtraction involving units of time partially accurately.
Ability to convert shillings to cents and cents to shillings.	The learner converts shillings to cents and cents to shillings correctly and proficiently.	The learner converts shillings to cents and cents to shillings correctly.	The learner converts shillings to cents or cents to shillings correctly.	The learner converts shillings to cents or cents to shillings partially correctly.

Ability to work out the total cost of items in the shopping list of not more than ten thousand shillings.	The learner works out the total cost of items in the shopping list of not more than ten thousand shillings accurately and proficiently.	The learner works out the total cost of items in the shopping list of not more than ten thousand shillings accurately.	The learner works out cost of items in the shopping list of not more than eight thousand shillings accurately.	The learner works out cost of items in the shopping list of not more than five thousand shillings accurately.

STRAND 3.0: GEOMETRY

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
3.0 Geometry	**3.1 Position and Direction** (5 Lessons)	By the end of the sub strand, the learner should be able to: a) identify a clockwise and an anti-clockwise turn in the environment, b) demonstrate a clockwise and an anti-clockwise turn in the environment, c) identify quarter, half and full turns direction in the environment, d) demonstrate a quarter turn, half turn and full turn direction in the environment, e) appreciate use of position and direction in real life situations.	The learner is guided to: • Make clockwise or anticlockwise turns in the environment. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistants or teachers to perform the task. • Discuss in purposive pairs or groups and demonstrate a clockwise turn. Those 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.	How can you change your position?

			• Demonstrate an anti-clockwise turn. Learners with mobility difficulties could be supported by peers or teacher to perform the task. • Work with peers to safely make quarter, half and full turns in the environment. • Team with peers to demonstrate a quarter turn in both directions individually. • Demonstrate a half turn from a point. • Demonstrate a full turn. • Jointly work with others to play digital games involving position and direction. Regulate the screen resolution or light intensity to support learners who are sensitive to light.	
Core Competencies to be developed: Learning to learn: learner works collaboratively with others while making clockwise or anticlockwise turns in the environment.				
Values: Unity: learner embraces others as they demonstrate a clockwise turn.				

Pertinent and Contemporary Issues (PCIs): Learner observes care and precautions while making quarter, half and full turns in the environment to enhance safety.
Link to other subjects The learner is able to relate making quarter, half and full turns in the surroundings to the Location, Position and size of Kenya in Social Studies.

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question
3.0 Geometry	**3.2 Angles** (5 Lessons)	By the end of the sub strand, the learner should be able to: a) identify an angle at a point in lines b) identify angles from the objects in the environment, c) relate a turn to angles in real life situations, d) appreciate use of angles in real life situations.	The learner is guided to: • Discuss in purposive pairs or groups and recognize angles that are made by 2 lines that meet at point using a chart with a different line. Those 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. • Team with peers in purposive groups/pairs to explore and identify angles from the objects	How do we use angles in daily life?

			such as cubes, cuboids in the environment. Learners with mobility difficulties could be supported by peers or teachers to perform the task. • Make clockwise quarter and half turns, and relate the turns to angles. • Play digital games and learn more about angles. Regulate the screen resolution or light intensity to support learners who are sensitive to light.	
Core competencies to be developed: Communication and collaboration: learner collaboratively works with others and recognizes angles that are made by 2 lines that meet at point using a chart with a different line.				
Values: Responsibility: learner observes safety precautions while identifying angles from objects such as cubes, cuboids in the environment.				
Pertinent and Contemporary Issues (PCIs): Learner explores and identify angles from objects such as cubes, and cuboids in the environment to enhance environmental education.				
Link to other subjects: The learner is able to relate angles from objects such as cubes and cuboids in the environment to perspective in Creative Arts.				

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
3.0 Geometry	**3.3 Plane Figures** (6 Lessons)	By the end of the sub strand, the learner should be able to: a) identify rectangles, squares, triangles, circles and ovals from objects in the environment, b) draw the shapes of rectangles, squares, triangles, circles and ovals from objects in the environment, c) identify lines of symmetry of different shapes, d) make patterns using squares, rectangles and triangles, e) identify properties of plane figures in different situations f) appreciate using shapes in real life situations.	The learner is guided to: • Discuss in purposive pairs or groups and recognize shapes of rectangles, squares, triangles, circles and ovals from common objects in the environment. Those 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. • Sketch the shapes of rectangles, squares, triangles, circles and ovals in their books or charts using objects in the environment. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted	How can you make patterns using shapes?

			by peers, learner support assistants or teachers to perform the task. • Discuss in purposive pairs or groups and fold the shapes into two equal parts and recognise the fold line as the line of symmetry. • Discuss in purposive pairs or groups how many lines of symmetry can each shape possibly have, fold the shapes to confirm. • Work with peers to make patterns using squares, rectangles and triangles. • Identify properties of a square practically. Learners with manipulation difficulties could use alternative functional parts of the body, appropriate assistive devices or be assisted by peers, learner support assistants or teachers to perform the task. • Discuss in purposive pairs or groups properties of a rectangle	

			practically. • Identify properties of a triangle practically. • Collaboratively use IT devices to learn more about plane figures and make patterns. 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 displayed content.	
Core competencies to be developed: Creativity and imagination: learner explores new ideas while making patterns using squares, rectangles and triangles.				
Values: Respect: learner displays humility while recognising shapes of rectangles, squares, triangles, circles and ovals from common objects in the environment.				
Pertinent and Contemporary Issues (PCIs): Learner exhibits teamwork while sketching the shapes of rectangles, squares, triangles circles and ovals from objects in the environment to enhance peer education and mentorship.				

Link to other subjects: The learner is able to relate making patterns using squares, rectangles and triangles to perspective in Creative Arts.

STRAND 4.0: DATA HANDLING

Strand	**Sub Strand**	**Specific Learning Outcomes**	**Suggested Learning Experiences**	**Suggested Key Inquiry Question(s)**
4.0 Data Handling	**4.1 Data** (10 Lessons)	By the end of the sub strand, the learner should be able to: a) identify materials for data collection and recording in real life situations, b) collect data of at most 10 items within the school environment, c) draw a table for recording data, d) record data in the table e) interpret the raw data from the table, f) appreciate use of tables in representing data in real life situations.	The learner is guided to: • Name different materials that are used for data collection and recording such as rulers, exercise books for drawing tables, and textbooks. Those 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 task. • Gather and share different items for purposes of recording data. Those with speech difficulties could use Alternative and	How can you represent data?

			Augmentative modes of Communication-AAC (residual speech/ digital devices with text-to-speech application/ point/sign/write) during the discussion. • Represent the raw data in simple tables in purposive pairs/groups. • Explain and interpret the raw data from the table. • Use digital devices, other resources and for data collection and recording in purposive groups/pairs. 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 displayed content.	
Core competencies to be developed: Critical thinking and problem solving: learner explores new ways of gathering and sharing different items for the purposes of recording data.				

Values: Patriotism: learner exhibits honesty while gathering and sharing different items for the purposes of recording data.
Pertinent and Contemporary Issues (PCIs): Learner collects materials from the immediate classroom environment to enhance environmental education.
Link to other subjects: The learner is able to relate data collection and recording to Democracy in society in Social Studies.

Suggested Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to demonstrate a clockwise and an anti-clockwise turn in the environment.	The learner demonstrates a clockwise and an anti-clockwise turn in the environment accurately and proficiently.	The learner demonstrates a clockwise and an anti-clockwise turn in the environment accurately.	The learner demonstrates a clockwise or an anti-clockwise turn in the environment accurately.	The learner demonstrates a clockwise or an anti-clockwise turn in the environment partially accurately.
Ability to demonstrate a quarter turn, half turn and full turn in the environment.	The learner demonstrates a quarter turn, half turn and full turn in the environment accurately and	The learner demonstrates a quarter turn, half turn and full turn in the environment accurately.	The learner demonstrates a quarter turn or half turn or full turn in the environment accurately.	The learner demonstrates a quarter turn or half turn or full turn in the environment

	creatively.			partially accurately.
Ability to identify angles from the objects in the environment.	The learner identifies angles from the objects in the environment accurately and proficiently.	The learner identifies angles from the objects in the environment accurately.	The learner identifies some angles from the objects in the environment accurately.	The learner identifies some angles from the objects in the environment partially accurately.
Ability to draw the shapes of rectangles, squares, triangles, circles and ovals.	The learner draws the shapes of rectangles, squares, triangles, circles and ovals accurately and creatively.	The learner draws the shapes of rectangles, squares, triangles, circles and ovals accurately.	The learner draws the shapes of any 3 of the shapes; rectangles, squares, triangles, circles and ovals accurately.	The learner draws the shapes of any 2 of the shapes; rectangles, squares, triangles, circles and ovals accurately.
Ability to make patterns using squares, rectangles and triangles.	The learner makes patterns using squares, rectangles and triangles correctly and creatively.	The learner makes patterns using squares, rectangles and triangles correctly.	The learner makes patterns using any 2 of the shapes; squares, rectangles and triangles correctly.	The learner makes patterns using any 2 of the shapes; squares, rectangles and triangles partially correctly.
Ability to identify properties of triangles,	The learner identifies the properties of triangles, squares and rectangles correctly and	The learner identifies the properties of triangles, squares	The learner identifies the properties of triangles or squares or rectangles correctly.	The learner identifies the properties of triangles or

squares and rectangles.	proficiently.	and rectangles correctly.		squares or rectangles partially correctly.
Ability to identify and collect data of at most 10 items.	The learner identifies and collects data of at most 10 items accurately and proficiently.	The learner identifies and collects data of at most 10 items accurately.	The learner identifies and collects data of at most 7 items accurately.	The learner identifies and collects data of at most 4 items accurately.
Ability to record and interpret the raw data from the table.	The learner records and interprets the raw data from the table accurately and comprehensively.	The learner records and interprets the raw data from the table accurately.	The learner records or interprets the raw data from the table accurately.	The learner records or interprets the raw data from the table partially accurately.

APPENDIX I: SUGGESTED ASSESSMENT METHODS

Assessment may be through oral, written or observation following the assessment rubrics. 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 AAC (*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 II: SUGGESTED LEARNING RESOURCES

Strand	Sub Strand	Suggested Resources
NUMBERS	Whole numbers	Place value apparatus, number charts, number cards, multiplication table
	Addition	Place value chart, Abacus
	Subtraction	Place value chart, Abacus
	Multiplication	Multiplication tables
	Division	Multiplication tables
	Fractions	Equivalent fraction board, Circular and rectangular cut outs, counters, clock face
	Decimals	100 square grid, rectangular paper strips, Place value charts, number cards
MEASUREMENT	Length	Metre rule, 1metre sticks, tape measure
	Area	Square cut outs, paper cut outs
	Mass	1kg mass, soil or sand, manual/electronic weighing machine, beam balance
	Volume	Cubes, cuboids
	Capacity	1 liter containers, containers of different sizes, water, sand ,soil
	Time	Analogue and digital clocks, digital watches, am /pm chart
	Money	Real / imitation money, price list

GEOMETRY	Position and direction	Clock face
	Angles	Representation of different angles
	plane figures	Cut outs of rectangles, circles, and triangles of different sizes
DATA HANDLING	Data	Data from different sources
ALGEBRA	Use of letters	Information from different sources

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.

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

APPENDIX III: SUGGESTED NON-FORMAL ACTIVITIES

Strand	Sub Strand	Suggested Non-Formal Activities
Numbers	Whole Numbers	Learners to play number games and count items in the environment.
	Addition	Learners to work out total scores in a game.
	Subtraction	Learners to work out the difference in scores for various teams during play.
	Multiplication	Learners to work out the number of flowers in a flower bed by considering the number of rows and columns.
	Division	Learners to distribute themselves into teams during play activities e.g. football.
	Fractions	Learners to share items during play.
	Decimals	Learners to represent decimals using paper cut outs during play.
Measurement	Length	Learners to mark play areas.
	Area	Learners to mark their areas of operation in different games e.g. netball.
	Mass	Learners to play games using a sea saw.
	Volume	Learners to pile up same items during play.
	Capacity	Learners to fill and empty containers during play.
	Time	Learners to observe shadows and relate them to different times of the day.
	Money	Learners to practice shopping activities during play.
Geometry	Position and Direction	Learners to make different turns during singing games.
	Angles	Learners to make toys of cars or dolls during play.
	plane figures	Learners to make different shapes for use during play.

Data Handling	Data	Learners to represent different number of items using sticks as tallies practically.
Algebra	Use of letters	Learners to represent items using letters during play.

APPENDIX IV: 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.
her appropriate tool.