KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

A Skilled and Ethical Society

PRIMARY SCHOOL CURRICULUM DESIGN

MATHEMATICAL ACTIVITIES

GRADE 3

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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 instil social and adaptive skills in the learner for effective participation in community and national development.
   b) **Economic Needs**
      Education should prepare a learner with requisite 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-fulfilment**
   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 LOWER PRIMARY

S/No	Learning Area	Number of Lessons per week
1.	Indigenous Language Activities	2
2.	Kiswahili Language Activities / Kenya Sign Language Activities	4
3.	English Language Activities	5
4.	Mathematical Activities	5
5.	Religious Education Activities	3
6.	Environmental Activities	4
7.	Creative Activities	7
	Pastoral Instruction Programme	1
Total		**31**

LEVEL 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) 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 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.

STRAND 1.0: NUMBERS

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.1 Number Concept** (8 lessons)	By the end of the sub strand, the learner should be able to: use ordinal numbers to a) order objects according size, b) identify position of objects from 1st to 20th, c) write the position of objects in numbers symbols and in words, d) appreciate use of positions of items in real life situations.	The learner to be guided to: • in pairs or groups, discuss and arrange real objects collected from the environment according to size starting with the smallest to the largest and from the largest to the smallest, • name the position of an object from a reference point using 1st, 2nd up to 20th, • in groups of 20, race for a distance and assign each other the correct position using the words first, second up to twentieth position depending on when they finish the race. Write their positions in the race in symbols and in words, • in pairs/groups, relate numbers 1 to 20 to positions first, second up to 20th and	How do we tell our positions in a competition?

			relate to real life situations. For example, birth order in a family; 1st born, 2nd born, ● play games involving position 1 to 20 using digital devices and other resources.	

Core Competencies to be developed:

- Communication and collaboration: learners in groups discuss and arrange real objects collected from the environment according to size.
- Digital literacy: learners play games involving position of items from 1 to 20 using digital devices.

Values:

- Integrity: learners display honesty as they assign each other the rightful positions after a timed race.
- Unity: learners strive to achieve a common goal as they discuss and arrange real objects collected from the environment according to size.

Pertinent and Contemporary Issues (PCIs):

Learners discover their potential as they participate in a race to enhance self-esteem.

Link to other learning areas:

Learners utilise their writing skills from Language Activities to write their positions in the timed race in symbols and in words.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.2 Whole Numbers** (20 lessons)	By the end of the sub strand, the learner should be able to: a) count numbers forward up to 1000 starting from any point, b) count numbers backward in multiples of 100 from 1000, c) identify the place value of numbers up to hundreds, d) read numbers 1 to 1000 in symbols, e) read and write numbers 1 to 100 in words,	The learner is guided to: ● in pairs/groups, count forward in 1's, 10's, and 100's starting from any point up to 1000 using rope skipping game in a safe environment, ● in pairs/groups, practise through play using number cards counting numbers backward in multiples of 100 from 1000, ● in pairs / groups, discuss place value up to hundreds using place value apparatus in class, ● in pairs / groups, read numbers 1 to 1000 in symbols starting from any	1. How would you get the total number of people in a group? 2. How do you tell the place value of a digit in a number?

		f) identify missing numbers in number patterns up to 1000, g) play games involving number patterns up to 1000.	point, ● in pairs and taking turns, read and write numbers 1 to 100 in words using number cards, ● in pairs or groups, create number patterns up to 1000 and share with other groups, ● play games involving whole numbers up to 1000 using digital devices and other resources.	

Core Competencies to be developed:

- Learning to learn**:** learners pay attention to details as they count numbers backward in multiples of 100 from 1000.
- Creativity and Imagination: learners generate new ideas to create patterns of numbers up to 1000.

Values:

- Respect: learners understand and appreciate peers as they take turns to read and write numbers 1 to 100 in words using number cards.
- Peace: learners follow laid down procedures to count forward in 1's, 10's, and 100's starting from any point up to 1000.

Pertinent and Contemporary Issues (PCIs):

Learners play games involving whole numbers up to 1000 using digital devices and other resources with peers to enhance friendship formation.

Link to other learning areas: Learners utilise speaking skills from Language Activities to discuss place value of numbers up to hundreds.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.3 Addition** (25 lessons)	By the end of the sub strand, the learner should be able to: a) add a 3 digit number to up to a 2 digit number without regrouping with sum not exceeding 1000, b) add a 3 digit number to up to a 2 digit number with single regrouping with sum not exceeding 1000, c) add two 3 digit numbers without regrouping, d) add two 3 digit numbers with single regrouping	The learner is guided to: ● add a 3 digit number to up to 2 digit number without regrouping with sum not exceeding 1000 using place value apparatus, ● practice addition horizontally and vertically using place value apparatus, ● in pairs or groups or individually, practise adding a 3 digit number to up to a 2 digit number with single regrouping with sum	1. How do you arrange numbers when adding downwards? 2. How can you get the next number in a given pattern?

		with sum not exceeding 1000, e) create number patterns involving addition up to 1000, f) practice addition of numbers using digital devices or other resources.	not exceeding 1000, ● practise adding two 3 digit numbers without regrouping with sum not exceeding 1000 using place value apparatus (abacus and place value tins), ● create and work out missing numbers in patterns involving addition up to 1000, ● use digital devices or other resources for activities involving additions.	

Core Competencies to be developed:

- Imagination and creativity: learners bring imaginations to life as they create patterns involving addition up to a sum of 1000.
- Learning to learn: learners approach new challenges positively as they practise addition horizontally and vertically using place value apparatus.

Values:

- Respect: learners portray patience as they take turns to practise addition horizontally and vertically using place value apparatus.

Pertinent and Contemporary Issues (PCIs): Learners improvise place value apparatus such as abacus, place value tins or pockets using locally available materials to enhance sustainable consumption.
Link to other learning areas: Learners apply the concept of safety from Environmental Activities to safely collect materials from the local environment.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.4 Subtraction** (20 lessons)	By the end of the sub strand, the learner should be able to: a) subtract a 2-digit number from a 3 digit number without regrouping, b) Subtract a 2 digit number from a three digit number with single regrouping, c) subtract a 3 digit number from a 3 digit number with single regrouping, d) subtract up to 3 digit numbers involving missing numbers with single regrouping, e) work out missing numbers in number patterns involving subtraction up to 1000,	The learner is guided to: ● in groups, work out subtraction of up to 3 digit numbers without regrouping using place value apparatus and share findings with others, ● in turns, work out subtraction of up to 3 digit numbers with single regrouping using place value chart, ● work out missing numbers in subtraction of up to 3 digit numbers with single regrouping using a variety of strategies, ● play games involving subtraction using digital	1. When do you regroup during subtraction? 2. How do you identify the missing number in a number pattern involving subtraction?

		f) appreciate subtraction in real life situations.	devices and other resources, ● discuss how to work out missing numbers in patterns involving subtraction up to 1000.	

Core Competencies to be developed:

- Digital literacy: learners play games involving subtraction using digital devices.
- Creativity and imagination: learners come up with ideas to create number patterns involving subtraction.

Values:

- Unity: learners take turns to work out subtraction of up to 3 digit numbers without regrouping using place value pockets and share findings with others.
- Respect: learners accommodate diverse opinions as they discuss how to work out missing numbers in patterns involving subtraction up to 1000.

Pertinent and Contemporary Issues (PCIs):

Learners work out missing numbers in subtraction of up to 3 digit numbers with single regrouping using a variety of strategies to enhance problem solving.

Link to other learning areas:

Learners apply listening and speaking skills from Language Activities to discuss how to work out missing numbers in patterns involving subtraction up to 1000.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.5 Multiplication** (10 lessons)	By the end of the sub strand, the learner should be able to: a) model multiplication as repeated addition using numbers 1,2,3,4 and 5 by 4 and 5, b) multiply a single digit number by a single digit number, c) multiply single digit numbers by 10, d) appreciate multiplication of numbers as repeated addition.	The learner is guided to: ● in pairs/groups, model multiplication as repeated addition of numbers 1, 2, 3, 4 and 5 by 4 and 5 using counters, ● in groups, multiply a single digit number by a single digit number using multiplication chart, ● in turns, practice multiplication of single digit numbers by 10 using multiplication tables, ● play games involving multiplication using digital or other resources.	1. How can you work out multiplication using repeated addition? 2. How do model multiplication as repeated addition?
Core Competencies to be developed: ● Learning to learn: learners discover the connection between repeated addition of numbers and multiplication. ● Creativity and imagination: learners devise ways to model multiplication as repeated addition of numbers 1, 2, 3, 4 and 5				

by 4 and 5 using counters.
Values: ● Respect: learners understand and appreciate others as they take turns to multiply single digit numbers by 10 using multiplication tables. ● Social justice: learners foster fairness and justice among peers as they play games involving multiplication.
Pertinent and Contemporary Issues (PCIs): **L**earners re-use improvised learning materials and objects such as charts and counters to enhance environmental conservation.
Link to other learning areas: Learners relate modelling of multiplication as repeated addition of numbers 1, 2, 3, 4 and 5 by 4 and 5 using counters to modelling in **Creative Activities**.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.6 Division** (8 lessons)	By the end of the sub strand, the learner should be able to: a) represent division of numbers up to 50 by 4 and 5 as repeated subtraction b) divide a 2 digit number by a single digit number without a remainder, c) divide a 2 digit number by 10 without a remainder, d) appreciate division as repeated subtraction in real life situations.	The learner is guided to: ● in groups, take away from a group a specific number of objects at a time until all are finished and then count the number of small groups formed and share their findings with others, ● in groups, discuss and model division as repeated subtraction of numbers up to 50 by 4 and 5 using counters and share their findings with others, ● in pairs/ groups, practise division of multiples of ten from 90 by 10 using multiplication tables, ● extended activity: learners can participate in communal activities related to feeding of animals which involves subtraction of	1. How can you represent division as repeated subtraction? 2. How can we use the multiplication table to work out division questions?

			feeds for so many days.	

Core Competencies to be developed:

- Communication and collaboration: learners speak clearly and listen to peers as they discuss division as repeated subtraction of numbers.
- Learning to learn: learners discover the connection between repeated subtraction and division.

Values:

- Social justice: learners share objects equitably by repeatedly taking away from a group a specific number of objects at a time until all are finished.
- Patriotism: learners serve the community as they participate in communal activities related to feeding animals.

Pertinent and Contemporary Issues (PCIs):

- Learners participate in communal activities related to feeding of animals to enhance animal welfare.
- Learners model division as repeated subtraction of numbers up to 50 by 4 and 5 using counters to enhance creative thinking.

Link to other learning areas:

Learners relate modelling of division as repeated subtraction of numbers up to 50 by 4 and 5 using counters to modelling in Creative Activities.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.7 Fractions** (10 lessons)	By the end of the sub strand the learner should be able to: a) identify $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole, b) identify $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a group, c) appreciate fractions as part of a whole in daily activities.	The learner is guided to: • in pairs /groups, safely make circular cut-outs from manila papers, • in pairs /groups, fold circular cut-outs into 2 equal parts and identify one part as $\frac{1}{2}$ of the whole, • in pairs /groups, make rectangular cut-outs and fold them into 4 equal parts to get a quarter of a whole and identify each part as $\frac{1}{4}$ of the whole, • in pairs /groups, make rectangular cut-outs and fold to get 8 equal parts and identify one part as $\frac{1}{8}$ of the whole, • in pairs /groups, divide a number of objects into 2 equal groups and identify each of the small groups as $\frac{1}{2}$ of the whole group, • in pairs /groups, divide a number of	How can you represent a half, a quarter or an eighth of a group?

			objects into 4 equal groups and identify each of the small groups as $\frac{1}{4}$ of the whole group, • in pairs /groups, divide a number of objects into 8 equal groups and identify each of the small groups as $\frac{1}{8}$ of the whole group, • play games involving $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ using digital devices or other resources.	

Core Competencies to be developed:

- Critical thinking and problem solving: learners explore different solutions to divide a number of objects into 8 equal groups and identify each of the small groups as eighth of a whole.
- Learning to learn: learners discover new ideas as they fold circular cut-outs into 2 equal parts and identify one part as $\frac{1}{2}$ of the whole.

Values:

- Unity: learners collaborate with peers as they work in pairs /groups to make rectangular cut-outs and fold them into 4 equal parts to get a quarter of a whole.
- Peace: learners follow laid down procedure to divide a number of objects into 4 equal groups and identify each of the small groups as $\frac{1}{4}$ of the whole group.

Pertinent and Contemporary Issues (PCIs):

Learners adhere to safety rules as they use scissors to make circular cut-outs from manila papers to enhance safety.

Link to other learning areas:
Learners relate dividing in fractions to portions of planting different crops as carried out in **Agriculture and Nutrition**.

Assessment Rubrics

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify position of objects from 1st to 20th and write the position in number symbols and in words.	Identifies and writes the position of objects from 1st to 20th in number symbols and in words correctly and fluently.	Identifies and writes the position of objects from 1st to 20th in number symbols and in words correctly.	Identifies and writes the position of objects between 1st to 15th in number symbols or in words correctly.	Identifies and writes the position of objects between 1st to 10th in number symbols or in words correctly.
Ability to count numbers forward up to 1000 starting from any point and backward from 1000 in multiples of 100.	Counts numbers forward up to 1000 starting from any point and backward from 1000 in multiples of 100 correctly and fluently.	Counts numbers forward up to 1000 starting from any point and backward from 1000 in multiples of 100 correctly.	Counts numbers forward up to 700 starting from any point or backward from 700 in multiples of 100.	Counts numbers forward up to 500 starting from any point or backward from 500 in multiples of 100.

Ability to identify place value of numbers up to hundreds.	Identifies the place value of numbers up to hundreds accurately and fluently.	Identifies the place value of most of the numbers up to hundreds accurately.	Identifies place value of numbers up to ten accurately.	Identifies place value of numbers up to ones.
Ability to read numbers 1 to 1000 in symbols and read and write numbers 1 to 100 in words.	Reads numbers 1 to 1000 in symbols and reads and writes numbers 1 to 100 in words accurately and fluently.	Reads numbers 1 to 1000 in symbols and reads and writes numbers 1 to 100 in words accurately.	Reads numbers from 1 to 700 in symbols or reads and writes some numbers from 1 to 70 in words.	Reads numbers 1 to 500 in symbols or reads and writes numbers 1 to 50 in words.
Ability to add two 3 digit numbers with single regrouping with sum not exceeding 1000.	Adds two 3 digit numbers with single regrouping with sum not exceeding 1000 correctly and proficiently.	Adds two 3 digit numbers with single regrouping with sum not exceeding 1000 correctly.	Adds two 3 digit numbers with single regrouping with sum not exceeding 700 correctly.	Adds two 3 digit numbers without regrouping with sum not exceeding 500.
Ability to subtract up to 3 digit numbers with single regrouping.	Subtracts up to 3 digit numbers with single regrouping correctly and proficiently.	Subtracts up to 3 digit numbers with single regrouping correctly.	Subtracts up to 2 digit numbers with single regrouping correctly.	Subtracts up to 2 digit numbers without regrouping correctly.

Ability to multiply a single digit number by a single digit number and by 10.	Multiplies a single digit number by a single digit number and by 10 correctly and proficiently.	Multiplies a single digit number by a single digit number and by 10 correctly	Multiplies a single digit number by a single digit number or by 10 correctly	Multiplies a single digit number by a single digit number correctly
Ability to divide a 2 digit number by a single digit number and by 10 without a remainder.	Divides a 2 digit number by a single digit number and by 10 without a remainder correctly and proficiently.	Divides a 2 digit number by a single digit number and by 10 without a remainder correctly.	Divides a 2 digit number by a single digit number or by 10 without a remainder correctly.	Divides a 2 digit number by a single digit number without a remainder correctly.
Ability to create number patterns involving addition, subtraction, multiplication and division of numbers up to 1000.	Creates number patterns involving addition, subtraction, multiplication and division of numbers up to 1000 correctly and creatively.	Creates number patterns involving addition, subtraction, multiplication and division of numbers up to 1000 correctly.	Creates number patterns involving any 3 of; addition, subtraction, multiplication or division of numbers up to 700.	Creates number patterns involving any 2 of; addition, subtraction, multiplication or division of numbers up to 500.
Ability to identify $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole and as part of a	Identifies $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole and as part of a group correctly	Identifies $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole and as part of a group	Identifies $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole or as part of a group	Identifies $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ as part of a whole correctly.

group.	and proficiently.	correctly.	correctly.	

STRAND 2.0: MEASUREMENT

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.1 Length** (6 lessons)	By the end of the sub strand, the learner should be able to: a) measure length in metres, b) add length in metres, c) subtract	The learner is guided to: ● in pairs/groups, use metre sticks to measure various distances and record their results, ● prepare 5 metres long strings with knots at intervals of one metre to measure long distances, ● in groups, measure the lengths of the 4	1) How can the length of a chalkboard be measured using a metre stick? 2) How can the distance

		length in metres, d) estimate length up to 10 metres, e) appreciate measuring length in metres in real life situations.	walls in their classroom and add the lengths, ● measure the length of the chalkboard and the teacher's table in metres and work out the difference in length, ● work out questions involving addition of length in real life situations, ● work out subtraction of length in metres based on real life situations, ● in pairs/groups, estimate distances around the school compound up to 10 metres, measure and compare results, ● record videos of classmates measuring length then play back the video and share experiences.	between the flag post and the staffroom be measured using a 5 metres long string?

Core Competencies to be developed:

- Digital literacy: learners use digital devices to record videos of classmates measuring length and play back the videos.
- Critical thinking and problem solving: learners' complete tasks by following instructions as they work out questions involving addition of length in real life situations

Values:

- Unity: learners appreciate peers' effort as they measure the lengths of various objects in and around the classroom.
- Responsibility: learners engage in assigned roles and duties as they prepare 5 metres long strings with knots at intervals of one metre to measure long distances

Pertinent and Contemporary Issues (PCIs):

● Learners estimate distances around the school compound up to 10 metres, measure the actual distances and compare results to enhance self-efficacy. ● Learners work harmoniously in groups to measure the lengths of various objects in and around the classroom to enhance social cohesion.
Link to other learning areas: ● Learners utilise speaking skills acquired from Language Activities to share experiences in measuring lengths around the school. ● Learners apply creative skills from Creative Activities to prepare 5 metres long strings with knots at intervals of one metre to measure long distances.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.2 Mass** (6 lessons)	By the end of the sub strand, the learner should be able to: a) measure mass in kilograms, b) add mass in kilograms, c) subtract mass in kilograms, d) estimate mass up to 5 kilograms, e) appreciate measuring mass of objects in kilograms.	The learner is guided to: ● collect safe materials to be used to measure mass in their immediate environment, ● make masses of 1kg using sand or soil by measuring against the kilogram standard unit, ● in groups, measure mass of different objects in kilograms using a beam balance and share experiences, ● in pairs/groups, role play addition of mass in kilograms using items in the classroom model shop, ● work out the differences between the masses of items in the classroom model shop, ● compare the masses of items in the classroom model shop with a 5kg mass, ● estimate mass of items up to 5kg, ● measure the masses of items to confirm their actual mass, ● play digital games involving mass.	How can you make a 1kg mass using a beam balance?

Core competencies to be developed: ● Self-efficacy: learners acquire self-confidence as they role play addition of mass in kilograms using items in the classroom model shop. ● Critical thinking and problem solving: learners explore different ways of making masses of 1kg using sand or soil by measuring against the kilogram standard unit.
Values: ● Respect: learners understand and appreciate others as they measure mass of different objects in kilograms using a beam balance and share their experiences. ● Unity: learners share resources amicably as they make masses of 1kg using sand or soil by measuring against the kilogram standard unit.
Pertinent and Contemporary Issues (PCIs): Learners safely collect materials needed for learning from their immediate environment to enhance environmental safety.
Link to other learning areas: ● Learners apply creative skills acquired from Creative Activities to make masses of 1kg using sand or soil by measuring against the kilogram standard unit. ● Learners apply safety skills acquired from Environmental Activities to safely collect materials needed for learning from their immediate environment.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.3 Capacity** (8 lessons)	By the end of the sub strand, the learner should be able to: a) measure capacity in litres, b) add capacity in litres, c) subtract capacity in litres, d) estimate capacity up to 5 litres, e) appreciate measuring capacity of containers in litres.	The learner is guided to: ● in pairs /groups, collect safe materials in their immediate environment to be used to measure capacity, ● in pairs or groups, discuss and measure capacity of different containers using a 1 litre containers, ● in turns, practice addition of capacity in litres in real life situations, ● in turns, practice subtraction of capacity in litres in real life situations, ● estimate capacity of containers up to 5 litres, ● measure the actual capacity of the containers to confirm their capacity in litres, ● play digital games involving capacity in real life situations.	How can the capacity of a container be measured?

Core Competencies to be developed: ● Self-efficacy: learners exhibit self-confidence as they estimate the capacity of containers up to 5 litres, measure the actual capacities of the containers and compare the measurements. ● Communication and collaboration: learners speak clearly, listen attentively and support peers as they discuss and measure capacity of different containers using 1 litre containers.
Values: ● Social justice: learners advocate for harmonious relation among peers as they work in groups to measure capacity of different containers using 1 litre containers. ● Responsibility: learners care for their own items for measuring capacity and those of others.
Pertinent and Contemporary Issues (PCIs): Learners work in groups and collect safe materials in their immediate environment to be used for measuring capacity to enhance social cohesion.
Link to other learning areas: Learners apply safety skills acquired from Environmental Activities to safely collect materials needed for measuring capacity from their immediate environment.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.4 Time** (10 lessons)	By the end of the sub strand, the learner should be able to: a) identify the minute as a unit of measuring time, b) read and tell time using 'past' and 'to' the hour using the clock face, c) read and tell time using the digital clock or analogue clock, d) write time using 'past' and 'to' the hour, e) estimate time in hours, f) add time involving	The learner is guided to: ● in groups, draw a clock face on a manila paper or any other resource, divide the clock face into two equal parts using a line passing through the centre, and discuss what each division represents, ● in pairs/groups, discuss the divisions on the clock face, ● locate a minute on the clock face and discuss it as a unit of measuring time, ● in pairs/groups, discuss how to tell time on the clock face using "past" and "to" the	How do we read and tell time using digital and analog clocks?

		hours and minutes without conversion in real life situations, g) subtract time involving hours and minutes without conversion in real life situations, h) appreciate reading and telling time using digital and analogue clocks.	hour, ● in turns, read and tell time on an analog clock, ● in groups, discuss how the digital clock operates and share their findings with others, ● in turns, read and tell time on a digital clock, ● in pairs/groups, estimate time in hours, ● in pairs/groups, add time in hours and minutes without conversion, ● in pairs/groups, subtract time in hours and minutes without conversion, ● discuss the importance of keeping time in real life situations.	
Core Competencies to be developed: ● Communication and collaboration: learners speak clearly, listen attentively and recognize peers' efforts as they discuss how to tell time on the clock face using “past” and “to” the hour. ● Learning to learn: learners show interest and persist in reading and telling time on analog and digital clocks.				

Values: ● Respect: learners accommodate diverse opinions as they discuss the importance of keeping time in real life situations. ● Peace: learners display tolerance as they in turns read and tell time on a digital clock.
Pertinent and Contemporary Issues (PCIs): Learners take turns in activities and conversations as they read and tell time on analog and digital clocks to enhance social cohesion.
Link to other learning areas: Learners apply creative skills acquired from Creative Activities to draw a clock face and divide the clock face into equal parts.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
2.0 Measurement	**2.5 Money** (10 lessons)	By the end of the sub strand, the learner should be able to: a) identify Kenyan currency notes up to sh.1000, b) count money in different denominations up to sh.1000, c) add money involving	The learner is guided to: ● use locally available materials to model Kenyan currency denominations for use in learning, ● in pairs/groups, sort Kenyan currency notes according to their value up to sh.1000, ● in pairs/groups, count Kenyan currency notes in different denominations up to sh1000, ● in pairs/groups, subtract money up	How can money be represented in different denominations?

		different denominations up to a sh.1000, d) subtract money involving different denominations up to a sh.1000, e) represent the same amount of money in different denominations, f) convert money into different denominations, g) use money to buy up to 3 items involving balance, h) appreciate spending and saving money in real life situations.	to sh.1000 in real life situations, ● in pairs/groups, add money up to sh.1000 in real life situations, ● in pairs/groups, role play changing money into different denominations up to sh. 1000 in the classroom model shop, ● in pairs/groups, role play buying up to 3 items involving balance using the money models up to sh.1000 in the classroom model shop, ● share own experiences in relation to shopping activities, ● play digital games involving money.	

Core Competencies to be developed:

- Citizenship: learners embrace each other regardless of their background as they in pairs/groups count Kenyan currency notes in different denominations up to sh. 1000.
- Digital literacy: learners use digital devices to play games involving money.

Values: ● Patriotism: learners exhibit honesty as they sort out Kenyan currency notes according to their value up to sh.1000. ● Responsibility: learners engage in assigned roles and duties as they role play buying up to 3 items involving balance using the money models up to sh.1000 in the classroom model shop.
Pertinent and Contemporary Issues (PCIs): ● Learners role play buying up to 3 items involving balance using the money models up to sh.1000 in the classroom model shop to enhance financial literacy. ● Learners use locally available materials from the environment to model Kenyan currency to enhance sustainable consumption.
Link to other learning areas: Learners use creative skills acquired from Creative Activities to model Kenyan currency denominations using locally available materials.

Assessment Rubrics

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to add and subtract length in metres.	Adds and subtracts length in metres accurately and proficiently.	Adds and subtracts length in metres accurately.	Adds or subtracts length in metres accurately.	Adds or subtracts length in metres with difficulties.
Ability to add and subtract mass in kilograms.	Adds and subtracts mass in kilograms accurately and proficiently.	Adds and subtracts mass in kilograms accurately.	Adds or subtracts mass in kilograms accurately.	Adds or subtracts mass in kilograms with difficulties.
Ability to add and subtract capacity in litres.	Adds and subtracts capacity in litres accurately and proficiently.	Adds and subtracts capacity in litres accurately.	Adds or subtracts capacity in litres accurately.	Adds or subtracts capacity in litres with difficulties.
Ability to read and write time using 'past' and 'to'	Reads and writes time using 'past' and 'to' accurately and fluently.	Reads and writes time using 'past' and 'to' accurately.	Reads or writes time using 'past' and 'to' accurately.	Reads or writes time using 'past' or 'to' accurately.
Ability to add and subtract time involving hours and minutes without	Adds and subtracts time involving hours and minutes without conversion accurately and	Adds and subtracts time involving hours and minutes without	Adds or subtracts time involving hours and minutes without conversion	Adds or subtracts time involving hours or minutes without conversion

conversion	proficiently.	conversion accurately.	accurately.	accurately.
Ability to identify Kenyan currency notes up to sh.1000	Identifies Kenyan currency notes up to sh.1000 correctly and consistently.	Identifies Kenyan currency notes up to sh.1000 correctly.	Identifies Kenyan currency notes up to sh.500.	Identifies Kenyan currency notes up to sh.200 correctly.
Ability to count money in different denominations up to sh.1000.	Counts money in different denominations up to sh.1000 correctly and consistently.	Counts money in different denominations up to sh.1000 correctly.	Counts money in different denominations up to sh.700 correctly.	Counts money in different denominations up to sh.500 correctly.
Ability to add and subtract money involving different denominations up to sh.1000.	Adds and subtracts money involving different denominations up to sh.1000 correctly and consistently.	Adds and subtracts money involving different denominations up to sh.1000 correctly.	Adds or subtracts money involving different denominations up to sh.700 correctly.	Adds or subtracts money involving different denominations up to sh.500 correctly.
Ability to represent the same amount of money in different denominations.	Represents the same amount of money in different denominations correctly and consistently.	Represents the same amount of money in different denominations correctly.	Represents the same amount of money in different denominations partially correctly.	Represents the same amount of money in different denominations with difficulties.

STRAND 3.0: GEOMERY

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) move along a straight line from a point, b) identify the right and left side from a point, c) turn to the right from a point, d) turn to the left from a point, e) appreciate use of directions in real life situations.	The learner is guided to: • in pairs /groups, move along a straight line from a given point outside the classroom, • in pairs/groups, play a game of moving to the right and left sides from a point, • in pairs/groups, move straight outside the classroom then turn to the right, • in pairs/groups, move straight outside the classroom then turn to the left, • in pairs or groups, play games involving moving along a straight line and turning left or right, • play digital games involving movement on straight lines and turning to the left and right.	What is the importance of directions in real life situations?
Core Competencies to be developed: ● Digital literacy: learners use digital devices to play games involving movement on straight lines and turning to the left and				

right. ● Communication and collaboration: learners describe their positions using terms such as right, left, ahead, behind.
Values: ● Peace: learners avoid hurting others as they play games involving moving along a straight line then turning left or right. ● Unity: learners take turns in activities as they move straight outside the classroom then turn to the left.
Pertinent and Contemporary Issues (PCIs): ● Learners follow laid down procedures to carry out activities as they move along a straight line from a given point outside the classroom to enhance positive discipline. ● Learners accord each other equal opportunities in sharing responsibilities as they play a game of moving to the right and left sides from a point to enhance responsibility.
Link to other learning areas: Learners apply the skills of position and direction from Environmental Activities to play games involving moving along a straight line and turning left or right within the environment.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
3.0 Geometry	**3.2 Shapes** (4 lessons)	By the end of the sub strand, the learner should be able to: a) identify the shapes in a combined shape	The learner is guided to: ● in pairs/groups, make paper cut-out of different shapes, ● in pairs or groups, sort out the paper cut-outs according to their shapes,	What shapes can you identify in your school?

		made of two different shapes, b) draw a combined shape made of 2 shapes, c) model a combined shape made of two shapes, d) appreciate the use of combined shapes in the environment.	• in pairs or groups, name the different shapes made from the paper cut-outs, • in pairs/groups, name and discuss shapes in their immediate environment, • in pairs/groups, draw combined shapes found in the environment that are made of 2 different shapes, e.g. the hut, • in groups, use locally available materials to model a combined shape made of 2 different shapes, • play digital games involving shapes.	

Core Competencies to be developed:

- Communication and collaboration: learners speak clearly, listen keenly, understand and respect diversity as they discuss shapes in their immediate environment.
- Critical thinking and problem solving: learners make paper cut-out of different shapes and sort them according to their shapes.

Values:

- Social justice: learners share resources equitably as they make paper cut-outs of different shapes.
- Integrity: learners use locally available resources sparingly as they model a combined shape made of 2 different shapes.

Link to PCIs:

Learners imagine different shapes and model them using locally available materials from the immediate environment to enhance creative thinking.

Link to other learning areas:

- Learners apply speaking and listening skills acquired from Language Activities to discuss shapes in their immediate environment.
- Learners apply creative skills acquired from Creative Activities to model combined shapes using locally available materials.

Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify the right and left side from a point.	Identifies the right and left side from a point accurately and consistently.	Identifies the right and left side from a point accurately.	Identifies the right or left side from a point accurately.	Identifies the right or left side from a point with difficulties.
Ability to turn to the right and to the left from a point.	Turns to the right and to the left from a point accurately and consistently.	Turns to the right and to the left from a point accurately.	Turns to the right or to the left from a point accurately.	Turns to the right or to the left from a point with difficulties.
Ability to identify shapes from a figure made of two different shapes	Identifies shapes from a figure made of two different shapes accurately and proficiently.	Identifies shapes from a figure made of two different shapes accurately.	Identifies shapes from a figure made of two different shapes partially accurately.	Identifies shapes from a figure made of two different shapes with difficulties.
Ability to draw and model a combined shape made of 2 shapes.	Draws and models a combined shape made of 2 shapes accurately and creatively.	Draws and models a combined shape made of 2 shapes accurately.	Draws or models a combined shape made of 2 shapes accurately.	Draws or models a combined shape made of 2 shapes with difficulties.

APPENDIX 1: COMMUNITY SERVICE LEARING (CSL) GUIDELINES FOR EARLY YEARS EDUCATION (PP1&2 AND GRADE 1-3)

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 Environmental Activities learning area. The class teacher is expected to identify and guide learners to undertake age-appropriate whole-class integrated CSL activity within the school. 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

- Determine the activity for the learners
- 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 of 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. The 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 developed and values nurtured. 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, rating scale or any other appropriate assessment tool.

APPENDIX 2: SUGGESTED LEARNING RESOURCES

STRANDS	SUB -STRANDS	RESOURCES
NUMBERS	NUMBER CONCEPT	Counters such as marbles, sticks, stones, grains
	WHOLE NUMBERS	A number line drawn on the ground/floor, place value chart
	ADDITION	Place value chart, abacus, basic addition facts table
	SUBTRACTION	Basic addition facts table, place value chart
	MULTIPLICATION	Bottle tops, marbles, stones, grains, number line drawn on the ground/floor, multiplication tables
	DIVISION	Bottle tops, marbles, stones, sticks, grains, multiplication tables
	FRACTIONS	Circular and rectangular cut outs, marbles, bottle tops, sticks, grains, stones
MEASUREMENT	LENGTH	Books, pencils, rulers, sticks, bottles, metre rule, metre sticks
	MASS	Masses of 1kg, soil, sand, beam balance
	CAPACITY	Containers of different sizes, 1litre containers, sand soil water,5 litre containers
	TIME	Clock face both analogue and digital

	MONEY	Kenyan currency coins and notes/imitations up to sh.1000, classroom shop
GEOMETRY	POSITION AND DIRECTION	Charts showing a straight line, a turn to the left and a turn to the right
	SHAPES	Cut- outs of rectangles, circles, triangles, ovals and squares of different sizes

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

APPENDIX 3: SUGGESTED ASSESSMENT METHODS AND TOOLS

1. Written tests and quizzes
2. Rating scales
3. Projects
4. Observation Schedules
5. Portfolio
6. Assessment Rubric
7. Questionnaire