KENYA INSTITUTE OF CURRICULUM DEVELOPMENT

A skilled and Ethical Society

PRIMARY SCHOOL CURRICULUM DESIGN

MATHEMATICAL ACTIVITIES

GRADE 2

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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:

1. Communicate appropriately using verbal and or non-verbal modes in a variety of contexts.
2. Demonstrate mastery of number concepts to solve problems in day to day life
3. Demonstrate social skills, moral and religious values for positive contribution to society
4. Develop one's interests and talents for personal fulfilment
5. Make informed decisions as local and global citizens of a diverse, democratic society in an interdependent world.
6. Explore, manipulate, manage and conserve the environment effectively for learning and sustainable development
7. Acquire digital literacy skills for learning and enjoyment.
8. 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 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.

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: a) identify numbers 1 to 100 in symbols in different situations, b) represent numbers 1 to 100 using concrete objects from the environment, c) play number games using number cards or digital devices, d) appreciate the use of numbers in real life situations.	The learner is guided to: ● in pairs or groups, recognize and read numbers 1 to 100 from number cards or charts, ● in groups, collect safe concrete objects from the environment, ● in groups, count concrete objects of given numbers in symbols, ● match a group of objects to their number value, ● in groups, discuss, choose and play number games in turns using number cards or digital devices.	How can we represent numbers using objects?
Core Competencies to be developed: ● Digital literacy: learners use digital devices to play number games. ● Learning to learn: learners discover ways of representing numbers as they match a group of objects to their number value.				
Values: Unity: learners respect peers' opinion as they discuss, choose and play number games in turns using number cards or digital devices.				
Pertinent and Contemporary Issues (PCIs): ● Learners develop self confidence in relating numbers using concrete objects as they match a group of objects to their number value to enhance self-esteem. ● Learners observe safety as they collect concrete objects for learning from the environment to use to enhance safety**.**				

Link to other learning areas: Learners interact with the environment when collecting safe concrete objects for use in Mathematics Activities thus relating with Environmental Activities.

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 100 in different situations, b) count numbers backward from number 50, c) read and write numbers 1 to 100 in symbols in different situations, d) identify the place value of numbers in ones and tens, e) read and write numbers 1 to 20 in words, f) work out missing numbers in number patterns up to 100, g) appreciate number patterns in playing number games.	The learner is guided to: ● in pairs/groups, count numbers forward up to 100 starting from any point, ● in pairs/groups, count numbers backward from 50 starting from any point, ● in pairs, recognize and read numbers 1 to 100 in symbols from number cards or charts, ● in groups, name and write the numbers in the place value of ones and tens ● in groups, discuss the place value of digits written on the number cards, ● read and write numbers 1 to 20 in words, ● work out missing numbers in number patterns up to 100, ● in pairs or groups, make number patterns and share with other groups, ● play games involving whole numbers using digital devices or other resources,	How do we get the next number in a number pattern?

			• improvise place value tins and pockets from locally available materials, • play a game of putting number cards in place value tins or pockets (ones and tens) according to the place value of digits.	

Core Competencies to be developed:

- Creativity and imagination: learners imagine ways of making different patterns and bring them to life as they make number patterns and share their work with other groups.
- Critical thinking and problem solving: learners complete tasks by following instructions as they improvise place value tins and pockets from locally available materials.

Values:

- Unity: learners take turns in activities as they play a game of putting number cards in place value tins or pockets (ones and tens) according to the place value of digits.
- Responsibility: learners observe safety precautions as they use locally available materials to improvise place value tins and pockets.

Pertinent and Contemporary Issues (PCIs):

- Learners improvise place value tins and pockets from locally available materials to enhance environmental awareness.
- Learners improvise place value tins and pockets from locally available materials to enhance creative thinking.

Link to other learning areas:

- Learners utilise creative skills from Creative Activities to improvise place value tins and pockets from locally available materials.
- Learners utilise reading and writing skills from Language Activities to read and write numbers 1 to 20 in words.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.3 Addition** (20 lessons)	By the end of the sub strand, the learner should be able to: a) add a 2 digit number to a 1 digit number without and with regrouping with sum not exceeding 100, b) add a 2 digit number to a 2 digit number without and with regrouping, with sum not exceeding 100, c) add two multiples of 10 whose sum does not exceed 100, d) work out missing numbers in patterns involving addition of whole numbers up to 100, e) appreciate the addition of numbers in real life situations.	The learner is guided to: ● in pairs, write addition sentences given in horizontal form into vertical form according to place value, ● add a 2 digit number to a 1 digit number without regrouping, ● add a 2 digit number to a 1 digit number with regrouping, ● in pairs/groups, discuss and come up with different ways of adding two 2 digit numbers without and with regrouping, ● in pairs/groups, add 2 multiples of ten whose sum does not exceed 100, ● play games involving addition using digital devices or other resources, ● in groups, make patterns using numbers up to 100 and share with other groups.	1. How are horizontal addition sentences written vertically? 2. When do we regroup during addition?
Core Competencies to be developed: • Communication and collaboration: learners speak clearly, listen and support their peers as they discuss and come up with different ways of adding two 2 digit numbers without and with regrouping. • Learning to learn: learners discover ways of presenting addition as they write addition statements given in horizontal form into vertical				

form according to place value.
Values: Respect: learners accommodate each other as they work in groups to make number patterns and share with other groups.
Pertinent and Contemporary Issues (PCIs): ● Learners work harmoniously in groups as they practise adding 2 multiples of ten with sum not exceeding 100 to enhance social cohesion. ● Learners play games involving addition using digital devices or other resources to enhance friendship formation.
Link to other learning areas: Learners utilise speaking and listening skills from Language Activities to discuss and come up with different number patterns involving adding numbers up to 100.

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 1 digit number from a 2 digit number without regrouping, b) subtract a 2 digit number from a 2 digit number without and with regrouping, c) subtract a lower multiple of 10 from a higher multiple of	The learner is guided to: ● individually or in groups, subtract a 1 digit number from a 2 digit number without regrouping, ● in pairs or groups, subtract a 2 digit number from a 2 digit number without regrouping using place value apparatus, ● in pairs or groups, subtract a 2 digit number from a 2 digit number with regrouping using place value	How do you work out missing numbers in number patterns involving subtraction?

		10, d) work out missing numbers in patterns involving subtraction up to 100, e) appreciate subtraction of numbers in real life situations.	apparatus, ● in pairs or groups, subtract lower multiples of 10 from higher multiples of 10, ● in groups, discuss and work out missing numbers in patterns involving subtraction up to 100.	

Core Competencies to be developed:

- Learning to learn: learners discover steps of subtracting a 2 digit number from a 2 digit number with regrouping using place value apparatus.
- Critical thinking and problem solving: learners explore different solutions as they discuss and work out missing numbers in patterns involving subtraction up to 100.

Values:

- Unity: learners collaborate with others as they work in groups to subtract numbers with regrouping using place value apparatus.
- Social justice: learners accommodate peers as they work in groups to discuss and work out missing numbers in patterns involving subtraction up to 100.

Pertinent and Contemporary Issues (PCIs):

Learners accommodate peers as they work in groups to discuss and work out missing numbers in patterns involving subtraction up to 100 to enhance social cohesion.

Link to other learning areas:

Learners apply speaking and listening skills from Language Activities to discuss numbers patterns involving subtraction up to 100.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.5 Multiplication** (12 lessons)	By the end of the sub strand, the learner should be able to: a) represent multiplication as repeated addition using numbers 1, 2, 3, by 2 and 3, b) write repeated addition sentences as multiplication using '×' sign, c) multiply 1 digit numbers by 1, 2, 3, 4 and 5, d) multiply 1 digit numbers by 10, e) appreciate arranging objects in groups of 3's, 4's, 5's and 10's in real life situations.	The learner is guided to: ● in pairs or groups, use counters or other concrete objects to represent multiplication as repeated addition, ● in pairs, model multiplication as repeated addition using concrete objects. ● use '×' sign in writing repeated addition sentences as multiplication, ● in groups, multiply 1 digit numbers by 1, 2, 3, 4, 5, ● use locally available materials to model a multiplication chart and display in the learning environment, ● in groups, multiply 1 digit numbers by 10 to form multiples of 10, ● play games involving multiplication using digital devices or other resources, ● visit the local market to see how different fruits and other items are arranged in groups of 3's, 4's, 5's or 10's for selling, and assist in	How is multiplication represented as repeated addition?

			grouping some of the items for sale.	

Core Competencies to be developed:

- Digital literacy: learners use digital devices to play games involving multiplication.
- Critical thinking and problem solving: learners explore ways of improvising learning materials as they use locally available materials to model a multiplication chart.

Values:

- Responsibility: learners share resources amicably as they model multiplication as repeated addition.
- Patriotism: learners serve the community as they visit the local market and assist in grouping some items for sale.

Pertinent and Contemporary Issues (PCIs):

- Learners visit the local market to see how different fruits and other items are arranged in groups of 3's, 4's, 5's or 10's for selling to enhance financial literacy.
- Learners visit the local market to assist in grouping some items for sale to enhance community involvement.

Link to other learning areas:

Learners utilise speaking and listening skills from Language Activities to interact with the community members as they assist in grouping some items for sale.

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 as equal sharing up to number 20 by 2, b) represent division as	The learner is guided to: ● in groups, share a given number of objects equally by each picking one object at a time until all the objects are finished. Each learner to count how many objects he/she got,	How can you share a given number of objects equally?

		equal grouping of numbers up to 25 by 3, c) use ' ÷' sign in writing division statements. d) divide numbers up to 25 by 4 and 5 without a remainder, e) appreciate the application of division of numbers in real life situations.	● as a class, place several objects together, let each group pick one item at a time until there is no object remaining, each group to count the number of objects they picked, ● write division statements using the sign '÷', ● organise numbers up to 25 into groups of 4 or 5 without a remainder, ● play games involving division using digital devices or other resources.	
Core Competencies to be developed: ● Self-efficacy: learners exhibit confidence as they organise numbers up to 25 into groups of 4 or 5 without a remainder, ● Digital literacy: learners use digital devices to play games involving division.				
Values: ● Social justice: learners accommodate each other regardless of their background as they share a given number of objects equally. ● Respect: learners display humility as they place several objects together and let each group pick one item at a time until there is no object remaining				
Pertinent and Contemporary Issues (PCIs): Learners accommodate each other regardless of their background as they share a given number of objects equally to enhance social cohesion.				
Link to other learning areas: Learners utilise writing skills from Language Activities to write division statements using the sign '÷'.				

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
1.0 Numbers	**1.7 Fractions** (12 lessons)	By the end of the sub strand, the learner should be able to: a) identify a $\frac{1}{2}$ as part of a whole in different situations, b) identify a $\frac{1}{4}$ as part of a whole in different situations, c) use fractions in day-to-day activities, d) appreciate the application of fractions in daily life activities.	The learner is guided to: ● in pairs, use papers, pencils and a pair of scissors to make circular paper cut-outs while observing safety, ● in pairs, fold the circular paper cut-outs into two equal parts and identify one of the parts as a half of the whole written as $\frac{1}{2}$, ● in pairs, make rectangular paper cut-outs and fold them into two equal parts to get a half of a whole written as $\frac{1}{2}$, ● in pairs, fold circular paper cut-outs to get 4 equal parts and identify one of the parts as a $\frac{1}{4}$ of a whole, ● in pairs, practise making halves and quarters of a whole, ● play games involving fractions using digital devices or other	How do we get a fraction from a whole?

			resources.	

Core Competencies to be developed:

- Learning to Learn: learners persistently practise making halves and quarters of a whole.
- Critical thinking and problem solving: learners explore ways of presenting fractions as they make rectangular paper cut-outs and fold them into two equal parts to get a half of a whole written as $\frac{1}{2}$.

Values:

- Responsibility: learners observe safety precautions as they make circular paper cut- outs using a pair of scissors.
- Unity: learners collaborate with peers as they use digital devices to play games involving fractions.

Pertinent and Contemporary Issues (PCIs):

- Learners fold circular paper cut outs into two equal parts and identify one of the parts as a half of the whole to enhance creative thinking.
- Learners practise making halves and quarters of a whole to enhance self-esteem.

Link to other learning areas: Learners use materials same as those used in Creative Activities such as papers, pencils and a pair of scissors to make circular paper cut-outs.

Assessment Rubrics - Numbers

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to identify numbers 1 to 100 in symbols.	Identifies numbers 1 to 100 in symbols accurately and fluently.	Identifies numbers 1 to 100 in symbols accurately.	Identifies numbers 1 to 70 in symbols accurately.	Identifies numbers 1 to 50 in symbols accurately.
Ability to count numbers forward up to 100 and backward from number 50.	Counts numbers forward up to 100 and backward from number 50 accurately and fluently.	Counts numbers forward up to 100 and backward from number 50 accurately.	Counts numbers forward up to 70 and backward from number 30 accurately.	Counts numbers forward up to 50 and backward from number 20 accurately.
Ability to read and write numbers 1 to 100 in symbols and 1 to 20 in words.	Reads and writes numbers 1 to 100 in symbols and 1 to 20 in words correctly and proficiently.	Reads and writes numbers 1 to 100 in symbols and 1 to 20 in words correctly.	Reads and writes numbers 1 to 70 in symbols and 1 to 15 in words correctly.	Reads and writes numbers 1 to 70 in symbols and 1 to 10 in words correctly.
Ability to identify the place value of numbers in ones and tens.	Identifies the place value of numbers in ones and tens correctly and fluently.	Identifies the place value of numbers in ones and tens correctly.	Identifies the place value of numbers in ones or tens correctly.	Identifies the place value of numbers in ones or tens with difficulties.
Ability to work out missing numbers in	Works out missing numbers in number patterns up to	Works out missing numbers in number	Works out missing numbers in number	Works out missing numbers in number

number patterns up to 100.	100 accurately and systematically.	patterns up to 100 accurately.	patterns up to 70 accurately.	patterns up to 50 accurately.
Ability to add a 2 digit number to a 2 digit number without and with regrouping, with sum not exceeding 100.	Adds a 2 digit number to a 2 digit number without and with regrouping, with sum not exceeding 100 accurately and fluently.	Adds a 2 digit number to a 2 digit number without and with regrouping, with sum not exceeding 100 accurately.	Adds a 2 digit number to a 2 digit number without or with regrouping, with sum not exceeding 100 accurately.	Adds a 2 digit number to a 1 digit number without regrouping and with sum not exceeding 100 accurately.
Ability to work out missing numbers in patterns involving addition and subtraction of whole numbers up to 100.	Works out missing numbers in patterns involving addition and subtraction of whole numbers up to 100 accurately and fluently.	Works out missing numbers in patterns involving addition and subtraction of whole numbers up to 100 accurately.	Works out missing numbers in patterns involving addition or subtraction of whole numbers up to 70 accurately.	Works out missing numbers in patterns involving addition or subtraction of whole numbers up to 50 accurately.
Ability to subtract a 2-digit number from a 2 digit number without and with regrouping.	Subtracts a 2 digit number from a 2 digit number without and with regrouping correctly and fluently.	Subtracts a 2 digit number from a 2 digit number without and with regrouping correctly.	Subtracts a 1 digit number from a 2 digit number without or with regrouping correctly.	Subtracts a 1 digit number from a 2 digit number without regrouping correctly.
Ability to multiply 1 digit numbers by 1, 2, 3, 4, 5 and 10.	Multiplies 1 digit numbers by 1, 2, 3, 4, 5 and 10 accurately and fluently.	Multiplies 1 digit numbers by 1, 2, 3, 4, 5 and 10 accurately.	Multiplies 1 digit numbers by any 4 of; 1, 2, 3, 4, 5 or 10 accurately.	Multiplies 1 digit numbers by any 2 of; 1, 2, 3, 4, 5 or 10 accurately.
Ability to represent division as equal sharing and grouping up to number 20 by 2.	Represents division as equal sharing and grouping up to number 20 by 2 accurately and	Represents division as equal sharing and grouping up to number 20 by 2 accurately.	Represents division as equal sharing or grouping up to number 15 by 2 accurately.	Represents division as equal sharing or grouping up to number 10 by 2 accurately.

	systematically.			
Ability to divide numbers up to 25 by 4 and 5 without a remainder.	Divides numbers up to 25 by 4 and 5 without a remainder accurately and systematically.	Divides numbers up to 25 by 4 and 5 without a remainder accurately.	Divides numbers up to 20 by 4 or 5 without a remainder accurately.	Divides numbers up to 15 by 4 or 5 without a remainder accurately.
Ability to identify a $\frac{1}{2}$ and a $\frac{1}{4}$ as part of a whole.	Identifies a $\frac{1}{2}$ and a $\frac{1}{4}$ as part of a whole correctly and fluently.	Identifies a $\frac{1}{2}$ and a $\frac{1}{4}$ as part of a whole correctly.	Identifies a $\frac{1}{2}$ or a $\frac{1}{4}$ as part of a whole correctly.	Identifies a $\frac{1}{2}$ or a $\frac{1}{4}$ as part of a whole with difficulties.

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 using fixed units, b) identify the metre as a unit of measuring length, c) measure length in metres, d) appreciate measuring length using fixed units in real life situations.	The learner is guided to: ● in pairs or groups, use sticks of equal length to measure lengths of different objects and record the measurements, ● in pairs or groups, use sticks of different lengths to measure length, including a 1-metre sticks, ● use locally available materials to make 1-metre sticks and use them to measure the length of various objects within the classroom and record the measurements, ● measure the length of different objects at home, record the measurements and discuss with peers in school.	How is the length of an object measured?
Core Competencies to be developed: Critical thinking and problem solving: learners make 1-metre sticks and use them in measuring length of various objects.				
Values: Responsibility: learners use locally available materials to make 1-metre sticks and use them to measure the length of various objects within the classroom.				
Pertinent and Contemporary Issues (PCIs): Learners observe safety measures when using locally available materials to make 1-metre sticks and use them to measure the length of various objects.				
Link to Other Learning Areas: Learner relates use of locally available materials to make 1-metre sticks to natural resources in Environmental Activities.				

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 using fixed units, b) identify the kilogram as a unit of measuring mass, c) measure mass of different objects in kilograms, d) appreciate measuring mass using fixed units in real life situations.	The learner is guided to: ● in pairs/groups, collect safe materials from the environment for measuring mass, ● in pairs/groups use locally available materials to improvise a beam balance, ● in pairs/groups, use items of the same mass and an improvised beam balance to measure different masses, record and discuss the results, ● in pairs/groups, use an item equivalent to a 1-kilogram mass and a beam balance to measure mass of different objects in kilogram accurately, ● visit a shop or market and assist vendors measure items such as beans, maize, rice, flour using fixed units, for example an empty 1-kilogram container, ● measure the mass of different items in kilograms using a 1 kilogram container, ● play digital games involving mass in kilograms.	Why is it important to know the mass of an object?

Core Competencies to be developed: Communication and collaboration: learners in pairs or groups, use items of the same mass and an improvised beam balance to measure different masses, record and discuss the results,
Values: Patriotism: learners visit a shop or market and assist vendors measure items such as beans, maize, rice, flour using fixed units, for example an empty 1 kilogram container
Pertinent and Contemporary Issues (PCIs): Learners carefully collect materials from the environment for measuring mass to ensure safety.
Link to Other Learning Areas: Learner relates use of locally available materials to improvise a beam balance to improvisation of materials in Creative Activities.

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 using fixed units, b) identify the litre as a unit of measuring capacity, c) measure capacity in litres, d) appreciate measuring	The learner is guided to: ● in pairs/groups collect containers of different sizes for use in measuring capacity, ● in pairs/groups, use small containers of equal capacity to fill bigger containers of same capacity but different shapes with water, count the number of small containers used to fill the big containers, ● in pairs/groups, use 1 litre containers to fill bigger containers with	1. Why do containers have different capacities? 2. Which commodities can be measured in terms of litres?

		capacity in litres using improvised containers in real life situations.	water and count the number of litres used to fill the big containers. Use water properly to avoid wetting floors. ● in pairs/groups, discuss and measure the capacity of different containers in litres accurately, ● participate in activities involving measuring liquids such as milk and water using 1 litre bottles.	
Core Competencies to be developed: Learning to learn: learners use 1 litre containers to fill bigger containers with water and count the number of litres used to fill the bigger containers.				
Values: Responsibility*:* learners participate in activities involving measuring liquids such as milk and water using 1 litre bottles.				
Pertinent and Contemporary Issues (PCIs): Learners use water carefully to avoid wetting floors as they use 1 litre containers to fill big containers with water to ensure safety.				
Link to Other Learning Areas: Learners relate speaking in pairs/groups as they discuss and measure the capacity of different containers in litres to speaking skills in language activities.				

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) relate the months of the year to special occasions, b) recite the number of days in each month of the year, c) read the calendar in terms of day and date, d) measure time using arbitrary units, e) identify the minute and hour hand in clock face, f) read time by the hour from the clock face, g) write time by the hour shown by an analogue and digital clock, h) appreciate keeping time in day-to-day activities.	The learner is guided to: ● in pairs/groups, discuss special occasions that take place in different months of the year, ● in pairs/groups, sing songs and rhymes related to the number of days in the months of the year, ● in pairs/groups, discuss how to read, tell and write dates from the calendar. ● in pairs/groups, discuss and relate time by hour using the length of a shadow of an object such as a tree in the environment, ● discuss places where clocks are displayed and how they look, ● observe a clock face and discuss the minute and hour hand, ● discuss how to read, tell and write time by the hour using both the analogue and digital clock, ● discuss the importance of keeping time in different activities.	How do we tell time?
Core Competencies to be developed: Citizenship: learners sing songs and rhymes related to the number of days in the months of the year.				
Values: • Patriotism: learners sing songs and rhymes related to the number of days in the months of the year.				

• Integrity: learners discuss the importance of keeping time in different activities.
Pertinent and Contemporary Issues (PCIs): Learners sing songs and rhymes related to the number of days in the months of the year in groups which enhance social cohesion.
Link to other learning areas: • Learner relates reading, telling and writing time by the hour using both the analogue and digital clock to reading skills in language activities. • Learner associates singing songs and reciting rhymes related to the number of days in the months of the year to singing in creative activities.

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 coins and notes up to sh.100, b) count the number of sh. 10 and sh. 20 coins in different situations, c) count the number of sh. 50 and sh. 100 notes in different situations, d) add two denominations of money with a sum not exceeding sh. 100, e) use money to buy up to 3 items without balance, f) appreciate the use of money in buying items.	The learner is guided to: ● in pairs/groups, recognize and sort out Kenyan currency coins and notes up to sh.100, ● in groups, make sh. 10 and sh. 20 coins paper cut-outs, sort and count the number of sh. 10 and sh. 20 coins paper cut-outs, ● in groups, make sh. 50 and sh. 100 notes paper cut-outs, sort and count the number of sh. 50 and sh. 100 notes paper cut-outs, ● add two denominations of money with a sum not exceeding sh. 100, ● in pairs or groups, role play buying up to 3 items without balance from the model shop in the classroom, ● record a video during a role play of classroom shopping activities.	How different are Kenyan currency denominations?
Core Competencies to be developed: Digital literacy**:** learners record a video during a role play of classroom shopping activities.				
Values: Patriotism: learners recognize and sort out Kenyan currency coins and notes up to sh.100.				
Pertinent and Contemporary Issues (PCIs): Financial Literacy is enhanced as learners in pairs or groups role play buying up to 3 items without balance from the model shop in the				

classroom.
Link to other learning areas: Learners role play buying up to 3 items without balance from the model shop in the classroom thus linking with Creative Activities.

Assessment Rubrics

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to measure length in metres, mass in kilograms and capacity in litres.	Measures length in metres, mass in kilograms and capacity in litres accurately and precisely.	Measures length in metres, mass in kilograms and capacity in litres accurately.	Measures any 2 of; length in metres, mass in kilograms or capacity in litres accurately.	Measures any 1 of; length in metres, mass in kilograms or capacity in litres accurately.
Ability to read the calendar in terms of day and date.	Reads the calendar in terms of day and date accurately and fluently.	Reads the calendar in terms of day and date accurately.	Reads the calendar in terms of day or date accurately.	Reads the calendar in terms of day accurately.
Ability to read and write time by the hour from the clock face.	Reads and writes time by the hour from the clock face accurately and fluently.	Reads and writes time by the hour from the clock face accurately.	Reads or writes time by the hour from the clock face accurately.	Reads or writes time by the hour from the clock face partially accurately.
Ability to identify Kenyan currency coins and notes up to sh.100.	Identifies Kenyan currency coins and notes up to sh.100 accurately and precisely.	Identifies Kenyan currency coins and notes up to sh.100 accurately	Identifies Kenyan currency coins or notes up to sh.70 accurately.	Identifies Kenyan currency coins or notes up to sh.50 accurately.

Ability to count the number of sh.10 and sh.20 coins and sh.50 and sh.100 notes.	Counts the number of sh.10 and sh.20 coins and sh.50 and sh.100 notes correctly and fluently.	Counts the number of sh.10 and sh.20 coins and sh.50 and sh.100 notes correctly.	Counts the number of sh.10 or sh.20 coins and sh.50 or sh.100 notes correctly.	Counts the number of sh.10 or sh.20 coins correctly.
Ability to add 2 denominations of money with sum not exceeding sh. 100.	Adds 2 denominations of money with sum not exceeding sh. 100 correctly. and consistently.	Adds 2 denominations of money with sum not exceeding sh. 100 correctly.	Adds 2 denominations of money with sum not exceeding Sh. 70 correctly.	Adds 2 denominations of money with sum not exceeding sh. 50 correctly.

STRAND 3.0 GEOMERTY

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
3.0 Geometry	**3.1 Lines** (5 lessons)	By the end of the sub strand, the learner should be able to: a) model straight lines in different ways, b) draw straight lines in different ways, c) model curved lines in different ways, d) draw curved lines in different situations, e) appreciate the use of lines in real life situations.	The learner is guided to: ● in pairs /groups, safely model straight lines using sticks, plasticine or clay or papier mache and strings, ● in pairs /groups, safely model curved lines using plasticine or clay or papier mache and strings, ● individually model straight and curved lines by holding their hands in different ways; upward, horizontal, diagonal, ● draw straight and curved lines on manila papers and books using pencils, crayons and rulers or sticks, ● use digital devices or other resources to draw lines.	How are lines used?
Core Competencies to be developed: ● Self- efficacy: learners individually model straight and curved lines by holding their hands out in different ways. ● Digital literacy: learners use digital devices to draw lines.				
Values: ● Responsibility: learners take care of their drawing materials for drawing straight and curved lines. ● Love: learners portray a caring attitude towards peers as they use digital devices to draw lines.				

Pertinent and Contemporary Issues (PCIs): Learners safely model curved lines using plasticine or clay or papier mache and strings to enhance safety.
Links to other learning areas: Learners apply modelling skills acquired from Creative Activities to model straight and curved lines by holding their hands in different ways; upward, horizontal, diagonal.

Strand	Sub strand	Specific Learning Outcomes	Suggested Learning Experiences	Suggested Key Inquiry Question(s)
3.0 Geometry	**3.2 Shapes** (5 lessons)	By the end of the sub strand, the learner should be able to: a) identify different shapes in the environment, b) draw shapes in different ways, c) draw patterns involving different shapes, d) appreciate the use of shapes in forming patterns in fabrics.	The learner is guided to: ● recognise and name different shapes in the environment (triangles, squares, circles and ovals), ● in pairs or groups, discuss types of lines in different shapes (triangles, squares, circles and ovals) ● in turns, name different shapes of objects or on surfaces in their classroom, ● draw triangles, squares, circles and ovals on manila papers and display in the learning environment, ● in groups, make patterns using triangles, squares, circles and ovals, colour them and share with other groups, ● play games involving pattern making	How can patterns be made using shapes?

			using digital devices or other resources.	

Core Competencies to be developed:
Creativity and Imagination: learners imagine patterns and bring them to life as they make patterns using triangles, squares, circles, and ovals, and colour them.

Values:

- Unity: learners work harmoniously in groups as they discuss types of lines in different shapes and in turns, name different shapes of objects or on surfaces in their classroom.
- Social justice: learners accord each other equal opportunity as they in turns name different shapes of objects or on surfaces in their classroom,

Pertinent and Contemporary Issues (PCIs):
Learners draw triangles, squares, circles and ovals on manila papers and display them in the learning environment to enhance self-esteem.

Link to other learning areas:
Learners apply drawing and colouring skills from Creative Activities to make patterns using triangles, squares, circles and ovals, and colour.

Assessment Rubric

Level / Indicator	Exceeds Expectations	Meets Expectations	Approaches Expectations	Below Expectations
Ability to model and draw straight lines.	Models and draws straight lines accurately and creatively.	Models and draws straight lines accurately.	Models or draws straight lines accurately.	Models or draws straight lines with difficulties.
Ability to model and draw curved lines.	Models and draws curved lines accurately and creatively.	Models and draws curved lines accurately and creatively.	Models or draws curved lines accurately.	Models or draws curved lines with difficulties.

Ability to identify and draw triangles, squares, circles and ovals.	Identifies and draws triangles, squares, circles and ovals correctly and consistently.	Identifies and draws triangles, squares, circles and ovals correctly.	Identifies and draws any 3 of; triangles, squares, circles and ovals correctly.	Identifies and draws any 2 of; triangles, squares, circles and ovals correctly.
Ability to draw patterns involving triangles, squares, circles and ovals.	Draws patterns involving triangles, squares, circles and ovals accurately and creatively.	Draws patterns involving triangles, squares, circles and ovals accurately.	Draws patterns involving any 3 of; triangles, squares, circles and ovals accurately.	Draws patterns involving any 2 of; triangles, squares, circles and ovals accurately.

APPENDIX 3: 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.

APPENDICES 2: APPENDIX 1: SUGGESTED LEARNING RESOURCES

STRANDS	SUB -STRANDS	RESOURCES
NUMBERS	NUMBER CONCEPT	Counters such as bottle tops, marbles, sticks, stones, grains
	WHOLE NUMBERS	Bottle tops, marbles, sticks, stones, grains, a number line drawn on the ground/floor
	ADDITION	Bottle tops, marbles, stones, sticks, grains, place value chart, abacus, basic addition facts table, a number line drawn on the ground/floor
	SUBTRACTION	Bottle tops, marbles, sticks, stones, grains, basic addition facts table, a number line drawn on the ground/floor
	MULTIPLICATION	Bottle tops, marbles, stones, grains, number line drawn on the ground/floor, multiplication table
	DIVISION	Bottle tops, marbles, sticks, stones, grains, multiplication tables
	FRACTIONS	Circular and rectangular cut outs, pair of scissors
MEASUREMENT	LENGTH	Pencils, sticks, rulers, strings, ropes
	MASS	Items of different masses such as books, stones, pieces of wood, items of same mass, beam balance
	CAPACITY	Containers of different sizes, 1 litre containers, water, soil, sand
	TIME	Charts with number of days in each month and months of the year in order, clock face both

		analogue and digital
	MONEY	Money in coins and notes sh.1, sh.5, sh.10, sh.20, sh.40, sh.50, sh.100, Model classroom shop
GEOMETRY	LINES	Sticks, clay, plasticine, strings, ropes
	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. Portfolios
6. Assessment Rubric
7. Questionnaire