

THE NEW BASIC EDUCATION CURRICULUM FOR SIERRA LEONE (With Effect from December 2020)

MATHEMATICS (Class 1 – Form 3 Syllabi)

This subject curriculum is based on the <u>National Curriculum Framework and Guidelines for Basic</u> <u>Education</u>. It was prepared by national curriculum specialists, subject experts, and teachers; through a series of nationwide consultations and technical workshops in June 2015, as reviewed in 2020. It also takes account of an "accelerated learning curriculum" prepared for reopening of schools (2020-2021) after the shut-down due to Corona Virus (Covid-19).

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A MESSAGE TO ALL TEACHERS IMPLEMENTING THE NEW CURRICULUM

The new basic education curriculum for Sierra Leone comes at a challenging phase in the country's history. After the 11-year civil war and years of economic decline, the country was hit by the worst outbreak of the Ebola Virus Disease (EVD) that set back development. Later on, Sierra Leone experienced series of flooding and a mudslide that killed many people. The current outbreak of Corona Virus (Covid-19) has disrupted this year's economic development plan called year of delivery. These are all factors responsible for the set back in national development. However, as Sierra Leone is determined to minimize the spread of Covid-19, the Government is also poised for full economic recovery and a major push for national development. It is an exciting time for all teachers, school heads and other education professionals who want to see positive change in Sierra Leone. You are the professionals who have the challenging duty to shape the future for the next generation of young Sierra Leoneans. The future of our children and our nation is in your hands!

As part of the curriculum reform process the Ministry of Basic and Senior Secondary Education (MBSSE) has issued a key reference document to guide future strategies and activities. The **National Curriculum Framework and Guidelines for Basic Education** is the basis for designing each subject syllabus in the curriculum. Teachers are urged to obtain copies of this framework document from the Public Relations Office at the MBSSE. It highlights key principles underlying the new curriculum and outlines strategies for the reform of basic education, as well as providing specific guidance on structure, pedagogy, prescribedd subjects, time allocation, etc.

The main reform elements in the new curriculum include: a learner-centered approach; learner-friendly schools; equity and a chance for every child to learn; a focus on learning (not just teaching); support for professional development of teachers; a focus on making schools accountable to local communities (not just MBSSE); support for learning beyond memorizing cognitive content for examinations; a focus on empowering learners to make choices and thrive through the joys of learning; an approach that encourages local interpretation of the syllabus to achieve the prescribed learning outcomes through various methods and with a variety of resources.

There are also five key reform issues that have been made part of an advocacy and popularization campaign to win support from the public for this type of education reform. These reform issues, which hold great promise for peace building and development in Sierra Leone, are: **Assessment & Accountability; Equity & Inclusion; Partnerships; Quality & Integrity; and Social Cohesion & Peace Building**. To facilitate popular discussion around these topics MBSSE has issued Advocacy and Guidance Notes on each one, and these are being used to conduct radio discussions and other forms of popular engagement with the public. Teachers can obtain copies of these notes from the Public Relations Officer at the Ministry of Basic and Senior Secondary Education (MBSSE).

The new basic education curriculum has been structured in three broad stages, so the teaching syllabus for each subject area is designed for Stage 1 (Class 1- Class 3), Stage 2 (Class 4 – Class 6), and Stage 3 (Form 1 – Form 3). We hope this will help teachers to focus on links between

different subjects in a particular stage. Teachers may then see more clearly how these subjects combine to help their pupils achieve the outcomes relating to that stage. This should help teachers move away from a "class-by-class" and "subject-by-subject" view of their job. Instead teachers will develop a stage-by-stage view of how children develop and learn across subjects. It also gives teachers a sense of what children need to achieve at each stage before moving to the next stage. We hope teachers also see the need to work together like a "Relay Team in Sports". Each teacher has an obligation to the teacher of the next class to prepare Pupils well and make sure they are ready for that class. In turn the teacher of the next class has a duty to help learners make up for weak areas from their previous class, as well as to prepare them for progressing to yet another next class.

The three broad stages of basic education also helps teachers to understand that schools have three years in each stage to help learners achieve certain outcomes. So for children who do not learn well in Class 1, there is still a chance to help them catch up in Class 2 and Class 3, so that they can achieve the learning outcomes prescribedd for the first stage (Class 1-3) of basic education. This means that instead of failing these children and asking them to repeat class 1 or class 2, they can be allowed to proceed to the next class where they should be given help with areas in which they are weak.

However at the end of each of the three stages there are national assessments which will determine if children are ready to proceed to the next stage. Based on their performance in these examinations, there are two options to consider. Children may be asked to repeat a class in order to retake the examination. Alternatively they may be allowed to proceed, on condition that they are given remedial support in areas of weakness when they start the next stage. This applies to BECE and NPSE as well as national assessment on reading and mathematics (EGRA and EGMA) at the end of Class 3. Children who do not perform well in EGRA and EGMA may be asked to repeat Class 3 in order to retake these early grade assessments; or they may be allowed to proceed to stage 2 on condition that they are given remedial support in reading and mathematics during the first year of stage 2 (i.e. in Class 4).

Keeping these guidelines in mind the outline curriculum and teaching syllabus has been structured along the lines of four key elements that are important for quality in teaching and learning. These elements are outlined briefly below, and teachers are asked to note that they are interrelated. This has been taken into account by curriculum development practitioners in preparing the outline teaching syllabus to guide teachers on quality classroom practices that reflect the key elements as follows:

Learning Outcomes: There are different levels of learning outcomes in the document and teachers should note the differences. There are: General learning Outcomes, which state what learners are expected to achieve in this subject at the end of each of the three stages; Specific Learning Outcomes by Grade, which state what learners are expected to achieve in this subject at the end of each Class/Form in the 9-year basic education cycle; and there are Specific learning Outcomes by Topic, which state what learners should achieve in this subject at the end of each class/Form of each of the suggested topics/themes/units (i.e. content) for each grade. Based on the resources at their disposal and the background of their pupils, teachers may adapt the suggested content to make the lesson more familiar to learners. Content selected in different parts of the country should enable learners to achieve the specified learning outcomes. It is the learning outcomes that are important and content is just a way of achieving learning.

- Assessment Methods: suggest various ways in which teachers can test to find out how far learners have been able to achieve the expected learning outcomes during, and at the end of, a period of teaching and learning. These assessment methods must match the learning outcomes as an appropriate way of testing for the required results. E.g. testing for *recall* of the memorized definition of a concept cannot tell us if a learner really *understands* or *can make correct use of* that concept.
- Teaching Styles or Pedagogy: suggest how teachers can go about teaching and organizing learning such that the learners have a good chance of achieving the expected learning outcomes during, and at the end of, a period of teaching and learning. The teaching style used must be closely linked to the learning outcome and assessment method.
- Learning & Teaching Resources: which suggest a wide variety of learning materials and teaching aids that can be used to help teachers do their job and to help learners achieve the expected learning outcomes.

In addition to the outline teaching syllabus for each of the three broad stages of basic education, an implementation guideline chart is provided for teachers to use in planning how to pace learning for each term of the school year.

MATHEMATICS CURRICULUM

Mathematics causes anxiety in many pupils. This leads to poor performance, which in turn causes more anxiety!

In Sierra Leone there is a "fear" of mathematics as a difficult subject. This can cause stress and anxiety in learners. The evidence shows that anxiety leads to poor performance in the subject, and poor performance increases the level of anxiety about mathematics. Teachers can help to break this vicious cycle of anxiety and poor performance. Research shows that teachers can help if they give frequent assessment (tests, class exercises), and also provide feedback to pupils on how well they are doing, where they are going wrong and how to correct their mistakes. Through this approach learners can develop a love for mathematics instead of stress and anxiety about the subject. Teachers can also help to make mathematics fun for learners by using supplementary materials that are not related to the fear of examinations. E.g. the supplementary materials on "Lessons after COVID-19" deal with daily life issues that interest learners rather than with examinations.

Rationale and justification (Why Do We Have Mathematics in the Curriculum?)

Mathematics is a tool for solving a wide range of problems in daily life and in specialist areas of work. This subject enables learners to quantify objects and events precisely in a manner that can be understood by all. Mathematics also enables learners to manage information better by transforming large amounts of data into concise forms like tables and charts. Through this subject learners can develop logical, analytical and creative thinking, as well as problem solving and decision making skills. Because of its broad applications mathematics is a critical part of preparing children to survive and thrive in the 21st century.

General Learning Outcomes (The Learning Pupils should Acquire by the end of each Basic Education Stage)

The General Learning outcomes of a subject tell us what learners *should know or understand* and what they *should be able to do or demonstrate*, as well as what they *should value or reflect in their attitudes/behaviour*. These are the things that learners should achieve by the time they complete each of the three stages of basic education. Teachers may use general learning outcomes as a guide to check if the learners are on track for success at the end of each stage of stage of basic education.

1 First stage of Basic Education (Class 1 to Class 3)

By the end of Class 3 the learners should be able to demonstrate that they can:

- count to 10 000 forwards and backward from any two-, three- or four-digit number; count from any number in multiples of 2 up to 10, 20, 50 and 100
- identify, read, write, compare and order whole numbers up to 10 000 in numerals and in words and locate them on a number line; recognise place value for whole numbers to 10 000; recognise the ordinal numbers from first to tenth; recognise odd and even number

- identify, model, read, write, count, compare and order unit and non-unit fractions with denominators up to 10 and locate them on a number line; identify, model, read and write equivalent fractions with denominators up to 10 and locate them on a number line; add and subtract like fractions within one whole with denominators up to 10, including simple word problems
- recall and use addition and related subtraction facts to 100 and derive facts to 1000; use models, pictorial representations, mental and informal written strategies for addition and subtraction up to 10 000 involving whole numbers with up to four digits, including two-step word problems; recognise that subtraction is the inverse of addition; recognise and use the associative and commutative laws for addition
- > recognise broad units of time and state the relationships between them (hour, day, week, month, year)
- identify, name, describe, draw/ model, and sort simple two- and three-dimensional shapes according to their properties; recognise angles as a measure of turn and identify quarter turn as a right angle and half turn as a straight line; identify right angles within simple two-dimensional shapes
- identify, describe and complete number patterns involving the four mathematical operations and determine the rule in the number pattern
- collect, organise, display, extract and interpret simple discrete data using pictograms, lists, tables and bar charts, including one-step word problems

Specific learning outcomes

Specific learning outcomes of a topic or theme indicate what learners *should know or understand* and what they *should be able to do or demonstrate*, as well as what they *should value or reflect in their attitudes/behaviour*. These are the things that learners should achieve by the time they complete the specific topic or theme. Teachers should be guided by specific learning outcomes when planning assessments and tests to check that learners have achieved what is expected of them.

The First Grade (Class 1)

| THEMATIC AREA | SPECIFIC LEARNING OUTCOMES |
|---------------|---|
| Number and | Pupils should be able to: |
| Numeration | count to 100 forwards and backward initially from 0 or 1, progressing to counting from any given number |
| | identify, read, write, compare and order whole numbers up to 100 in numerals and in words |
| | represent whole numbers with models and pictorially, including locating them on a number line |
| | recognise place value for counting (whole) numbers up to 100 |
| | recognise the ordinal numbers from first to tenth |
| | use models and pictorial representations, including the number line, to describe halves and quarters |
| | Pupils should be able to: |

| Evenuday Arithmetic | Luce models nisterial representations, montal and written strategies for addition and related subtraction fasts up |
|---------------------|---|
| | • use models, pictorial representations, mental and written strategies for addition and related subtraction facts up |
| (include Financial | to 20 involving whole numbers with one- and two-digits |
| Literacy) | recognise that subtraction is the inverse of addition |
| | solve simple one-step addition and subtraction word problems up to 20 involving whole numbers with one- and |
| | two-digits |
| | > recognise multiplication as repeated addition and use models and pictorial representations to solve simple one- |
| | step problems |
| | recognise and identify the national currency in everyday use |
| | |
| | Pupils should be able to: |
| | use everyday and comparative language for length area and time |
| Measurement and | \sim use non-standard units to estimate length and area |
| Ectimation | vise non-standard drifts to estimate length and area recognize tall and draw on a 12 hour clock face the time to the hour and half hour |
| Estimation | recognise, tell and draw on a 12-nour clock-lace the time to the nour and hall-hour |
| | Dupile should be able to: |
| | |
| | Identify and name, simple two- and three-dimensional shapes |
| | use appropriate language to describe position, direction and movement |
| Geometry | |
| | Pupils <u>should be able to:</u> |
| | identify and describe simple number patterns involving addition and subtraction |
| | |
| Algebra | Pupils should be able to: |
| | use general ICT tools, e.g. spreadsheets, videos etc. to illustrate mathematics concepts |
| | use computer games and other mathematics teaching software to introduce practise and consolidate mathematics |
| Pasic Computing | conconts |
| | concepts |
| SKIIIS | |
| | |

The Second Grade (Class 2)

| THEMATIC AREA | SPECIFIC LEARNING OUTCOMES |
|-----------------------|--|
| Number and | Pupils should be able to: |
| Numeration | count to 1000 forwards and backward from any two- or three-digit number |
| | count from 0 in multiples of 2, 4, 5 and 10 |
| | identify, read, write, compare and order whole numbers up to 1000 in numerals and in words, and locate them on a number line |
| | extend understanding of place value for whole numbers to 1000 |
| | recognise odd and even numbers |
| | use models and pictorial representations, including the number line, to describe unit and non-unit fractions with de- nominators up to 10 |
| | Pupils should be able to: |
| Everyday | recall and use addition and related subtraction facts up to 20 and derive facts to 100 |
| Arithmetic | identify and use the associative and commutative laws for addition |
| (include Financial | use models, pictorial representations, mental and written strategies for addition and subtraction up to 1000 involving two- and three-digit numbers, including one-step word problems |
| Literacy) | recognise and use multiplication and related division facts for the 2, 4, 5 and 10 multiplication tables |
| | recognise and use the associative and commutative laws for multiplication |
| | recognise division as the inverse of multiplication |
| | use mental and informal written strategies for multiplication and division within the multiplication tables including one- step word problems |
| | count and solve simple word problems with the national currency involving addition and subtraction |
| | Pupils should be able to: |
| | review everyday language for length and time, and area, and extend to mass and volume / capacity |
| | use non-standard units to estimate, measure, compare and order length, perimeter, area mass and volume / capacity, |
| | and solve simple word problems involving their units of measurement |
| Measurement | recognise, tell and draw on a 12-hour clock face the time to five minutes, including quarter past / to the hour |
| and Estimation | know the number of seconds in a minute, minutes in an hour and hours in a day |

| | Pupils should be able to: identify, name, describe and sort simple two- and three-dimensional shapes according to their properties |
|-------------------------------|---|
| Geometry Algebra | Pupils should be able to: identify and describe simple number patterns involving the four mathematical operations determine the rule in the number pattern |
| Statistics and Probability | Pupils should be able to: collect, organise, display and extract simple discrete data using pictograms and lists |
| Basic Computing Skills | Pupils should be able to: use general ICT tools, e.g. spreadsheets, videos etc. to illustrate mathematics concepts use computer games and other mathematics teaching software to introduce, practise and consolidate mathematics concepts |

The Third Grade (Class 3)

| THEMATIC | SPECIFIC LEARNING OUTCOMES |
|------------|--|
| AREA | |
| Number and | Pupils should be able to: |
| Numeration | count to 10 000 forwards and backward from any two-, three- or four-digit number |
| | count from any number in multiples of 3, 6, 7, 8, 9, 20, 50 and 100 |
| | identify, read, write, compare and order whole numbers up to 10 000 in numerals and in words, and locate them on a number line |
| | extend understanding of place value for whole numbers to 10 000 |
| | identify, model, read, write, count, compare and order unit and non-unit fractions with denominators up to 10 and locate them on a number line |
| | identify, model, read and write equivalent fractions with denominators up to 10 and locate them on a number line |
| Everyday | Pupils should be able to: |
| Arithmetic | recall and use addition and related subtraction facts to 100 and derive facts to 1000 |
| (include | use models, pictorial representations, mental and informal written strategies for addition and subtraction up to 10 000 involving whole numbers with up to four digits, including two-step word problems |

| Financial | recall and use multiplication and related division facts for the 3, 6, 7, 8 and 9 multiplication tables |
|----------------|--|
| Literacy) | use models, mental and informal written strategies for multiplication and division within the multiplication tables, and |
| | with whole numbers up to three digits by one digit, including two-step word problems |
| | add and subtract like fractions within one whole with denominators up to 10, including simple word problems |
| | perform addition, subtraction and multiplication and division calculations with the national currency, including two-step |
| | word problems |
| Measurement | |
| and Estimation | Pupils should be able to: |
| | use everyday and comparative language for length, area, mass, volume / capacity and time |
| | use standard units of measurement to estimate, measure compare and order length, perimeter, area, mass, volume / |
| | capacity and time |
| | solve simple word problems involving units of measurement |
| | recognise, tell and draw on a 12-hour clock-face the time to the nearest minute, and use appropriate language (o'clock, |
| | a.m., p.m., morning, noon, afternoon, night and midnight) to describe time of day |
| | recognise units of time and state the relationships between them (second, minute, hour, day, week, month, year) |
| Geometry | |
| | Pupils should be able to: |
| | draw/ model and sort simple two- and three-dimensional shapes according to their properties |
| | recognise angles as a measure of turn and identify quarter turn as a right angle and half turn as a straight line |
| | identify right angles within simple two-dimensional shapes |
| Algebra | |
| | Pupils should be able to: |
| | identify, describe and complete number patterns involving the four mathematical operations |
| | determine the rule in the number pattern |
| Statistics and | |
| Probability | Pupils should be able to: |
| | collect, organise, display, extract and interpret simple discrete data using pictograms, lists, tables and bar charts, includ- |
| | ing one-step word problems |
| Basic | |
| Computing | Pupils should be able to: |
| Skills | use general ICT tools, e.g. spreadsheets, videos etc. to illustrate mathematics concepts |
| | use computer games and other mathematics teaching software to introduce, practise and consolidate mathematics con- |
| | cepts |

MATHEMATICS

Brief Guide on Learning Assessment Methods and Teaching Styles/Approaches

| Suggested Assessment Methods | Recommended Teaching Styles or Pedagogical Approaches | | |
|--|--|--|--|
| Some ways to gauge how well pupils are learning mathematics | Approaches that help to avoid rote learning | | |
| Types of Assessments | Main Pedagogical Approach | | |
| | concrete \rightarrow pictorial \rightarrow abstract (CPA) | | |
| Self-assessment – Pupils exchange and mark each other's work | | | |
| | Active Learning Settings | | |
| Open-ended / diagnostic questions – class exercise and tests | individuals - reflection, practice and revision tasks | | |
| | ♦ pairs - problem solving tasks, brainstorming, peer teaching | | |
| Discussion – guided by teacher, with feedback on right answers | \diamond groups (of up to 4 in lower primary and 6 in upper primary and junior | | |
| | secondary) - cooperative and collaborative tasks | | |
| Observation – as learners carry out their work | \diamond whole class - transmitting and reinforcing knowledge such as teaching | | |
| | a new topic, open ended questioning and discussions | | |
| Posters | | | |
| | $THINK \to PAIR \to SHARE$ | | |
| Quiz - e.g. "hot mental", written tests, etc. | | | |
| | | | |
| | | | |
| | | | |

MATHEMATICS - CLASS 1

| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning & Teaching Resources |
|---|---|---|--|---|
| , e mus | | | | (Core/Supplementary) |
| Unit 1. Number and Numeration Counting | After completing this unit, the pupils should be able to: Count Up to 10 Objects Count from 1 to 10. Count Up to 10 Forwards and Backwards. | Provide opportunities for Pupils to: Count physical attributes of Pupils, e.g. number of eyes, ears, fingers, toes, etc. recite numbers using physical activities such as clapping, | Teachers should assess pupils by: Asking pupils to count from 1 to 10 either as a class or individual child. Telling pupils to count the various objects placed in front of them. Oral drill in counting forward and backward to 10 | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. |
| Unit 2. Number and Numeration counting | After completing this unit, the pupils should be able to: Count Up to 10 Objects and Write the Numbers. Use Pictorial Representation to Count and Write Numbers Up to 10. Draw Pictorial Representation to Count and Write Numbers Up to 10. | Group concrete materials,, e.g. pebbles, beads etc., to model and count the number of objects in a set; Match the numerals 0-10 to the number of objects in the set; say aloud the number | Teachers should assess pupils by: Oral drill in counting Ask pupils to count objects and write the numbers. Asked pupils to count pictures and match to the numbers. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |
| Unit 3. Number and Numeration. Identification | After completing this unit, the pupils should be able to: Use Different Representation for Numbers Up to 10. Use Real Objects to Represent and Count Numbers Up to 10. Count Objects Up to 10 outside the Classroom. | Group concrete materials,, e.g. pebbles, beads etc., to model and count the number of objects in a set; Match the numerals 0-10 to the number of objects in the set; say aloud the number. Place different real objects from 1 to 10. count the number of object (s) and write the number below it. Eg. B = 1, BB = 2, BBB = 3 STRT STRT STRT STRT STRT STRT STRT STRT | Teachers should assess pupils by: Asking pupils to place objects in a cycle as he/she call numbers. Telling pupils to show the number of objects outside the classroom. E.g. How many people are in their house? How many spoons do they have at home? Etc. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Different objects like empty tomato tins, cigarette packets, pencils, books, chalks, bags, fruits etc. |
| Unit 4. Number and Numeration identification and counting | After completing this unit, the pupils should be able to: Use Rhymes, Songs and Games to Count Numbers Up to 100. Group Objects in 10s. Count Up to 100 Forward and Backward. | Recite numbers using songs, skipping ropes Use games,, e.g. 'Guess my Number' to ask / answer questions to identify hidden numbers | Teachers should assess pupils by: Observing pupils singing counting song. Test pupils' ability in grouping objects in 10s. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. |
| Unit 5. Number and Numeration | After completing this unit, the pupils should be able to: Locate Numbers Up to 100 on the 100 Chart. | Describe the 100 chart to the pupils. Demonstrate moving on the 100 chart, i.e. the numbers increase by 10 when moving | Teachers should assess pupils by: Give independent exercises to pupils at the end of the lesson. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). |

| comparing | Locating Numbers Up to 100 on the Number Line. Compare Numbers Up to 100. Order Numbers Up to 100 Using the 100 Chart. Order Numbers Up to 100 Using the Number Line | down the chart and decrease by 10 when moving up the chart. The numbers increase by 1 each time you move 1 box to the right and decrease by 1 each time you move 1 box to the left. Describe the number line strip to the pupils. Explain and demonstrate how to move on the number line, i.e when we move forward on the number line, the numbers are increasing which implies addition. When we move back- wards on the number line, the numbers are decreasing which implies subtraction. | Observing Pupils demonstrate the use of the 100 chart and the number line. | Primary School Mathemat- ics Book 1. Concrete materials (manipulative) • The 100 Chart. • The Number Line strip |
|---|---|--|---|--|
| Unit 6. Number and Numeration writing numbers | After completing this unit, the pupils should be able to: Read and Write Numbers Up to 100. Make Up Stories for Numbers Up to 100. Count Objects Up to 50 outside the classroom. Write Numbers Up to 100 in Words. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM write and recite the following on the blackboard 1 - one 2 - two 3 - three . etc. to 10 write and recite the following on the blackboard 10 - Ten , 20 - twenty, 30 - thirty , 40 - forty etc. to 100. Group the pupils, Cut numbers from 1 to 20 into strips and give each group at least three cut strips. Allow the pupils to write the names of the numbers in words. | Teachers should assess pupils by: Asking the pupils to read number aloud up to 100 either individually or in group. Telling pupils to write numbers to 100. Asking pupils to write numbers in word (spelling quiz on numbers) E.g. spell 23, spell 5, spell 55, spell 93 etc. Asking pupils in group to write the num- bers 8, 11, 19, 14, 5, 2, 15, 7, 18 in words. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. |
| Unit 7. Number and Numeration Fraction. | After completing this unit, the pupils should be able to: Identify Halves Using Pictures. Make Stories by Drawing Halves in Pictures . Identify Quarters Using Pictures. Making Stories by Drawing Quarters in Pictures. Share Using Halves and Quarters | Develop an understanding to identify fractions in discrete objects, e.g. sets of marbles, bottle tops, beads, and continuous quantities, e.g. rope, paper, liquids Use practical activities, such as paper folding, and cutting out and shading fraction shapes, to form simple unit fractions with denominators up to 4, e.g. 1/2, and 1/4. Match these fractions to concrete materials such as fraction discs, pictorial representations, fraction names and notation e.g. on fraction picture and number cards | Teachers should assess pupils by: Telling pupils to point at the picture and show half, quarters Allow pupils to draw a circle or rectangle and share it into halves and quarters. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Pictorial representations Fraction Circles ,Fraction Discs ,Fraction Stripsetc |
| Unit 8. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use Counters to Add 2 Numbers Up to 5 Use Real Objects to Add 2 Numbers Up to 5 | • Introduce the topic as prescribed in the LPM for class 1. | Teachers should assess pupils by: Giving class work to pupils on addition using counters and fingers. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). |

| ADDITION | Use fingers to Add 2 Numbers Up to 10 Use counters to Add 2 Numbers Up to 10 Use Real Objects to Add 2 Numbers Up to 10 | • Follow the instruction in the LPM | | Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |
|---|--|--|---|---|
| Unit 9. Everyday Arithmetic ADDITION | After completing this unit, the pupils should be able to: Practise Writing Addition Sums Using Correct Mathematical Symbols. Use the 100 chart to Add 2 Numbers that Sum to 10. Use the number line to Add 2 Numbers that Sum to 10 Draw Pictures to Visualise Addition of 2 Numbers that Sum to 10. | Recap the movements on the number line and the 100 chart. Demonstrate how addition is done using both tools. eg. 3 + 7 = ? (using 100 chart) Start by pointing the index finger on number 3 and jump 7 boxes forward step by step along the chart and stop. Ask pupil where your index finger is.(<i>The index finger stop at number 10</i>) Therefore 3 + 7 = 10 Eg.2+5 = ? (using the number line strip) start from 2 and make 5 hops to the right and land on 7. Therefore 2+5 = 7. | Teachers should assess pupils by: Giving class work to pupils on addition using correct mathematical symbols. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Beads, Beans,Bottle Tops ,Buttons, Counters, Cards, Fingers. Pictorial representations Visualise Addition to 10 |
| Unit 10. Everyday Arithmetic ADDITION | After completing this unit, the pupils should be able to: Identify Numbers and Add in Word Problems Use One-Step Addition Up to 10 in Word Problems. Construct One-Step Word Problems Using Addition | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils on addition. | Lesson Plan Manual Class 1 (1 st , 2 nd & 3 rd terms). Primary School Mathematics Book 1. Concrete materials (manipulative) Beads, Beans, Bottle Tops, But- tons, Counters, Cards, Fingers |
| Unit 11. Everyday Arithmetic ADDITION | After completing this unit, the pupils should be able to: Add Up to 10 from Pictures. Represent Word Problems Using Addition Up to 10 by Drawing. Construct Word Problems Using Addition Up to 10. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils on addition. Giving Home work | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Pencils, vanguard, crayon. |
| Unit 12. Everyday Arithmetic ADDITION | After completing this unit, the pupils should be able to: Use Counters to Add 2 Numbers Up to 15 Use Real Objects to Add 2 Numbers Up to 15 Use Fingers to Add 2 Numbers Up to 15 Use Counters to Add 2 Numbers Up to 20 Use Real Objects to Add 2 Numbers Up to 20 Use Real Objects to Add 2 Numbers Up to 20 Use Fingers to Add 2 Numbers Up to 20 Use Fingers to Add 2 Numbers Up to 20 | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Oral drill Written class exercise. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms).Primary School Mathematics Book 1.Concrete materials (manipulative) Beads, Beans , Bottle Top Buttons, Counters, Cards, Fingers and Toes etc. (Any safe real objects). |

| Unit 13. Everyday Arithmetic SUBTRACTIO N | After completing this unit, the pupils should be able to: Use Counters to Subtract Numbers Up to 5 Use Real Objects to Subtract Numbers Up to 5 Use Fingers to Subtract Numbers Up to 10 Use Counters to Subtract Numbers Up to 10 Use Real Objects to Subtract Numbers Up to 10 | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils on subtraction | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Beads, Beans, Bottle Top Buttons, Counters, Cards, Fingers etc. (Any safe real objects). |
|---|---|--|--|---|
| Unit 14. Everyday Arithmetic SUBTRACTIO N | After completing this unit, the pupils should be able to: Practise Writing subtraction Sums Using Correct Mathematical Symbols. Identifying Numbers and Subtraction in Word Problems Using One-Step Subtraction Up to 10 in Word Problems | Recap the movements on the number line and the 100 chart. Demonstrate how addition is done using both tools. eg. 7 - 3 = ? (using 100 chart) Start by pointing the index finger on number 7 and move 3 boxes backward step by step along the chart and stop. Ask pupil where your index finger is.(<i>The index finger stop at number 4</i>) Therefore 7-3 = 4 Eg.5 - 2 = ? (using the number line strip) start from 5 and make 2 hops to the left and land on 3. Therefore 5 - 2 = 3. | Teachers should assess pupils by: Giving class work to pupils on subtraction using correct mathematical symbols. | Lesson Plan Manual Class 1(1 st , 2 nd & 3 rd terms).Primary School Mathematics Book 1.Concrete materials(manipulative)Beads, Beans , Bottle TopButtons, Counters, Cards,Fingers etc. (Any safe realobjects). |
| Unit 15. Everyday Arithmetic SUBTRACTIO N | After completing this unit, the pupils should be able to: Construct One-Step Word Problems Using Subtraction Up to 10 from Pictures Represent Word Problems Using Subtraction Up to 10 by Drawing . Construct Word Problems Using Subtraction Up to 10. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils. | Lesson Plan Manual Class 1 (1 st , 2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |
| Unit 16. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use Counters to Subtract 2 Numbers Up to 15. Use Real Objects to Subtract 2 Numbers Up to 15 | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils Home work (assignment) | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. |
| N N | Use Fingers to Subtract2 Numbers Up to 15. Use Counters to Subtract 2 Numbers Up to 20. | | • Asking pupils to demonstrate subtraction using their finger. | Concrete materials (manipulative) Beads, Beans , Bottle Top Buttons, Counters, Cards, |

| | • Use Real Objects to Subtract 2 Numbers Up to 20. | | | Fingers and Toes etc. (Any safe real objects). |
|--|---|---|---|--|
| Unit 17. Everyday Arithmetic SUBTRACTIO N | Use Fingers to Subtract 2 Numbers Up to 20 After completing this unit, the pupils should be able to: Use Counters to Subtract 2 Numbers with a Difference of 10 Use Real Objects to Subtract 2 Numbers with a Difference of 2 and 59. Word Problems Using Subtraction Up to 20. Subtraction Calculations Using Correct Mathematical Symbols . | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Giving class work to pupils Home Work oral drill Short quiz questions. | Lesson Plan Manual Class 1 (1 st , 2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Beads, Beans, Bottle Top Buttons, Counters, Cards, Fingers etc. (Any safe real objects). |
| Unit 18. Everyday Arithmetic MULTIPLICA TION | After completing this unit, the pupils should be able to: Repeat Patterns Inside and Outside the Classroom Repeating Patterns in Pictures. Repeating Patterns Using Sound. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM Find patterns in the multiplication tables, e.g. by colouring the multiplication square Use concrete materials and rectangular arrays to show the multiplication facts | Teachers should assess pupils by: Asking pupils to demonstrate patterns inside and out of classroom. Asking pupils to demonstrate patterns in picture Asking pupils to demonstrate patterns using sound. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |
| Unit 19. Everyday Arithmetic MULTIPLICA TION | After completing this unit, the pupils should be able to: Repeat Patterns in Pictures Involving Addition Draw Patterns for Number Sequences that Involve Addition. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Teachers should assess pupils by: Asking and monitoring pupils to demonstrate patterns in picture Instruct Pupils to draw patterns. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |
| Unit 20. Everyday Arithmetic MULTIPLICA TION | After completing this unit, the pupils should be able to: Multiply by 2 as Repeating Addition Using Counters. Multiply by 4 Using Counters. Multiply by 5 Using Counters Multiply by 10 Using Counters. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM Use counters to show the multiplication facts | Teachers should assess pupils by: Asking and monitoring pupils to demonstrate multiplication using counters. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Counters |
| Unit 21. Everyday Arithmetic MULTIPLICA TION | After completing this unit, the pupils should be able to: Multiply by 2 as Repeating Addition Using Objects Multiply by 4 Using Objects Multiply by 5 Using Objects | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM Link counting groups of objects in multiples of 2 to 10 to their multiplication tables; Illustrate multiplication with objects. Show the equivalence of calculations Example: | Teachers should assess pupils by: Asking and monitoring pupils to demonstrate using objects. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) |

| | Multiply by 10 Using Objects | 2+2+2=6 and 2×3=6 2+2+2+2=8 & 2 x 4=8 etc. • extend to larger numbers (two digits and higher) | | Beads, Beans , Bottle Top Buttons, Cards, etc. (Any safe objects). |
|---|--|---|---|---|
| Unit 22. Everyday Arithmetic FINANCIAL LITERACY (National Currency) | After completing this unit, the pupils should be able to: Buy and Sell Using Counters. Giving Change Using Counters. Recognise and identify denomination of national currency in everyday use. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM Bring Real Natioal Currency to class Divide the currency into coin and note Le 50 Coin, Le 100 Coin, Le 100 Coin, Le 500 Coin. Le1,000 Note Le 2,000 Note Le 2,000 Note Le 5,000 Note Take each money and ask the pupils to look and describe. Demonstrate to the pupils the use of money in buying and selling of goods and services. | Teachers should assess pupils by: Pairing Pupils , one a buyer and the other a seller. Give counters to them and ask them to demonstrate buying, selling and the giving of change. Placing the various denomination of national currency and ask pupils to identify . Taking the monies and ask pupils to name the face value. Eg, How much is this money? Asking the pupils to describe the currency. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials (manipulative) Counters, Fruits etc. • National Currency Le 50 Coin, Le 100 Coin, Le 500 Coin. Le 1,000 Note, Le 2,000 Note, Le 5,000 Note, Le 10,000 Note |
| Unit 23. Measurement and estimation length | After completing this unit, the pupils should be able to: Name Things in the Class that are Big and Small . Compare and Sort Long and Short Objects. Compare and Sort Tall and Small Objects. Use Long, Tall and Short to Describe Lengths. Compare Length as High and Low. | Provide opportunities for Pupils to discuss and compare everyday objects and events using vocabulary such as: big/small, bigger/smaller, as big /bigger/biggest long/short, tall/short, wide/narrow, as long/longer/longest, shorter, wider Make use of the LPM for lesson delivery . | Teachers should assess pupils by: Asking pupils to name things in the class room. orally asking pupils either in group or individual name two thing and compare them. Bringing two pupils together and ask monitor them to compare. Calling representative to come and sort out object in front of the class. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials Desk, Bench, Table, Chair, Pencils, Pen, Ruler, two pu- pils, plants,sticks. Rope, strings etc. |
| Unit 24. Measurement and estimation length | After completing this unit, the pupils should be able to: Measure Small Objects Using a Thumb . Measure and Compare the Length of Spaces Using Footsteps | Provide activities for Pupils to measure length using non-standard units of measurement. Footstep, Arm Stretch, Thumb, Hand-span, Plastic Bottle, etc. Pupils should measure objects in the classroom, compare and order them by length. | Teachers should assess pupils by: Asking pupils to use their hands to measure the length of their benches. How many hands did they count. Asking Pupils to measure the length of the building using their foot steps. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials. |

| | Measure and Compare Heights of Pupils Using Hands Order Objects According to their Length. Invent Non-Standard Units to Measuring Length. | Introduce the topic as prescribed in the LPM for class 1. Follow the instruction in the LPM | Pairing pupils to measure each other using the thumb . | Desk, Bench, Table, Chair, Pencils, Pen, Ruler, Two Pu- pils, Plants, Sticks. Rope, Strings etc. Hand, Footsteps , Thumb Pictorial representations pictures showing lengths, mass and volume of objects |
|---|--|--|---|---|
| Unit 25. Measurement and estimation area | After completing this unit, the pupils should be able to: Identify Objects in the Classroom as Big or Small in Area Compare and Sort Objects Using Bigger and Smaller. | Provide opportunities for Pupils to discuss and identify area of objects using vocabulary such as: <i>big/small</i>, <i>bigger/smaller</i> | Teachers should assess pupils by: Asking pupils to use their hands to measure the area of their benches. How many hands did the count. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. |
| | Measure the Area of Objects Using Hands. Measure the Area of Objects Using Leaves . Order Objects According to Their Area. | <i>narrow/wider</i> Make use of the LPM for lesson delivery. | Asking Pupils to measure the area of the book using their in between finger. Pairing pupils to measure area of blackboard and table | Concrete materials. Books, chalk Box, black- board, table, paper etc. Hand, leave or string etc |
| Unit 26. Measurement and estimation | After completing this unit, the pupils should be able to:Identify Objects in the Classroom as | Provide opportunities for Pupils to discuss and compare everyday objects and events using vo- cabulary such as: | Teachers should assess pupils by: Asking pupils to show which object is | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). |
| MASS | Heavy or Light. Compare and Sort Objects Using Heavier and Lighter. Estimate the Weight of Heavier Objects Estimate the Weight of Lighter Objects Order Objects According to their Weight. | heavy/light, heavier/lighter, as heavy /heavier/heaviest Make use of the LPM for lesson delivery . | heavy or light. Asking and Monitoring Pupils to take any two objects and compare their weight.(heavier or lighter) Pairing pupils to order objects by weight. | Primary School Mathemat- ics Book 1. |
| Unit 27. Measurement | After completing this unit, the pupils should be able to: | Make use of the LPM for lesson delivery . Taggher should bring to close analogue well | Teachers should assess pupils by: Asking pupils to describe the face of the clock. Oral drill on hands of clock.(Second .Minute | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). |
| TIME | Tell the Time in Hours. | clock . | and Hour hand) Class Work :- Draw on the faces of the clock | Primary School Mathemat- ics Book 1. |
| | • Tell the Time in Hours and Half Hours. | • Introduce the concept by asking pupils to talk on anything they know about clock. | , 5 o 'clock, 8 o 'clock , 1 o 'clock , 7 o 'clock and 12 o 'clock. Ask pupils to show the time on the clock | Concrete materials. Analogue wall clock or watch. |
| | • Identify Hands on the Clock Face. | • Use the vanguard, colour markers and the pair of scissors to construct cut-out of clock face with the pupils. | Home work: ask Pupils to draw the face of the clock showing 2 o 'clock , 3 o 'clock and 10 o 'clock. | Electronic clack/watch. Cut-out of 12 hr. clock face Vanguard, colour mark- ers, pair of scissors. |

| | | Show the hands of the clock and how they are used in telling time. Demonstrate how time is told in hour and minute. | Class Work : Draw on the faces of the clock , half past 5 , half past 8 , half past 1 , half past 7. Ask and Monitor pupils to show the time on the clock. Home work: ask Pupils to draw the face of the clock showing 2 o 'clock , 3 o 'clock and 10 o 'clock. | Pictorial representations Pictures of Analogue clocks / Watches |
|--|--|--|--|---|
| Unit 28. Measurement and estimation TIME | After completing this unit, the pupils should be able to: Talk about the Time of Home and School Activities. Use Pictures to Learn about Earlier and Later. Use the 12 Hour Clock Face to Learn about Earlier and Later. Make Up Stories Using Time . Illustrate a Story Involving Time with 12-Hour Clock Faces. | Develop a chart having time of school and home activities. Examples. I get to bed at 9 O clock at night. The cock crow at 2 O clock. I visit the school at 8 O clock. We get out for lunch at 11 O clock. Discuss with pupils about earlier and later using: yesterday/today/tomorrow, morning/evening, night/day, early/late, lunchtime, bedtime, days of the week, months of the year, calendar dates Demonstrate many activities (stories) using time. | Teachers should assess pupils by: Asking the pupils to show time of activities at school. When do we start devotion? when does school over? when do they sleep at home.? Etc. oral drill on earlier and later. Telling pupils to give stories involving time. | Lesson Plan Manual Class 1 (1st,2nd & 3rd terms). Primary School Mathematics Book 1. Concrete materials. Analogue wall clock or watch. Cut out of 12 hr. clock face Chart :- Time of School and Home activities |
| Unit 29. Geometry | After completing this unit, the pupils should be able to: Classify 2 and 3 Dimensional Shapes. Identify Circles, Triangles ,Squares, Rectangles and their Properties. | Teachers must use the LPM for class 1 Displace 2D and 3D shapes models and describe them. Circle Triangle Rectangle Square | Teachers should assess pupils by: Putting several 2D and 3D objects and tell Pupils to classify them. Asking Monitoring Pupils to draw the various shapes (Circles ,Triangles, Squares, Rectan- gles) using different colour. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials. |
| Unit 30. Geometry | After completing this unit, the pupils should be able to: Give Differences between Rectangles and Squares. Make Drawings Using Triangles, Squares, Rectangles and Circles. Sing the plane shapes song. | Draw the two shapes rectangle and square and guide pupils to differentiate them by properties. eg. For square all 4 sides are equal and rectangles have two opposite sides equal. Allow pupils to draw objects using the shapes. Practice singing the plane shape song. THE PLANE SHAPE SONG Circles , Triangles ,Rectangles and Squares. These are the shapes we see in the world . We found them every where. | Teachers should assess pupils by: Drawing Rectangle and Square, and tell pupils to give differences between the two shape. Taking each shape and tell pupils to describe it by properties Orally. Allowing pupils to make cut outs of the shape using vanguard and pair of scissor. Asking monitoring pupils to Draw objects using the plane shapes. Eg. Draw a house using the plane shapes. Listening to pupils singing the plane shape song. | Lesson Plan Manual Class 1 (1 st ,2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Vanguard, coloured markers, pair of scissors. Chart :- The plane shape song. |

| Unit 31. Geometry | After completing this unit, the pupils should be able to: identify Cylinders, Spheres, and Their Properties . Cubes, Cuboids, and their Properties Classify 2 Dimensional Shapes Outside the Classroom. Making up Stories Involving 2 and 3 Dimensional Shapes. | • | Place objects having Cylinders, Spheres, Cubes, & Cuboids, in front of the class and try to help pupils to identify them by their properties.Use the LPM and the pupils textbook to illustrate this unit. | • | Teachers should assess pupils by: Oral drill on Cylinders, Spheres, Cubes, Cuboids, and their Properties . Class work: Asking monitoring pupils to name objects having shape of cylinders, sphere,cubes and cuboids. Short Quiz : pupils to name 2D shapes outside the class room. Home work: Pupils to draw and make Stories Involving 2 and 3 Dimensional Shapes. | Lesson Plan Manual Class 1 (1 st , 2 nd & 3 rd terms). Primary School Mathemat- ics Book 1. Concrete materials: Models of 2D and 3D shapes. Pictorial representations Pictures of 2D and 3D shape objects |
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| Unit 32. | After completing this unit, the pupils should be able to: | • | Use the LPM for class 1. Follow the steps in the LPM. | • | Teachers should assess pupils by: | Lesson Plan Manual Class 1 (1 st , 2 nd & 3 rd terms). |
| Geometry | Describe the Position of an Object or Person Describe Distance away from Objects or Person. Comparing Objects that Can Easily be moved and those that cannot. Describe Movement to a New Position of an Object or Person. Practising the Vocabulary Learnt to Describe Position, Direction and Movement | | - | • | Having class activities demonstrating position of objects or persons.Having class activities demonstrating movement to new position of an object or person.Testing pupils to give one vocabulary describing position, direction and movement each. | Primary School Mathemat- ics Book 1. |

MATHEMATICS OUTLINE TEACHING SYLLABUS FOR BASIC EDUCATION CLASS 2.

| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning & Teaching Resources |
|--------------------------------------|--|--|--|---|
| Unit 1. Number and Numeration | After completing this unit, the pupils should be able to: Count forward from 10 to 100. Count from 100 to 10 backwards. Count in multiples of 2 to 100. Count in multiples of 5 to 100. Count in multiples of 10 to 100. | Demonstration Group Work activities Explanation number game and exercises | Questioning Class participation Class work Assignment Feedback from group work | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books. Concrete Manipulative such as counters |
| Unit 2. Number and Numeration | After completing this unit, the pupils should be able to: Read and write numerals in words 10 to 100. At the end of the lesson, pupils should be ableto: Write numbers in words as numerals 10 to 100 using place value. Order whole numbers from 10 to 100. Locate numbers from 0 to 100 on a number line. Compare numbers up to 100 using a number line. | Explanation Demonstration Group Work activities Game for learning -Teacher guides pupils on the use of figures on the number line. | Question and Answer(QaA) Class exercise Participation | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2 Exercise Books and Pencil |
| Unit 3. Number and Numeration. | After completing this unit, the pupils should be able to: Count from 0-1000 forward Count from 1000-0 backwards. Count in multiples of 2 from 0-1000 Count in multiples of 5 from 0-1000 Count in multiples of 10 from 0-1000 | Talk for Learn Rich Tasks Pair Work Group Work | Class Participation. Choral/Individual Reading. Assignment | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Concrete Manipulative such as counters (Stones, Bottle tops, Sticks etc) |
| Unit 4. Number and Numeration | After completing this unit, the pupils should be able to: Read and write numerals in words up to 1,000 Write numbers in words from 100-500 as numerals using place value. Order whole numbers from 0-1,000 | Brainstorm Game for Learning Reflection Group Work | Class Participation. Choral/Individual Reading. Class Work. Assignment | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books |

| | Locate numbers from 0 to 1,000 using a number line Compare numbers up to 1,000 using a number line 50 | | | Concrete Manipulative such as counters (Stones, Bottle tops, Sticks etc) |
|---|--|---|--|---|
| Unit 5. Number and Numeration FRACTION | After completing this unit, the pupils should be able to: Identify halves using pictures Make stories by drawing halves in pictures Identify quarters using pictures Make stories by drawing quarters in pictures Locate halves and quarters on a number line. | Demonstration Poster Making Discussion Manipulative Questioning Rich Tasks | Class Participation Class Work Observation Home Work Activities. | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |
| Unit 6. Number and Numeration FRACTION | After completing this unit, the pupils should be able to: Identify unit fractions with denominators 2, 4 and 8 using pictorial representation. Identify unit fractions with denominators 3, 6 and 9 using pictorial representation. Identify unit fractions with denominators 5 and 10 using pictorial representation. Identify unit fractions with denominators from 2 to 10 using pictorial representation. Identify non-unit fractions for denominators from 2 to 10 using pictorial representation. | Chart Making Discussion Manipulative Questioning Rich Tasks | Class Participation Class Work Observation Home Work Activities. | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |
| Unit 7. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise addition of numbers 0 to 10 using the number line and fingers. Add numbers from 0-100 using a number line. Apply the commutative law of addition. Use mental strategies for addition up to 100. Solve one step word problems in addition up to 100 using pictures. | Discussion Problem Solving Game for Learning Chart Making {Number line) | Class Participation Question and Answer. Class Exercises Assignment | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials e.g. Stones , Sticks Bottle Tops |
| Unit 8. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use pictures to make up word problems using addition up to 100. Use longer stories to make up short word problems using addition up to 100. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |

| | Use songs and rhymes to make up word problems using addition up to 100. Represent word problems using addition in pictures. Solve simple word problems using addition | | | Concrete Materials eg Stones, Sticks Bottle Tops |
|------------------------------------|---|--|--|---|
| Unit 9. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise subtraction of numbers 0 to 10 using the number line and fingers. Subtract numbers from 0-100 using a number line. Solve one step word problems in subtraction up to 100 using pictures. Use the number line for subtraction of numbers up to 100. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials e.g. Stones , Sticks Bottle Tops |
| Unit 10. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use the number line for subtraction of numbers up to 100. Use pictures to make up word problems using subtraction up to 100. Use longer stories to make up short word problems using subtraction up to 100. Use songs and rhymes to make up word problems using subtraction up to 100. Represent word problems using subtraction in pictures. Solve simple word problems using subtraction. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. -Teacher guides pupils on the use of the Subtraction sign. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials e.g. Stones, Sticks Bottle Tops |
| Unit 11. Everyday Arithmetic | After completing this unit, the pupils should be able to: Apply Commutative law in addition. Add up to 1000. Use mental strategies for addition up to 1000. Subtract up to 1000. Use mental strategies for subtraction up to 1000. Solve Word problems involving addition and subtraction up to 1,000. | Demonstration Group Work activities Explanation Game for Learning, and Exercises -Teacher guides pupils on the use of the two operational signs (Addition and Subtration). | Questioning Class participation Class work Assignment Feedback from group work | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Concrete Manipulative such as counters (Stones, Bottle tops, Sticks etc) |
| Unit 12. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use Doubling to multiply by 2 using counters (repeated addition). Apply Commutative law of multiplication. Use Doubling to multiply by 2 using a number line. | Explanation Group Work Reflection Problem Solving | Class Participation Observation Feedback Class Exercise | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books. Manipulative |

| | Write the Multiplication table of 2. Use mental strategies for multiplication by 2. Solve Word problems involving times 2 using pictures. | -Teacher guides pupils on the use of the multiplication sign. | | such as Multiplication Charts, Pictures etc. Concrete Materials eg Stones , Sticks Bottle Tops |
|---|---|---|--|--|
| Unit 13. Everyday Arithmetic | After completing this unit, the pupils should be able to: Multiply by 4 using counters (repeated addition). Multiply by 4 using a number line. Write the Multiplication table of 4. Use mental strategies for multiplication by 4. Solve Word problems involving times four using pictures. | Demonstration Group Work activities Explanation Game for Learning, and Exercises | Questioning Class participation Class work Assignment Feedback from group work | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2. Supplementary primary Mathematics books Concrete Manipulative such as counters (Stones, Bottle tops, Sticks etc.) |
| Unit 14. Everyday Arithmetic | After completing this unit, the pupils should be able to: Multiply by 10 using counters (repeated addition). Multiply by 10 using a number line. Write the Multiplication table of 10. Use mental strategies for multiplication by 10. Solve Word problems involving times ten using pictures. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2. Supplementary primary Mathematics books Manipulative such as Multiplication Charts, Pictures etc. Concrete Materials eg Stones , Sticks Bottle Tops |
| Unit 15. Everyday Arithmetic | After completing this unit, the pupils should be able to: Multiply by 5 using counters Multiply by 5 using a number line write the Multiplication table of 5 Use Mental strategies for multiplication by 5 solve Word problems involving times 5 using pictures | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2. Supplementary primary Mathematics books Manipulative such as Multiplication Charts, Pictures etc. Concrete Materials eg Stones, Sticks Bottle Tops |
| Unit 16. Everyday Arithmetic NUMBER PARTERN | After completing this unit, the pupils should be able to: Recognize and make repeated patterns in pictures. Recognize and make repeated patterns in pictures involving addition. Recognize and make repeated patterns using sound | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2. Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |

| Unit 17. Everyday Arithmetic | Recognize and make repeated patterns that involve addition using sound. After completing this unit, the pupils should be able to: Draw patterns for number sequences that involve addition. Patterns pictures involving subtraction. Develop Patterns that involve subtraction using sound. Draw patterns for number sequences that involve subtraction. | Demonstration Poster Making Discussion Manipulative Questioning Rich Tasks | Class Participation Class Work Observation Home Work Activities. Question and Answer | Concrete Materials eg Stones , Sticks Bottle Tops Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2. Supplementary primary Mathematics books Manipulative such as Charts , Pictures etc. |
|--|--|--|--|--|
| Unit 18. Everyday Arithmetic Unit 19. Everyday Arithmetic | Find and describe patterns out of the classroom. After completing this unit, the pupils should be able to: Identify odd numbers using patterns. Identify even numbers using patterns Demonstrate Odd + odd = even. Demonstrate Even + even = even. Demonstrate Odd + even = odd. After completing this unit, the pupils should be able to: Patterns pictures involving multiplication. Develop Patterns that involve multiplication using sound. Draw patterns for number sequences that involve multiplication. Find and describe patterns out of the classroom that involve multiplication. | Demonstration Poster Making Discussion Manipulative Questioning Rich Tasks Demonstration Poster Making Discussion Manipulative Questioning Rich Tasks | Class Participation Class Work Observation Home Work Activities. Question and Answer Class Participation Class Work Observation Home Work Activities. Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts , Pictures etc. Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts , Pictures etc. |
| Unit 20. Measurement and estimation | After completing this unit, the pupils should be able to: Express and compare length in everyday language (review) Measure large lengths with non-standard units. Estimate of large lengths using non-standard units of measure. Measure the perimeter of large objects and spaces using non-standard units. Solve Word problems involving large lengths using non-standard units. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials eg Stones, Sticks Bottle Tops, Tape Rule ,Ruler Rope etc. |

| Unit 21. Measurement and estimation | After completing this unit, the pupils should be able to: Use appropriate non-standard units of length to measure different objects and spaces. Measure lengths of small objects. Estimate of small lengths using non-standard units of measurement. Compare and order lengths using non-standard units. Solve Word problems involving small lengths using non-standard units | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials eg Stones, Sticks Bottle Tops, Tape Rule ,Ruler Rope etc |
|---|--|---|--|--|
| Unit 22. Measurement and estimation | After completing this unit, the pupils should be able to: Express and compare areas in everyday language (review). Estimate and measure small areas using non-standard units of measurement. Estimate and measure large areas using non-standard units of measurement. Compare and order areas using non-standard units Solve Word problems involving areas using non-standard units | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials eg Stones , Sticks Bottle Tops , Tape Rule ,Ruler Rope etc |
| Unit 23. Measurement and estimation | After completing this unit, the pupils should be able to: Express and compare mass in everyday language (review). Estimate and measure a large mass using nonstandard units of measurement. Estimate and measure small mass using nonstandard units of measurement. Compare and order mass using non-standard units. Solve Word problems involving mass using non-standard units. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. Teacher guides pupils on the use of nonstandard unit of measurement. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. Concrete Materials eg Stones, Sticks Bottle Tops |
| Unit 24. Measurement and estimation | After completing this unit, the pupils should be able to: Estimate and measure volume using non-standard units of measurement. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2 , Primary School L P M book 2 Supplementary primary Mathematics books |

| | Estimate and measure capacity using nonstandard units of measurement. Compare and order capacity using non-standard units. Compare and order volume using non-standard units. Solve Word problems involving volume and capacity using nonstandard units. | Problem Solving. | | Manipulative such as Charts, Pictures etc. Concrete Materials eg Stones , Sticks Bottle Tops , Tape Rule ,Ruler Rope etc |
|---|---|---|--|--|
| Unit 25. Measurement and Estimation TIME | After completing this unit, the pupils should be able to: Draw 12 hours on the clock face Tell time in hours and half hours Tell time in quarters of an hour Tell time to 5 minutes. Convert from Seconds in a minute | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |
| Unit 26. Geometry | After completing this unit, the pupils should be able to: Revise triangles, squares, rectangles and circles and their properties Make patterns using triangles, squares, rectangles and circles. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books Manipulative such as Charts, Pictures etc. |
| Unit 27. Geometry | After completing this unit, the pupils should be able to: Identify Spheres , Cubes, Cuboids, Cylinders and their properties describe and sort out solid shapes | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | Sierra Leone Primary school Mathematics book 2, Primary School L P M book 2 Supplementary primary Mathematics books |
| Unit 28. STATISTICS | After completing this unit, the pupils should be able to: Make up a plan for data collection. Put the data collection plan into action. Create tally charts. Develop tally charts based on answers to questions. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work Problem Solving. | Class Work Feedback From Group Work. Class Participation Question and Answer | -Sierra Leone Primary school Mathematics book 2 , - Primary School L P M book 2. -Supplementary primary Mathematics books |
| Unit 29. STATISTICS | After completing this unit, the pupils should be able to: Create bar charts. Write report with survey findings. Present statistical report. | Poster Making (Drawing Pictures). Rich Tasks Explanation Group Work | Class Work Feedback From Group Work. Class Participation Question and Answer | -Sierra Leone Primary school Mathematics book 2 , -Primary School L P M book 2. -Supplementary primary Mathematics books |

| | | Problem Solving. | | - Manipulative such as Charts, Pictures etc. |
|---------------------------------------|--|--|------------------------------------|---|
| Unit 30. Basic computer skills. | After completing this unit, the pupils should be able to: -Briefly describe a computer. -Identify some key parts of a computer. -Discuss the uses of a computer. | Demonstration Explanation Exercise | Observation Question and Answer | -Computer. -Chart showing the diagram of a computer. The learning resources below do not match with the topic. Concrete Materials eg Stones, Sticks Bottle Tops, Tape Rule ,Ruler Rope etc |

MATHEMATICS

OUTLINE TEACHING SYLLABUS FOR BASIC EDUCATION CLASS 3.

| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning & Teaching Resources |
|--------------------------------------|---|--|---|---|
| Unit 1. Number and Numeration | After completing this unit, the pupils should be able to: Count forward in multiples of 1, 2, 5 10 up to 100 using a number line. Count backwards in multiples of 1, 2, 5, and 10 up to 100 using a number line. Read and write numerals in words 0-100 Write numerals in words 0-100 as numerals using place value. Order whole numbers from 0-100 using place value Locate numbers from 0-100 on a number line. | Provide opportunities for Pupils to: Count physical attributes of Pupils, e.g. number of eyes, ears, fingers, toes, etc. group concrete materials,, e.g. pebbles, beads etc., to model and count the number of objects in a set; match the numerals 0-9 to the number of objects in the set; say aloud the number pupils are given a pile of (up to100) items such as beads, seeds, beans, buttons, pebbles, nuts, sheets of papers. They are allowed to take items one by one from the pile and count aloud. Students are given flash cards with numbers in words and figures. They match words to figures by playing game tea cup and saucer: e.g. | Teachers should access pupils by: Ask pupils to count in multiples of 1, 2, 5, 10, up 100 either individually or as a class using the number line. Use number chart students are given 100 number squares in which they are to fill in the missing numbers Write numbers in figures and ask and Monitor pupils writ in words Write numerals in words and ask and Monitor pupils to write in figures Mix up whole numbers and ask and monitor pupils to | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations fraction picture/number cards, fraction walls number lines, strip diagrams, tenths grids |

| | | 136One hundred and thirty-six949Nine hundred and forty- nine | arrange in order either forward or backward Ask and monitor pupils to represent numbers on the number line, eg (4, 1,9,6,3,5) etc. Giving class exercise and do corrections where necessary. Giving assignment. | marbles, pebbles, number line pictures |
|--------------------------------------|---|--|--|--|
| Unit 2. Number and Numeration | After completing this unit, the pupils should be able to: Compare numbers up to 100 using a number line and place value. Count forward in multiples of 1, 2, 5, and 10 up to 1000 using a number line. Count backwards in multiples of 1, 2, 5, 10, 50 and 100 up to 1000 using a number line. Write numbers in words 0-1000 as numerals using place value. Order whole numbers from 0-1000 using place value. Locate numbers from 0-1000 on a number line. | Provide opportunities for Pupils to: Count and compare physical attributes of Pupils, e.g. number of eyes, ears, fingers, toes, etc. Count 5,10,15,20, to 100 pupils are given a pile of (up to1000) items such as beads, seeds, beans, buttons, pebbles, nuts, sheets of papers. They are allowed to take items one by one from the pile and count aloud. Introduce whole numbers from 0-1000 | Teachers should access pupils by: Class exercises Do compare numbers using the number line and place value Oral drill to count forward and backwards in multiples of 1, 2, 5, 10, 50 and 100 up to 1000 using a number line. Class exercise to locate non-given numbers on the number line. Giving assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations fraction picture/number cards, fraction walls |
| Unit 3. Number and Numeration. | After completing this unit, the pupils should be able to: Compare numbers up to 1000 using a number line and place value. Write numbers up to 100 in expanded form Write numbers up to 1000 in expanded form. Count forward and backward in multiples of 5, 10, 100, and 1,000 up to 10,000 using a number line. | Provide opportunities for Pupils to: Count of Pupils in class Identify how many eyes 10 people have. Do same for ears, fingers, toes, etc. group pupils to count concrete materials,, e.g. pebbles, beads etc., pile of (up to100) items such as beads, seeds, beans, buttons, pebbles, nuts, sheets of papers. | Teachers should access pupils by Ask pupils to identify the last number name in a counting sequence as the total number of objects Asking pupils to explain the significance of zero as a place-holder | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) |

| | | They are allowed to take items one by one from the pile and count aloud. | Asking pupils to identify and express numbers in ex- panded form Count forward and back- ward in multiples of 5, 10, 100, and 1,000 up to 10,000 using a number line | Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures |
|-------------------------------------|---|---|---|--|
| Unit 4. Number and Numeration | After completing this unit, the pupils should be able to: Count from any number in multiples of 3, 6, and 20 using a number line. Count from any number in multiples of 7, 8, and 9 using a number line. Write numbers in words 1,000-10,000 as numerals using places value. | Provide opportunities for Pupils to: Count 3,6,9 to 30 Do multiple counting of any number Write numbers in words from 1 to 1000. They are allowed to take items one by one from the pile and count aloud. | Teachers should access pupils by: Oral drill in Counting from any number in multiples of 3,6, 20 using a number line Oral drill in counting from any number in multiples of 7, 8, and 9 using a number line. Asking pupils to write numbers in words 1,000-10,000 according to their place values Giving class exercise and do corrections where necessary. Giving assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations |
| Unit 5. Number and Numeration | After completing this unit, the pupils should be able to: Read and write numerals in words 1,000-10,000. Order whole numbers from 1,000-10,000 using place value. Locate numbers from 1,000-10,000 on a number line. | Provide opportunities for Pupils to: Read numeral words aloud and try to frame them into asking questions. E.g. how do you spell thirteen Write numeral words from 1,000 to 5,000 and read aloud for others to hear | Teachers should access pupils by: Oral drill in reading numerals from 1,000-10,000 Asking pupils to write numbers in words from 1,000-10,000 Asking pupils to Order whole numbers from 1,000-10,000 using place value Asking pupils to Locate numbers from 1,000-10,000 on a number line. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations |

| | | | Giving class exercise and do correction where necessary. Giving assignment. | fraction picture/number cards, fraction walls number lines, strip diagrams, tenths grids |
|--|---|---|---|---|
| Unit 6. Number and Numeration writing numbers | After completing this unit, the pupils should be able Compare numbers 1,000 to 10,000 using a number line and place value. Write numbers up to 10,000 in expanded form. | Provide opportunities for Pupils to: Count and compare different numbers between 1,000 to 10,000 Work in group to identify bigger numbers Write 2,000 in expanded form | Teachers should access pupils by: Asking pupils to compare numbers 1,000 to 10,000 using a number line and place value. Asking pupils to write numbers up to 10,000 in expanded form. Asking pupils to write numbers up to 10,000 in expanded form. Giving class exercise and do corrections where necessary. Giving assignment. | Lesson Plan Manual Class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipulative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations fraction picture/number cards, fraction walls number lines, strip diagrams, tenths grids |
| Unit 7. Fraction. | After completing this unit, the pupils should be able to: Locate unit fractions on the number line. Identify unit fractions with denominators 1-5 using pictorial representation. Identify unit fractions with denominators 6-10 using pictorial representation. Learn more example about unit fraction | Provide opportunities for Pupils to: > Identify unit fractions on the number line > Learn that a fraction is a part of a whole > Use stones to identify unit fractions > Discuss unit fraction > Work in group to identify numerator and denominators | Teachers should access pupils by: Asking pupils to locate unit fractions on the number line. Asking and monitoring pupils to Identify unit fractions with denominators 1-5 using pictorial representation Asking pupils to identify unit fractions with denominators 6-10 using pictorial representation | Lesson Plan Manual class 3 (1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipu- latives) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations |

| | | | Giving class exercise and do corrections where necessary. Giving assignment. | fraction picture/number cards, fraction walls |
|---------------------|--|--|---|--|
| Unit 8. Fraction | After completing this unit, the pupils should be able to: Identify non-unit fractions with denominators 2-10 using pictorial representation. Identify unit and non-unit fractions with denominators 2-10 on the number line. Identify Equivalent fractions with denominators up to 5. | Provide opportunities for Pupils to: Discuss a non-unit fraction Differentiate a unit and a non-unit fraction Illustrate non-unit fraction with denominators 2 to 10 using pictorial representation Identify non-unit fraction with dominators 2-10 on the number line Understand and discuss equivalent fraction Do example of equivalent fraction | Teachers should access pupils by: Ask pupils to Identify non- unit fractions with denominators 2-10 Ask and Monitor pupils to Identify unit and non-unit fractions with denominators 2- 10 on the number line. Ask and Monitor pupils to Identify Equivalent fractions with denominators up to 5. Give class exercises and do corrections where necessary. Give out assignment | Lesson Plan Manual class 3 (1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipu- latives) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations fraction picture/number cards, fraction walls |
| Unit 9. Fraction | After completing this unit, the pupils should be able to: Discuss Equivalent fractions with denominators from 6 to 10. Add like fractions. Subtract like fractions. Solve Word problems involving addition and subtraction of like fractions. | Provide opportunities for Pupils to: Use addition skills to solve problems on equivalent fractions with denominators from 6 to 10 Understand and discuss like fractions and allowing them to give examples Use addition skills to solve problems on like fractions Use subtraction skills to solve problems on like and equivalent fractions | Teachers should access pupils by: Asking pupils to Identify Equivalent fractions with denominators from 6 to 10 Asking pupils to Add and subtract like fractions. Asking pupils to solve word problems involving addition and subtraction of like fractions. Giving class exercise and do corrections where necessary. | Lesson Plan Manual class 3 (1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipu- lative) Base 10 blocks ,beads Beans, bottle tops, buttons, counters, chairs and tables , marbles Pebbles, number line Pictures Pictorial representations fraction picture/number cards, |

| | | Use scenarios of word problems in relation to addition and subtraction of like and equivalent fractions | Giving class exercise and do corrections where necessary. Giving assignment. | |
|------------------------------------|---|---|--|---|
| Unit 10. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise addition of whole numbers 0 to 100 using a number line Add 2-digit numbers using place value without renaming Add 2-digit number using place value without renaming Use mental strategies for addition up to 100 Solve Word problems using addition up to 100 | Provide opportunities for Pupils to: Use mental strategies to add numbers up to 100 Use addition skills to add 2 digit numbers Give scenarios of word problems relating to addition of figure up to 100 | Teachers should access pupils by asking them to: Add whole numbers 0 to 100 using a number line Add 2-digit numbers using place value without renaming Add 2-digit number using place value without renaming Solve Word problems using addition up to 100 Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tives) base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks • toothpicks base 10 • wooden base10 |
| Unit 11. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise addition of numbers 100-1,000 using a number line Add up to 10,000 without renaming Use mental strategies for addition up to 10,000 Solve Word problems using addition up to 10,000. | Provide opportunities for Pupils to: Briefly review addition of numbers 100 to 1,000 on a number line Use addition skills to calculate up to 10,000 without renaming numbers. Apply mental strategy to add numbers up to 10,000 Apply scenarios of word problems relating to addition and subtraction of figures up to 10,000 | Teachers should access pupils by asking them to: Add up to 10,000 without renaming Solve Word problems using addition up to 10,000. Use mental strategies for addition up to 10,000. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks toothpicks base 10 wooden base10 |

| Unit 12. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise subtraction of numbers 0 to 100 by using a number line Subtract 2-digit numbers using place value without renaming Subtract 2-digit numbers using place value without renaming Use mental strategies for subtraction up to 100 Solve Word problems using subtraction up to 100 | Provide opportunities for Pupils to: Review subtraction of numbers from 0-to 100 by using subtraction skills on the number line Calculate 2 digit numbers by using subtraction skills Use mental strategy to subtract or add numbers up to 100 Use scenarios of word problems relating to subtraction of numbers up to 100 | Teachers should access pupils by asking them to: Subtract 2-digit numbers using place value without renaming Subtract 2-digit numbers using place value without renaming Solve Word problems using subtraction up to 100. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tives) base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks |
|------------------------------------|--|--|---|--|
| Unit 13. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise subtraction of numbers 100-1,000 by using a number line Subtract up to 10,000 without renaming Subtract up to 10,000 with renaming Use mental strategies for subtraction up to 10,000 Solve Word problems using subtraction up to 10,000 | Provide opportunities for Pupils to: Review subtraction of numbers from 100-to 1,000 by using subtraction skills on the number line Use subtraction skills to calculate figures up to 10,000 without renaming Use subtraction skills to calculate figures up to 10,000 with renaming Apply mental strategy to subtract or add numbers up to 10,000 Use scenarios of word problems relating to subtraction of numbers up to 10,000 | Teachers should access pupils by asking them to: Subtract up to 10,000 without renaming Subtract up to 10,000 with renaming Solve Word problems using subtraction up to 10,000. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks |
| Unit 14. Everyday Arithmetic | After completing this unit, the pupils should be able to: Revise multiplication and division table for 2.4,5,10, Practise multiplication and division tables for 2, 4, 5, and 10. | Provide opportunities for Pupils to: Review multiplication and division tables for 3,6.7and 8 Practice multiplication and division tables for the figures 3,6,7and 8 | Teachers should access pupils by: Oral drill on multiplication tables from 1 up to 10 | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipu- lative). base 10 blocks, beads |

| | | | Class room practice on simple multiplication and division from 1 up to 10. Give class exercise and do corrections where necessary. Give assignment. | beans, bottle tops, buttons, peb- bles, counters, chairs and tables dominoes ,games, marbles, peb- bles, puzzles, shells, |
|------------------------------------|---|---|--|---|
| Unit 15. Everyday Arithmetic | After completing this unit, the pupils should be able to: Multiply by 8, up to 40, using a multiplication table. Multiply by 8, up to 80, using a multiplication table. Multiply by 3 and 6 using counters Write Multiplication table of 3 and 6 Write Division table of 3 and 6 | Provide opportunities for Pupils to: Calculate figures from 5 to 50 using multiplication table Multiply figures by 3, 4, 6. 8 using counters Prepare division tables for 4 and 7 | Teachers should access pupils by asking them to: Multiply by 8, up to 40, using a multiplication table. Multiply by 8, up to 80, using a multiplication table. Write Multiplication table of 3 and 6 Write Division table of 3 and 6. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). base 10 blocks, beads beans, bottle tops, buttons, peb- bles, counters, chairs and tables dominoes ,games, marbles, peb- bles, puzzles, shells, skipping |
| Unit 16. Everyday Arithmetic | After completing this unit, the pupils should be able to: Use Mental strategies for multiplication by 3 and 6 Solve Word problems involving multiplication by 3 and 6 using pictures Multiply by 7 and 9 using counters (repeated addition) | Provide opportunities for Pupils to: Multiply numbers by 3 and 6 Use word problems to multiply 3,4,5,6,7,8 by 3 and 6 Multiply 3,4,5,6,7,8,9 by 7 and 8 using counters | Teachers should access pupils by asking them to: Solve Word problems involving multiplication by 3 and 6 Solve 7 and 9 multiplication problems. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). base 10 blocks, beads beans, bottle tops, buttons, peb- bles, counters, chairs and tables dominoes ,games, marbles, peb- bles, puzzles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks, number lines picture cards (e.g. playing cards, balls, animals), place-value ar- row cards, place-value charts, |
| Unit 17. Everyday Arithmetic | After completing this unit, the pupils should be able to: Write Multiplication table for 7 and 9. Write Division table for 7 and 9. Use mental strategies for multiplication by 7 and 9. Solve Word problems involving multiplication by 7 and 9 using stories. | Provide opportunities for Pupils to: Prepare multiplication table of 6 and 8 Set division table of 5 and 7 Apply mental strategies for multiplication of higher numbers Solve word problems | Teachers should access pupils by asking them to: Write Multiplication table for 7 and 9. Write Division table for 7 and 9. Solve word problems involving multiplication by 7 and 9. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive) base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, |
|------------------------------------|---|--|---|---|
| Unit 18. Everyday Arithmetic | After completing this unit, the pupils should be able to: Solve Multiplication problems using the times table 1-5. Solve Multiplication problems using the times table 6-10. Use Mental strategies for multiplication by 1-5. Use Mental strategies for multiplication by 6-10. | Provide opportunities for Pupils to: Read multiplication table from 1 to 10 without looking Apply mental strategies for multiplication of figures 1 to 9 | Teachers should access pupils by asking them to Oral drill to read the multiplication table from 1- 5 Solve Multiplication problems using the times table 6-10. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive), base 10 blocks, beads, beans, bottle tops buttons, pebbles, counters, chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, |
| Unit 19. Everyday Arithmetic | After completing this unit, the pupils should be able to: Solve Multiplication of two-digit by one-digit using visual representation. Solve Multiplication of three-digits by one-digit numbers using visual representation. Solve One-step word problems involving multiplication. | Provide opportunities for Pupils to: Understand 2 digit multiplications Solve a multiplication problem of 2 digit by 1 digit Solve a multiplication problem of 3 digit by 1 digit Practice solving one-step word problems involving multiplication | Teachers should access pupils by asking them to : Solve Multiplication of two- digit by one-digit using visual representation. Solve Multiplication of three- digits by one-digit numbers using visual representation. Solve One-step word problems involving multiplication. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive) base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes , |

| | | | Give class exercise and do corrections where necessary. Give out assignment. | |
|------------------------------------|---|---|--|--|
| Unit 20. Everyday Arithmetic | After completing this unit, the pupils should be able to: Solve more one-step word problems involving multiplication. Solve Two-step word problems involving multiplication. Solve more two-step word problems involving multiplication. | Provide opportunities for Pupils to: Practice solving one-step word problems involving multiplication Practice solving two-step word problems involving multiplication | Teachers should access pupils by asking them to: Solve more one-step word problems involving multiplication. Solve Two-step word problems involving multiplication. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive) base 10 blocks base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, |
| Unit 21. Everyday Arithmetic | After completing this unit, the pupils should be able to: Divide by 8, up to 40, using a division table. Divide by 8, up to 80, using a division table. Practice multiplication and division tables of 2, 4, 5, 8, 10. | Provide opportunities for Pupils to: Divide numbers by 8 up to 40 using tables Solve problems relating to multiplication and division tables of 2,4,6,8,10,12 and 3,5,7,9,11,13 | Teachers should access pupils by asking them to: Divide by 8, up to 40, using a division table. Divide by 8, up to 80, using a division table. Solve multiplication and division tables of 2, 4, 5, 8, and 10. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive), Pictorial representa- tions, dot cards hundred square, multiplication square numeral cards, number lines, picture cards (e.g. playing cards, balls, animals), place-value ar- row cards, place-value charts , puzzles |
| Unit 22. Everyday Arithmetic | After completing this unit, the pupils should be able to:Solve Division questions using the division table. | Provide opportunities for Pupils to: Create division questions and divide numbers, using tables | Teachers should access pupils by asking them to: Divide numbers using division tables | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. |

| | Solve Division problems using the division table 6-10. Use mental strategies for division by 1-5. Use mental strategies for division by 6-10. | Solve division problems relating to dividing figures by 5 and 11 Apply mental strategies for several division problems | Divide using the division table 6-10. Give class exercise and do corrections where necessary. Give out assignment. | Concrete materials (manipula- tive) base 10 blocks base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes , marbles, pebbles, puzzles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks |
|------------------------------------|--|---|--|---|
| Unit 23. Everyday Arithmetic | After completing this unit, the pupils should be able to Solve Division of 2-digit by 1-digit numbers using visual representation. Solve Division of three digit by one-digit numbers using visual representation. Solve One-step word problems involving division. | Provide opportunities for Pupils to: Divide two-digit by one-digit numbers Divide three-digit by one-digit numbers Apply mental strategies for several one-step division problems | Teachers should access pupils by asking them to: Divide 2-digit by 1-digit numbers Divide three digit by one- digit numbers Solve One-step word problems involving division. Give class exercise and do corrections where necessary. Give out assignment. | base 10 blocks, beads beans, bottle tops buttons, pebbles, counters chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks |
| Unit 24. Everyday Arithmetic | After completing this unit, the pupils should be able to: Solve more one-step word problems involving division. Solve Two-step word problems involving division. Solve more two-step word problems involving division. | Provide opportunities for Pupils to: Apply mental strategies for several one-step division problems Divide two-digit by one-digit numbers Work two-step word problems involving division | Teachers should access pupils by asking them to: Solve more one-step word and Two-step word problems involving division. Apply mental strategies to solve several one step division problems. Give class exercise and do corrections where necessary. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive) base 10 blocks, beads beans, bottle tops buttons, pebbles, counters |

| | | | • Give out assignment. | chairs and tables dominoes ,games, marbles, pebbles, puz- zles, shells, skipping ropes, stickers, broom straws ,Pupils ,toothpicks |
|---|---|--|--|--|
| Unit 25. Measurement and estimation | After completing this unit, the pupils should be able to: Revise everyday language for length. Use non-standard units to estimate length of objects. Measure length of large objects and spaces using arm span (non-standard units). Measure length of small objects and spaces using non-standard units. Solve simple word problems involving non-standard units of measurements. | Provide opportunities for Pupils to: Pronounce everyday language for length. Estimate length and object measurements Apply mental skills to measure length of small objects and spaces using non-standard units Understand solve a simple word problems involving non-standard units of measurements | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non- standard and standard units e.g. the dimensions of the class- room or playground. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |
| Unit 26. Measurement and estimation | After completing this unit, the pupils should be able to: Measure length by using both standard and non-standard units of measurement. Measure objects and perimeter by using the foot-rule. Measure larger objects and perimeters by using yards and metres. | Provide opportunities for Pupils to: Estimate length and object measurements for non-standard unit. Accurately measure length using standard unit Use rulers to measure object and perimeters | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight -the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |

| | | | Give class exercise and do corrections where necessary. Give out assignment. | |
|---|---|--|--|--|
| Unit 27. Measurement and estimation | After completing this unit, the pupils should be able to: Measure height by using feet, inches and centimetres. Solve Word problems involving standard units of measurement for length. | Provide opportunities for Pupils to: Use feet, inches and centimetres to measure heights Use standard units of measurement for length to solve word problems | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |
| Unit 28. Measurement and estimation | After completing this unit, the pupils should be able to. Estimate and measure area using standard units of measurement Compare and order area using standard units. | Provide opportunities for Pupils to: Use standard unit of measurement to measure areas Apply skills in doing standard unit to compare areas | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in nonstandard and standard units e.g.the dimensions of the classroom or playground. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |

| | | | Give class exercise and do corrections where necessary. Give out assignment. | |
|--|--|--|--|--|
| Unit 29. Measurement and estimation. | After completing this unit, the pupils should be able to: Estimate and measure mass using standard units of measurement Compare and order mass using standard units. Solve Word problems involving area and mass using standard units. | Provide opportunities for Pupils to: Use standard unit of measurement to measure areas Apply skills in doing standard unit to compare mass Use standard unit to solve word problems relating to mass and area | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |
| Unit 30. Measurement and Estimation. | After completing this unit, the pupils should be able to: Estimate and measure volume using standard units of measurement. Compare and order volume using standard units. Estimate and measure capacity using standard units. | Provide opportunities for Pupils to: Use standard unit of measurement to measure areas Apply skills in doing standard unit to compare volume Use standard unit to estimate capacity | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight -the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). |

| | | | Give class exercise and do corrections where necessary. Give out assignment. | |
|--|--|---|--|--|
| Unit 31. Measurement and Estimation. | After completing this unit, the pupils should be able to: Compare and order capacity using standard units. Solve Word problems involving volume and capacity using standard units. | Provide opportunities for Pupils to: Use standard unit of measurement to measure capacity Apply skills in doing standard unit to solve word problem involving volume and length. Use standard unit to estimate volume and capacity | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground. Give class exercise and do corrections where necessary. Give out assignment. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. |
| Unit 32. Time | After completing this unit, the pupils should be able to. Tell the time in hours and half hours Tell the time in quarters of an hour Tell the time to 5 minutes Tell the time to the nearest minute. | Provide opportunities for Pupils to: Use the clock to tell time Use watch to tell time in quarters Understand 'to' and 'after' in telling time | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight -the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). -Chart showing the diagram of a clock. |

| | | | The assessment above does not match with the topic. Listening keenly to them as they tell time in hours, half hours, quarters and to the nearest minute. Give class exercise and do corrections where necessary. Give out assignment. Ask pupils to to: Draw the clock face in their books. Put in the short and long hands for different time eg. Six o' clock, quarter past 5 o'clock, half past 2 o' clock. | |
|-----------------|---|--|--|---|
| Unit 33 Time | After completing this unit, the pupils should be able to: State the Units of time: (second, minute, hour). Estimate and measure time in seconds, minutes, hours. State the Units of time :(weeks, months, years). | Provide opportunities for Pupils to: Use the clock to tell the unit of time (second, minute and hour) Measure time in unit of time Understand and discuss day, week, month and year | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground The assessment above does not match with the topic. Observes pupils to state the units of time in second, minute, hour etc. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive). -Chart showing the diagram of a clock. |

| | | | Monitor pupils to estimate and measure time in seconds, minutes, hours etc. Listens keenly to them as they state the units of time in weeks, months and years. Give class exercise and do corrections where necessary. Give out assignment. Ask pupils to demonstrate different times on a clock face eg.7:20, 10:30, 12:15.etc. | |
|------------------|---|--|---|--|
| Unit 34. Time | After completing this unit, the pupils should be able to: Estimate and measure time in weeks, months, years. Compare time activities. Solve Word problems on time. | Provide opportunities for Pupils to: Measure time in day, week, month and year Think and compare the times different activities took place Solve word problems relation to time of second, minute, hour, day, week, month and year Know the seconds in a minutes, minute in an hour, hours in a day, days in a weeks, weeks in a month, and months in a year | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more ob- jects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the classroom or playground. The assessment above does not match with the topic. Observes pupils estimate and measure time in weeks, months and year. Listens keenly as they compare time activities. Monitors pupils on class exercise in word problems on time. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials (manipula- tive) -Chart showing the diagram of a clock. |

| | | | Giving assignment. Ask pupils to: Calculate the number of hours spent in school. Calculate number of : -Hours in 3 days. -Weeks in 4 months. | |
|----------------------------------|--|--|--|---|
| Unit 35. GEOMETRY (SHAPES) | After completing this unit, the pupils should be able to: Identify similarities and differences between a rectangle and square Identify similarities and differences between a rectangle, square and triangle Draw squares and rectangles using their properties Draw triangles using its properties | Provide opportunities for Pupils to: State the differences among the rectangle, triangle and square State the similarities among the rectangle, triangle and square Draw rectangle, triangle and square | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight -the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non-standard and standard units e.g. the dimensions of the class-room or playground. The assessment above does not match with the topic. Observe pupils identify the similarities and differences between a rectangle and a square. Ask pupils to identify the similarities and differences among a rectangle, square and triangle. Ask them to draw squares and rectangles using their properties. Ask them to draw triangles using its properties. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials 2D, faces of 3D objects plane shapes, 3D dice, food/drinks cans. Footballs, marbles, match-boxes, card templates for angles Pictorial representations pictures of 2D and 3D objects templates for 2D shapes, nets of 3D shapes |

| | | | Give class exercise and do corrections where necessary. Give out assignment. Ask pupils to: Identify triangles, rectangles and squares from a collection of plane shapes, templates or drawings and to draw the shapes identified. Ask pupils to make patterns using triangles and squares | |
|----------------------------------|---|---|--|---|
| Unit 36. GEOMETRY (SHAPES) | After completing this unit, the pupils should be able to: Draw more complex patterns using squares, rectangles and triangles. Identify and draw a cube using its properties. Identify and draw a cuboid using its properties. Identify and draw a prism using its properties. Identify and draw a cylinder using its properties. Identify and draw a cylinder using its properties. Practise to draw more cubes, cuboids, prisms, cylinders. | Provide opportunities for Pupils to: Make pattern in drawing rectangle, triangle and square State the differences among a cube, triangle and square Draw a cube and a cuboid using their properties Understand and describe prism, cylinder, and be able to draw them | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non- standard and standard units e.g. the dimensions of the class- room or playground. The assessment above does not match with the topic. Observe them to identify and draw a cuboid using its properties. Ask them identify and draw a prism using its properties. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials, 2D faces of 3D objects plane shapes, 3D dice, food/drinks cans, footballs, marbles, match-boxes card templates for angles Pictorial representations pictures of 2D and 3D objects templates for 2D shapes, nets of 3D shapes |

| | | | Observing them identify and draw a cylinder using its properties. Ask the class exercise on drawing more cubes, cuboids, prisms and cylinder. Give out assignment. Ask pupils to: Identify cuboid, prism, cylinders using their properties. State similarity and difference. | |
|----------------------------------|---|--|---|--|
| Unit 37. GEOMETRY (ANGLES) | After completing this unit, the pupils should be able to: Define and discuss angles as measures of turn. Relate descriptions for angles as measures of turn. Use angles as measures of turn to give directions. Draw Right angles with simple two dimensional shapes. | Provide opportunities for Pupils to: Describe angles Demonstrate a measure of turn Describe directions Draw right angle triangle | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in nonstandard and standard units e.g. the dimensions of the classroom or playground The assessment above does not match with the topic. Listen to pupils discuss angles as measures of turn. Ask them as they use angles as measures of turn to give directions. Give the class exercise on drawing right angles with | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. Concrete materials 2D faces of 3D objects plane shapes, 3D dice, food/drinks cans, footballs, marbles, match-boxes card templates for angles, |

| | | | simple two dimensional shapes. Give out assignment. Ask pupils to use matchsticks or pencils to demonstrate an angle and to describe an angle. | |
|------------------------------|--|---|---|---|
| Unit 38. Number patterns. | After completing this unit, the pupils should be able to: Draw patterns for number sequences that involve addition. Draw patterns for number sequences that involve subtraction. Find and describe number patterns out of the classroom that involve addition. Find number patterns out of the classroom that involve subtraction. Find number patterns in the classroom. | Provide opportunities for Pupils to: Draw number patterns involving addition Draw number patterns involving subtraction Describe number patterns outside the classroom that involves addition Describe number patterns outside the classroom that involves subtraction Locate a number pattern in the classroom involving either addition or subtraction | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non- standard and standard units e.g. the dimensions of the class- room or playground The assessment above does not match with the topic. Ask pupils to draw pattern for number sequences that involve addition and subtraction. Observe them as they draw pattern for number sequences that involve subtraction. Listen keenly to pupils as they describe number pattern out of the classroom that involve addition and subtraction. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. |

| | | | Give the class exercise and do corrections where necessary. Give out assignment. Ask pupils to : Identify groups of numbers that represent number patterns. Draw simple number patterns involving addition and substraction. | |
|---------------------------------|---|--|--|--|
| Unit 39. NUMBER PATTERNS. | After completing this unit, the pupils should be able to: Write number sequences from pattern rules that involve addition. Write number sequences from pattern rules that involve subtraction. Find the missing numbers in sequences that involve addition. Find the missing numbers in sequences that involve subtraction. Make drawings with repeating patterns. | Provide opportunities for Pupils to: Draw number sequences from patterns involving addition Draw number sequences from patterns involving subtraction Describe the missing numbers in the sequences involving addition Describe the missing numbers in the sequences involving subtraction Draw to repeat number sequences patterns | Teachers should access pupils by practical questions, discuss and compare, -the length of two or more objects by sight, -the area of two or more objects by sight the mass of two or more objects by sight/hand the volume of water in two or more containers by sight estimate, then measure in non- standard and standard units e.g. the dimensions of the class- room or playground The assessment above does not match with the topic. Ask pupils to write number se- quences from pattern rules that involves addition and subtrac- tion. Give class exercise to pupils on finding missing numbers in sequences that involve addi- tion and subtraction. Observing pupils make draw- ings with repeating patterns. | Lesson plan manual class 3(1 st , 2nd & 3 rd terms). Primary School Mathematics Book 3. |

| | Give the class exercise and do correction where necessary. Give out assignment. Ask pupils to : Give missing numbers or pictures from given sequences Draw pattern using pictures and numbers. |
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MATHEMATICS

OUTLINE TEACHING SYLLABUS FOR BASIC EDUCATION CLASS 4.

| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning & Teaching Resources |
|--|--|--|--|--|
| Unit 1. Number and Numeration <i>COUNTING</i> | After completing this unit, the pupils should be able to: Count up to 5000 using a number line. Count up to 10,000 using a number line. Compare numbers up to 10,000 using number line. | Provide opportunities for Pupils to: Recite numbers using physical activities such as clapping, Use games,, e.g. 'Guess my Number' to ask / answer questions to identify hidden numbers Revise the number line strip with the pupils. | Ask pupils to write numbers in words 1,000-5,000 according to their place values Oral drill in Counting Quiz. Class exercise. Assignment | -Lesson Plan Manual Class 4 (1st, 2nd & 3rd terms). -Primary School Mathematics Book 4. (MAN) -Sierra Leone primary School Mathematics Book 4.(Activity Series) |

| | Read and write numbers in numerals up to 10,000 using place value. Use place value system up to 10,000,000. | Explain place value including Tens of Thousand Thousand – Hundred Tens Ones. Eg 12,763 1 Tens of Thousand 2 Thousand 7 Hundred 6 Tens 3 Ones. Etc | | -Selective Common Entrance (B A Brown) |
|---|---|---|--|---|
| Unit 2. Number and Numeration <i>Reading And</i> <i>Writing</i> | After completing this unit, the pupils should be able to: Count numbers forward and backward in multiples of 10 and 100 up to 100,000. Read and Write Numbers in Numerals Up to 100,000. Read and Write Numbers in Word Up to 100,000. Compare and Order numbers up to 100,000 using place value and the number line. Compare and order whole numbers up to 100,000. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM write and recite the following on the blackboard 1000 - One Thousand 2000 - Two Thousand 3000 - Three Thousand etc to 100,000 Teacher to use the number line and place value chart to demonstrate comparing and ordering of numbers to 100,000. | Ask and monitor pupils to write numbers in words 1,000-10,000 ac- cording to their place values Oral drill in Counting Quiz. Class Work. Assignment. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) -Sierra Leone Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 3. Number and Numeration. <i>Approximation</i> . | After completing this unit, the pupils should be able to: Round whole Numbers up to 100,000 to the nearest 10 and 100. | Provide opportunities for Pupils to: write any 6 digits number and round it up to the nearest whole number. Teacher to guide pupils when and how to do rounding up to the nearest whole number. Teacher to mention significant figure(s) eg 456786 to the nearest 10. 456,789 = 456,790 456786 to the nearest 100. 456,789 = 456,800 etc | Ask and monitor pupils to round whole Num- bers up to 100,000 to the nearest 10 and 100. Oral drill in Count- ing Quiz. Class Work. Assignment. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) -Sierra Leone Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |

| Unit 4. Number and Numeration <i>FRACTION</i> | After completing this unit, the pupils should be able to: Simplify like fraction with common denominators. Compare and order like fraction. Identify Equivalent fractions. Relate fractions with denominators up to 12. Compare equivalent fraction greater than 1. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teachers in the guided practice should illustrate examples of like fraction with common denominators | Class Work. Home work Oral drill Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) -Sierra Leone Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
|---|---|---|---|--|
| Unit 5. Number and Numeration <i>OPERATION ON</i> <i>FRACTIONS</i> . | After completing this unit, the pupils should be able to: Add Equivalent fractions. Subtract Equivalent fractions. Solve both Addition and Subtraction of Equivalent fractions. Solve word problems involving Addition and Subtraction of Equivalent fractions. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teachers should do work examples with pupils including word problems. eg. Provide opportunity for pupils to add and subtract equivalent fraction. | Class Work. Assignment. Quiz. Test | Lesson Plan Manual Class 4 (1 st , 2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) -Sierra Leone Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown), Concrete materials (manipulative) |
| Unit 6. Number and Numeration <i>Operation on</i> <i>Fraction.</i> (<i>Multiplication</i>) | After completing this unit, the pupils should be able to: Multiply equivalent fractions. Multiply like fractions with denominators up to 6. Multiply like fractions with denominators up to 12. Multiply related fractions with denominators up to 6. Multiply related fractions with denominators up to 12. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher should write on the board examples of equivalent fraction and explain how to multiply them step by step. | Independent practice Assignment. Class exercise. Quiz. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |

| Unit 7. Number and Numeration Fraction | After completing this unit, the pupils should be able to: Multiply proper fractions with denominators up to 12 Multiply like fractions with denominators up to 12. Solve word problems involving proper fractions with denominators up to 6. Solve word problems involving proper fractions with denominators up to 12. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher to review concept of proper fraction. Allow pupils to give examples of proper fraction. Teacher also in the guided practice should solve work example for pupils to see including word problems | Independent practice Assignment. Class exercise Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
|--|---|---|---|---|
| Unit 8. Number and Numeration <i>Fractions /</i> <i>Decimals</i> | After completing this unit, the pupils should be able to: Solve fraction with denominator of 10. Solve fraction with denominator of 10 on a number line. Convert fraction to decimals and vice visa. Order fractions and decimals. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Demonstrate examples of fraction with denominator 10 on the number line. Teacher to explain how conversion from decimal to fraction and visa vi is done. eg. convert 5/10 to decimal 5/10=0.5 | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series), Selec- tive Common Entrance (B A Brown), Concrete materials (manipulative), Number Line strip. |
| Unit 9. Number and Numeration <i>Factors</i> . | After completing this unit, the pupils should be able to: Identify factors of numbers up to 10 Identify factors of numbers up to 20. Identify common factors of numbers up to 10. Identify common factors of numbers up to 20. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Provide pupils the opportunity to read and write the multiplication table 12. Teachers should take time and explain what factors are. Demonstrate to the pupils how to identify common factors. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 10. Number and Numeration NUMBER PATTERN | After completing this unit, the pupils should be able to: Describe number patterns using the stick or 100 number square. Describe number patterns using a calendar. Find and describe number patterns out of class. Represent number patterns visually. Find the missing term in number patterns. Write rules for number patterns in words. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher should illustrate in the guided practice how numbers are pattern using various objects. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Math- ematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown), Concrete materials (manipulative), 100 number square ,Stick, Calendar. |

| Unit 11. Everyday Arithmetic <i>Addition and</i> <i>Subtraction</i> | After completing this unit, the pupils should be able to: Revise Addition and Subtraction up to 1,000 Add numbers up to 10,000 Subtract numbers up to 10,000 Solve story problems using all four operations Solve inverse operations. | Teacher should demonstrate addition and subtraction activities to pupils to see. Allow pupils to follow observe the work example on the board to do their independent practice. Teacher should also involve stories that involve all four operations. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
|---|---|--|---|---|
| Unit 13. Everyday Arithmetic <i>Multiplication</i> | After completing this unit, the pupils should be able to: Multiply using the 7 and 8 Times Table. Multiply using the 9 and 10 Times Table. Use long Multiplication 2-digit numbers by 1-digit number without renaming. Use long Multiplication 2-digit numbers by 1-digit number with renaming Use long Multiplication 3-digit numbers by 1-digit number without and with renaming Use long Multiplication3-digit numbers by 2-digit numbers without renaming. Use long Multiplication3-digit numbers by 2-digit numbers without renaming. Use long Multiplication4-digit numbers by 1-digit numbers by 1-digit numbers by 1-digit numbers by 1-digit numbers without renaming. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher to provide the opportunity for pupils to recite the 7,8,9 and 10 Times Table. Discuss with the pupils the concept of with Renaming and without Renaming. Demonstrate how long multiplication is done from simple to harder examples. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) The Multiplication Table. |
| Unit 14. Everyday Arithmetic DIVISION | After completing this unit, the pupils should be able to: Use long Division to divide 2-digit numbers by 1-digit number without remainder. Use long Division to divide 2-digit numbers by 1-digit number with remainder. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher to provide the opportunity for pupils to recite the multiplication Table to 10. | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) |

| | Use long Division to divide 3- digit numbers by 1-digit number without remainder. Use long Division to divide 3-digit numbers by 1-digit number with remainder. Check division calculation without remainder by estimation. | Discuss with the pupils the concept of with Remainder and without Remainder. Demonstrate examples of how long Division is done from 2- digits to 3- digits. | | Selective Common Entrance (B A Brown) The Multiplication Table. |
|---|--|--|--|---|
| Unit 15. Everyday Arithmetic Operations on Decimals. | After completing this unit, the pupils should be able to: Add decimals with 1 decimal place. Subtract decimals with 1 decimal place. Multiply decimals with 1 decimal place by a whole number. Solve word problems involving addition , subtraction, and multiplication of numbers with 1 decimal place. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher to Solve problems on decimals involving all operations Teacher to apply the concept of BOADMAS dealing with Decimals. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 16. Everyday Arithmetic Addition and Subtraction . | After completing this unit, the pupils should be able to: Add and Subtract numbers up to 5,000. Add and Subtract numbers up to 10,000. Add and Subtract numbers up to 50,000. Add and Subtract numbers up to 100,000. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Teacher to demonstrate work examples on addition and subtraction up to 50,000 using various strategies | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 17. Everyday Arithmetic <i>MONEY</i> | After completing this unit, the pupils should be able to: Add money up to Le 5,000, Le10,000, Le 20,000 and Le 50,000 Subtract money up to Le 5,000, Le10,000, Le 20,000 and Le 50,000. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Review buying and selling ,Review the concept of profit and loss. Allow pupils to demonstrate money transaction.(adding and subtracting). | Independent practice Assignment. Test, Oral drill | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) Mode of Money |

| Unit 18. Everyday Arithmetic <i>Money</i> | After completing this unit, the pupils should be able to: Order operations using BODMAS. Solve word problems involving the 4 operations and money. Estimate strategies to check answers for reasonableness Inverse operations to check answers for reasonableness. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Allow pupils to demonstrate money transaction.(adding and subtracting). | Independent practice Assignment. Test, Oral drill | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
|---|---|--|--|---|
| Unit 19. Everyday Arithmetic <i>Multiplication</i> <i>and Decimal</i> . | After completing this unit, the pupils should be able to: Multiply whole numbers up to 5 digits by 10. Multiply decimal to 1 decimal place by 10. Divide whole numbers up to 5 digits by 10. Divide decimal to 1 decimal place by 10. Mental strategies for multiplication and division by 10. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Review the concept of Decimals place and Whole numbers. Teacher to provide the opportunity for pupils to recite the 10 Times Table. Discuss with the pupils the concept of Multiplication. Demonstrate how Multiplication & Division are carried out using mental strategies. | Independent practice Assignment. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 20. Measurement And Estimation <i>LENGTH</i> | After completing this unit, the pupils should be able to: Measure lengths of objects in Centimetres. Measure lengths of objects in Metres. Measure lengths of objects in Feet. Solve word problems about length of small objects in centimetres. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Provide activities for Pupils to measure length using standard units of measurement. <i>Foot rule, Tape rule. or Meter rule.</i> | Independent practice Assignment. Quiz. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN), Primary School Mathematics Book 4.(Activity Series), Selec- tive Common Entrance (B A Brown), Concrete materials (manipulative), Foot rule , Tape rule., Meter rule. |
| Unit 21. Measurement And Estimation <i>LENGTH</i> | After completing this unit, the pupils should be able to: Measure Perimeter of objects using Centimetres and Metres. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN), Primary School Mathematics Book 4.(Activity Series) |

| Perimeter | • Calculate Perimeter of rectangles, squares and triangles in Centimetres. | Provide activities for Pupils to measure length objects using <i>Foot rule, Tape rule. or Meter rule.</i> Solve problems on perimeter as work example. | | Selective Common Entrance (B A Brown), <i>Foot rule, Tape rule.</i> <i>or Meter rule.</i> |
|---|--|---|---|--|
| Unit 22. Measurement and Estimation. <i>LENGTH</i> Area. | After completing this unit, the pupils should be able to: Calculate Area of objects by counting squares. Calculate Area of Rectangles in cm² and m². Calculate Area of Squares in cm² and m². Give relationship between Area and Perimeter. Solve word problems about Area and Perimeter. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Provide activities for Pupils to measure length objects using <i>Foot rule, Tape rule. or Meter rule.</i> Solve problems on Area as work example. Discuss with pupils relationship between Area and Perimeter. | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown), Concrete materials (manipulative), <i>Foot rule, Tape</i> <i>rule. or Meter rule.</i> |
| Unit 23. Measurement and Estimation MASS | After completing this unit, the pupils should be able to: Estimate Mass comparatively using non-standard measurement. Calculate Mass using Kilograms Convert Kilogram and local measurement. Solve word problems about Mass using the 4 operations.(+,-,x, /). | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Provide activities for Pupils to measure Mass of objects using non standard and standard unit. Solve problems on Mass using kg as work example. Discuss with pupils how to convert kilometre (Pound and Ounces) and the local measurement | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN), Primary School Math- ematics Book 4.(Activity Se- ries), Selective Common Entrance (B A Brown) |
| Unit 24. Measurement and Estimation <i>VOLUME &</i> <i>CAPACITY</i> | After completing this unit, the pupils should be able to: Estimate volume and capacity. Estimate volume using standard measure (No conversion) Estimate capacity using standard measure (No conversion) Solve word Problems involving volume and capacity. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Discuss with pupils relationship between Volume and Capacity. Provide activities for Pupils to measure volume and capacity using standard unit. <i>e.g. litres, pints ,quart ,gallon etc.</i> | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st , 2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN), Primary School Math- ematics Book 4.(Activity Se- ries), Selective Common En- trance (B A Brown) <i>litres, pints ,quart ,gallon</i> |

| | | • Solve problems involving volume and capacity as work example. | | |
|--|---|---|---|--|
| Unit 25. Measurement and Estimation GEOMETRY <i>Lines and</i> <i>Angles</i> | After completing this unit, the pupils should be able to: Identify and draw horizontal and vertical lines Identify and draw Perpendicular line and Parallel Lines. Identify and name angles (equal to, Greater or Less than a right angle). Draw angles (equal to, Greater or Less than a right angle). Compare angles inside and outside the classroom. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Review geometry for class 3. Allow pupils to use the ruler and draw different lines. Discuss with them the different types of lines. Horizontal and Vertical lines Perpendicular and Parallel lines. Illustrate right angle and explain angles greater or less than right angle. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 26. Measurement and Estimation <i>Time</i> | After completing this unit, the pupils should be able to: Tell the Time to the nearest Minute on the Analogue clock. Tell the Time to the nearest Minute on the Digital clock. Convert between 12 and 24 hour Time. Estimate and Measure the duration an event. Solve word problems involving Time. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM Give opportunity to pupils to tell time on the analogue clock to the nearest minute Discuss with the pupils link between 12 and 24 hour Time. 1pm 13hrs 2pm 14 hrs 3pm 15 hrs etc. Solve word problems involving Time. | Independent practice Assignment. Quiz | Lesson Plan Manual Class 4 (1 st , 2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) Selective Common Entrance (B A Brown) -Chart showing the diagram of a clock. |
| Unit 27. STATISTICS Data Collection Plan | After completing this unit, the pupils should be able to: Make up a plan for data collection Put the data collection plan into action. Devise a plan for a statistical report with the findings of the survey. Write a statistical report with the findings of the survey. | Introduce the topic as prescribed in the LPM for class 4. Follow the instruction in the LPM | Independent practice Assignment. Test | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) |
| Unit 28. | After completing this unit, the pupils should be able to:Present a statistical report. | • Introduce the topic as prescribed in the LPM for class 4. | Independent practiceAssignment. | Lesson Plan Manual Class 4 (1 st ,2 nd & 3 rd terms). |

| STATISTICS Data Handling | • Solve word problems involving statistics. | • Follow the instruction in the LPM | • Test | Primary School Mathematics Book 4. (MAN) Primary School Mathematics Book 4.(Activity Series) |
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MATHEMATICS

OUTLINE TEACHING SYLLABUS FOR BASIC EDUCATION CLASS 5.

| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning &Teaching Resources |
|--|---|--|--|--|
| | | | | (Core/Supplementary) |
| Unit 1. Number and Numeration <i>Counting</i> | After completing this unit, the pupils should be able to: Count up to 100,000 Count up to 1,000,000 Forwards and backwards from any number in multiples of 100 and 1,000. Count up to 1,000,000 Forwards and backwards from any number in multiples of 10,000 and 100,000. | Provide opportunities for Pupils to: -Find the number of thousands in ten thousand. -Assist pupils to use non-proportional structured materials to count in thousands and in ten thousands E.g. abacus and colour-coded counters to count in (a) thousands (b) ten thousands. -Let pupils find the place value of a digit in a 4- or 5-digit numeral. | complete a sequence of numbers in thousands and ten thousands. E.g. 5000, 6000,,, 100,000. Find the value of a digit in a given 4- or 5-digit and 6-digit numeral Find missing numerals on a number line. -observe pupils as they count up to 100,000. -Monitor pupils as they count up to 1,000,000 forward and backwards from any number in multiples of 100 and 1000. -Give class exercise on counting up to 1,000,000 forwards and backwards from any number in multiples of 10,000 and 100,000. Give out assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN). Primary School –Sierra Leone Mathematics Book 5. (Activity Series). Selective Common Entrance (B A Brown) Concrete materials (manipulative) |

| Unit 2. Number and Numeration <i>Reading And Writing</i> | After completing this unit, the pupils should be able to: Read and Write Numbers in Numerals Up to 1,000,000. Read and Write Numbers in Word Up to 100,000. Compare and Order numbers up to 100,000 using place value. Locate numbers up to 100,000 on the number line. | Introduce the topic as prescribed in the LPM for class 5. Follow the instruction in the LPM write and recite the following on the blackboard 1000– One Thousand - 2000 – Two Thousand - 3000 – Three Thousand etc to 100,000 Let pupils read and write a numeral using digits in a place-value Teacher to use the number line and place value chart to demonstrate comparing and ordering of numbers to 100,000. | Write number names for given numerals up to 100,000 and ask pupils to write them in words. Write different numbers on the blackboard and ask pupils to order them according to place values. Ask pupils to locate missing numbers on a number line with a specific pattern. Give class exercise and do corrections where necessary. Give out assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN). Primary School Mathematics Book 5.(Activity Series). Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
|---|--|--|--|--|
| Unit 3. Number and Numeration <i>Approximation</i> | After completing this unit, the pupils should be able to: Round Numbers up to 100,000 to the nearest Ten. Round Numbers up to 100,000 to the nearest Hundred. Round Numbers up to 100,000 Thousand. Round Numbers up to 100,000 to the nearest Tens of Thousands. Round Numbers up to 100,000 to the nearest Hundreds of Thousand. | Provide opportunities for Pupils to: -Write any 6 digits number and round it up to the nearest whole number. -Teacher to guide pupils when and how to do rounding up to the nearest whole number. -Teacher to mention significant figure(s) Eg. write 456,786 456,790 to the nearest tens 456,800 to the nearest Hundreds 457,000 to the nearest Thousands 460,000 to the nearest ten Thousands 500,000to the nearest Hundred Thousands | Teachers should assess pupils by: -Ask pupils to round up the given number(s) to the nearest tens, hundreds, thousands, tens of thousands, hundreds of thousands, etc. -Give class exercises and do correction where necessary. -Give out assignment. | Lesson Plan Manual Class 5 (1 st , Lesson Plan Manuel Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN). Primary School Mathematics Book 5.(Activity Series). Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
| Unit 4. Number and Numeration <i>Place Value</i> | After completing this unit, the pupils should be able to: Use place value system up to 100,000. Use place value to add numbers up to 100,000 with or without Renaming. Use place value to subtract numbers up to 100,000 with or without Renaming. Add or Subtract numbers up to 100,000 using the vertical method with or without Renaming. | Introduce the topic as prescribed in the LPM for class 5. Follow the instruction in the LPM Teacher should illustrate in the guided practice how to add and subtract numbers using place value system with or without renaming. | Teachers should assess pupils by : -Giving pupils class exercises, assignments and test on addition and subtraction of numbers using place value system with or without renaming. | -Lesson Plan Manual Class 5 (1 st , Lesson Plan Manuel Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series). Selective Common Entrance (B A Brown) |

| | • Find missing Addends. | | | Concrete materials (manipulative) |
|---|---|---|---|--|
| Unit 5. Number and Numeration <i>Fraction</i> . | After completing this unit, the pupils should be able to: Solve problems on like fractions with denominators up to 12. Compare and order fractions. Add and subtract like fractions. Identify equivalent fraction. Add and subtract equivalent fractions. | Introduce the topic as prescribed in the LPM for class 5. -Guide pupils to add FRACTIONS which have the same denominator. E.g. 1/4 +2/4. -Help pupils to express their answers verbally in a meaningful way E.g. Ask pupils; the sum of one-quarter and two quarters gives how many quarters? Response: Three quarters. | Teachers should assess pupils by asking them: -To add and subtract like fractions. -To identify equivalent fractions. -Give class exercise on the addition and subtraction of equivalent fraction. -Give out assignment. | Lesson Plan Manual Class 5 (1 st , Lesson Plan Manuel Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN). Primary School Mathematics Book |
| Unit 6. Number and Numeration <i>Operation on</i> <i>Fraction</i> . | After completing this unit, the pupils should be able to: Compare equivalent fractions and fraction greater than 1. Convert mixed fractions and improper fractions. Use the 4 operations on fractions. (+,-,x,/). | -Introduce the topic as prescribed in the LPM for class 5. -Follow the instruction in the LPM -Teachers should do work examples with pupils including word problems. eg. Provide opportunity for pupils to add and subtract equivalent fraction. | Teachers should assess pupils by asking them: -Convert mixed fractions to improper fractions - do class exercises, quizzes, assignments or tests on basic operations on fraction. | Lesson Plan Manual Class 5 (1 st , Lesson Plan Manuel Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN). Primary School Mathematics Book |
| Unit 7. Number and Numeration Decimal | After completing this unit, the pupils should be able to: Locate and Order decimals on a number line. Add Decimal numbers to 100ths Subtract Decimals numbers from 100ths Multiply Decimal numbers. Divide Decimal numbers. Solve word problems involving decimals and the four operations. | Introduce the topic as prescribed in the LPM for class 5. Follow the instruction in the LPM Demonstrate examples of fraction with denominator 10 on the number line. Teacher to explain how conversion from fraction to decimal and visa vi is done. e.g. convert 5/10 to decimal 5/10= 0.5 | Teachers should assess pupils by asking : Pupils to locate decimal numerals on a number line. Them to add and subtract decimal numbers to 100ths Them to multiply and divide decimal numbers to 100ths Them to solve simple word problems on decimals using the four basic signs. Give class exercises and do corrections where necessary. -Give out assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |

| Unit 8. Number and Numeration <i>Conversion of</i> <i>Numbers</i> (fraction,decimal &percentage) | After completing this unit, the pupils should be able to: Convert from fractions to decimals and from decimals to fractions. Convert from fractions to percentage and from percentages to fractions Convert from decimals to percentage and from percentages to decimals Solve percentage of a quantitysimple problems to more problems. | • | Introduce the topic as prescribed in the LPM for class 5. Follow the instruction in the LPM Teacher should illustrate in the guided practice How fractions are converted to decimals and vice versa. how fractions are converted to percentages and vice versa how decimals are converted to percentages and vice versa Illustrate simple problems on percentage of quantity. | Teachers should assess pupils by asking them: To identify fraction, decimal and percentages. To convert from fraction to decimal and from decimal to Fraction. To convert from fraction to percentage and from percentage to fraction. -describe given percentages using appropriate representations and notation. -Do class exercise and do corrections where necessary. Give out assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
|--|--|---|---|--|--|
| Unit 9. Number and Numeration Percentages | After completing this unit, the pupils should be able to: Calculate percentages of quantity (simple to more problems) Change quantity as a percentage. Solve word problems involving money and percentage. Solve word problems involving percentage and quantities. | • | -Provides opportunity for pupils to : use concrete materials and pictorial and symbolic representations to identify, describe and solve problems with percentages from real-life contexts use strip diagrams to facilitate solving word problems involving percentages. | Teachers should assess pupils by asking them: to answer questions on a range of problems from real-life contexts, e.g. to calculate the percentage of a quantity to express one number as a percentage of another to calculate new quantities after a percentage increase or decrease calculate with money, e.g. simple interest -Give class exercise and do correction where necessaryGive out assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
| Number and Numeration | And completing this unit, the pupils should be able to: Increase number patterns with a | • | the LPM for class 5. Follow the instruction in the LPM | by: Oral drill in number patterns | Class 5 (1 st ,2 nd &3 rd terms). |

| Number Pattern | common difference. Decrease number patterns with a common difference. Multiply number patterns with a common number. Divide number patterns with a common number. Write sequences using the 4 operations. | • | Teacher should illustrate in the guided practice how numbers are pattern using various objects | Class exercises Group work Assignment. | Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series) Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
|---|--|-------------|--|--|--|
| Unit 11. Number and Numeration <i>Relation</i> | After completing this unit, the pupils should be able to: Relate sets of numbers involving Addition Relate sets of numbers involving Subtraction Relate sets of numbers involving Multiplication Relate sets of numbers involving Division. | • | Introduce the topic as prescribed in the LPM for class 5. Follow the instruction in the LPM Teacher should illustrate in the guided practice how number patterns are related using the four basic operations. | Teachers should assess pupils by: -Oral drill to relate set of numbers involving addition, subtraction, multiplication and division. -Class exercises -Assignments | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) Primary School Mathematics Book 5.(Activity Series) Selective Common Entrance (B A Brown) |
| Unit 12. Number and Numeration <i>Factors</i> | After completing this unit, the pupils should be able to: Identify prime and composite numbers Identify factors. Identify factors of whole numbers up to 50 &100. Identify factor pairs of whole numbers up to 100. Identify prime factors. Identify prime numbers up to 20. Identify common factors for numbers up to 100. Identify common multiples for 2 whole numbers up to 100. | • | use concrete materials or pictorial representations (e.g. arrays or factor trees) to find all the factors of a number under 100 use divisibility rules and / or factor tress to write numbers as products of their primes find the prime numbers between 1 and 100 use concrete materials and pictorial representations to illustrate square and cube numbers | Teachers should assess pupils by asking them: -Identify prime and composite numbers, factors, factors of whole numbers, prime factors, common factors and common multiples. Give class exercise and do corrections where necessary. Give out assignment. | -Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). -Primary School Mathematics Book 5. (MAN) Primary School -Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) |
| Unit 13. Everyday Arithmetic Operation on whole numbers to 100,000 | After completing this unit, the pupils should be able to: Add numbers involving 3 or more Terms up to 100,000. Subtract numbers involving 3 or more Terms up to 100,000. | • • • | Guide pupils to add 5- and 6-digit numbers using; (i) Abacus. (ii) place-value chart. Eg. Hth Tth Th H T O 2 6 5 3 4 6 | Teachers should assess pupilsby asking them:-to add, subtract multiply anddivide numbers involving 3 ormore Terms up to 100,000.• To Solve simple | -Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). |

| | Multiply whole numbers up to 100,000. Divide whole numbers up to 100,000. Solve multi-step word problems involving the 4 operations up to 100,000. | +3 2 6 3 6 1 Help pupils to subtract numbers from 4, 5 or 6-digit numbers Guide pupils to use colour-coded objects to perform multiplication of 4-digit numbers by a 1-digit number. Pupils to use the place-value chart to multiply 4-digit numbers by a-digit number. E.g. 4123 x 5 Guide pupils to write addition and subtraction sentences for given word problems and solve them. | Itiplication word problems olving the 4 operations up to 100,000. Class exercise. Assignment. Ask pupils to: Multiply and divide numbers involving 3 or more terms 100,000. Solve simple multiplication word problems involving the four operations signs up to 100,000 | -Primary School Mathematics Book 5. (MAN) -Primary School Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
|--|--|---|--|--|
| Unit 14. Everyday Arithmetic Stratigies on Operations | After completing this unit, the pupils should be able to: Develop mental strategies in using the 4 operations with large numbers. Apply formal written strategies to add and subtract up to 1 million. Apply formal written strategies to multiply and divide up to 4 digits numbers by 2 digits numbers. Estimate multiplication problems up to 1 million. Estimate division problems up to 1 million. | Provide opportunity for pupils to : Use mental and informal written strategies (e.g. through using concrete materials and/or their pictorial representations including the number line) to illustrate range of estimation methods, e.g. front end estimation to give a quick sense of the answer round to an appropriate degree of accuracy depending on problem context compatible numbers (round to most appropriate 10, 100 etc. as needed) review using concrete materials, such as base ten blocks or their pictorial representations, to represent the four operations and record the process symbolically (e.g. in expanded notation) | Teachers should assess pupils by asking them to: | -Lesson Plan Manual Class 5 (1 st , 2nd&3 rd terms). -Primary School Mathematics Book 5. (MAN) Primary School -Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) Concrete materials (manipulative) |
| Unit 15. Everyday Arithmetic <i>Multiplication</i> | After completing this unit, the pupils should be able to: Revised multiplication Tables up to 12. Multiply by 1 and 0. | • review using concrete materials, such as base ten blocks or their pictorial representations, to represent the four operations and record the process symbolically (e.g. in expanded | Teachers should assess pupilsby asking them to:• answer problems withmultiplication using informalstrategies and record the | -Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). |

| | • | Multiply by 3 digits numbers using non- formal methods. Recognise the expression of multiplication. Solve word problems using multiplication of whole numbers. | • | notation) use a range of multiplication methods, e.g. multiplication grid (expanded notation) lattice multiplication columnar multiplication and progress from short to long multiplication basic number properties | process symbolically show a range of skills in answering questions on multiplication using efficient written methods including the standard algorithms and the basic number properties Solve multiplication problems involving more than two numbers. -Give class exercises and do corrections where necessary. -Give out assignment. | -Primary School Mathematics Book 5. (MAN) -Primary School Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
|--|---|--|---|--|---|--|
| Unit 16. Everyday Arithmetic <i>Division</i> | • | After completing this unit, the pupils should be able to: Revise division Tables up to 12. Divide a whole number by 2 digits numbers (not by long division approach). Divide by power 10. Interpret the remainder in division Solutions Solve word problems using division of whole numbers up to 1,000. | • | Use a range of division methods, e.g. repeated subtraction columnar division, Progress from short to long division and interpret remainders according to the problem context. Model given calculations using the basic number properties | Teachers should assess pupils by asking them to: use operations using informal strategies and record the process symbolically show a range of skills in answering questions on division using efficient written methods including the standard algorithms and the basic number properties Solve division problems involving more than two numbers. Give class exercise and do corrections where necessary. Give and assignment. | Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). -Primary School Mathematics Book 5. (MAN) -Primary School Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
| Unit 17. | • | After completing this unit, the pupils | • | use strip diagrams to facilitate | Teachers should assess pupils | -Lesson Plan Manual |
| Everyday Arithmetic | | Silve problems on fraction and Patio | | solving word problems involving | | $(1 \text{ st } 2^{\text{nd}} \& 3^{\text{rd}} \text{terms})$ |
| Ratio | | Solve problems on ratio and fractions | | solve direct proportion problems | -Divide a quantity into two | -Primary School |
| | | Write ratio in the lowest form | • | using the unitary method | parts and explaining the | Mathematics Book 5 |
| | • | Share quantities using ratio. | • | Solve problems by following | part/whole and part as a | (MAN), Primary School |
| | • | Word problems with ratio. | | LPM. | ratios, e.g., for a group of 3 | |

| | | | girls and 5 boys, explain the ratios 3:5, 3:8 and 5:8. • -Give class exercise and do correction where necessary. • | -Mathematics Book 5.(Activity Series) |
|---|---|--|--|---|
| Unit 18. Measurement And Estimation <i>Length</i> | After completing this unit, the pupils should be able to: Use the metric system for measuring lengths of objects. Convert between Metres, Centimetres and Millimetres. Convert between Metres and Kilometres. Convert between any metric system for length. Solve word problems using metric measurement for length. | Guide pupils to measure line segments with ruler or tape measure marked in centimetres and millimetres. Assist pupils to estimate lengths of line segments and verify by measuring. Revision: recall the number of centimetres in a metre and Millimetres in a centimetre. find the number of millimetres in a metre and write the relation 10mm= 1cm 100cm =1m 1000mm= 1m | Teachers should assess pupils by asking them to: find missing lengths, perimeter and area of squares, rectangles and triangles, including composite figures made up of these shapes convert between large and small units of measurement of length, e.g. mass and capacity, and vice versa, e.g. km and m m and cm kg and g l and ml Give class exercise and do corrections where necessary. Give out assignment. | -Lesson Plan Manual Class 5 (1 st , 2 nd &3 rd terms). Primary School -Mathematics Book 5. (MAN). Primary School Mathematics Book 5.(Activity Series). -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
| Unit 19. Measurement and Estimation. Revision | After completing this unit, the pupils should be able to: Revise Area, Mass, Volume and Capacity. Understand the difference between volume and capacity by comparing and contrasting. Calculate Volume and Capacity of vessels. Solve word problems involving Area, Mass, Volume and Capacity. | Provide opportunities for pupils to: review previously studied standard units of measurement for length, area, volume / capacity and mass develop a sense of how long 1 km is used for example, distances between familiar landmarks. how small 1 mm2is used for example, the full-stop on standard written typeface how small 1 ml is used for example, a drop of water. use standard units to estimate | Teachers should assess pupils by asking them to : Estimate and measure in standard units e.g. the dimensions of the classroom or playground, the distance from the main school gate to the office. the mass of small and large items found at home/school the volume of solid objects found at home / school the volume (capacity) of water in containers of | -Lesson Plan Manual Class 5 (1 st , 2 nd &3 rd terms). Primary School -Mathematics Book 5. (MAN). Primary School -Mathematics Book 5.(Activity Series). Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |

| | | length/perimeter/area/mass/volume before measuring. Solve problems on multiplication of area, mass and volume. | different shapes and sizes. -Give class exercise and do corrections where necessary. -Give out assignment. | |
|---|---|--|---|---|
| Unit 20. Measurement and Estimation Temperature/ Time | After completing this unit, the pupils should be able to: Estimate temperature in Celsius. Measure and compare temperature in \ Celsius. Tell Time intervals in Months, Weeks, and Days. Solve word problems involving time between two events. | -Guide pupils to measure the temperature in Celsius. -Guide pupils to measure the time of an event in minutes and seconds using the ordinary/digital clock/watch. E.g. time taken to drink half litre of water.,, Guess a Minute". This is a game where all children have to try and predict when a minute is reached. The teacher starts the game with the class standing. When the children think the minute is up they sit. Teacher times the game and the child who sits down closest to the minute mark wins. The game can be adapted for any length of time e.g. 30 seconds, 2 minutes etc. | Teachers should assess pupils by asking them to: calculate with the standard unit of temperature. express the time in words and symbols from analogue, digital, 12- and 24-hour clocks estimate and measure the duration of an event in minutes, hours, days, weeks or months, e.g. how long it would take to do a task Determine elapsed time between two dates, e.g. 'time between independence day and today. Give class exercise and do corrections where necessary. Give out assignment. | -Lesson Plan Manual Class 5 (1 st ,2 nd &3 rd terms). -Primary School Mathematics Book 5. (MAN) -Primary School Mathematics Book 5.(Activity Series) -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
| Unit 21. Measurement and Estimation GEOMETRY <i>Angle Types</i> | After completing this unit, the pupils should be able to: Identify Acute and obtuse angles using Degrees. Measure Acute and obtuse angles. Compare angles using Degrees Estemate acute and Obtuse angles using Degrees. Estemate angles up to 180 degrees. | Provide opportunities for Pupils to: -Identify examples of angles in real- life contexts. estimate the measurement of a given and / or drawn set of angles, visually compare with right angles and straight lines, and classify as acute, right, obtuse or straight; confirm by measuring and record symbolically using degrees (°) | Teachers should assess pupils by asking them to: -Review right angles and straight lines. -Use concrete materials, e.g. angle templates and pictorial representations to identify, and estimate given and / or drawn acute and obtuse angles | -Lesson Plan Manual Class 5 (1 st , 2 nd &3 rd terms). Primary School -Mathematics Book 5. (MAN). Primary School Mathematics Book 5.(Activity Series). -Selective Common Entrance (B A Brown) Concrete materials |

| | | | Use a protractor and degree notation (°) to measure and compare acute and obtuse angles. | (manipulative) |
|--|---|--|---|---|
| Unit 22. Measurement and Estimation GEOMETRY <i>Circle/ other shapes</i> | After completing this unit, the pupils should be able to: Draw and identify properties of Squares, including angles and lines of symmetry. Draw and identify Properties of Rectangles, including Angles and lines of symmetry. Draw and identify Part of a circle. Compare and contrast properties of different shapes. | -Let pupils make nets of a cuboid and a cylinder using -Manila cards and fold to make the solids. -Let pupils draw a circle with a convenient radius and label the diameter, radius, centre and circumference. AB is diameter OC is radius O is centre. - Let pupils make nets of a cuboid and a cylinder using manila cards and fold to make the solids. -Let pupils draw a circle with a convenient radius and label the diameter, radius, and fold to make the solids. -Let pupils draw a circle with a convenient radius and label the diameter, radius, centre and circumference. | Teachers should assess pupils by asking them to: - Demonstrate that the angle sum of a triangle is 180° and show how to derive the angle sum for equilateral and isosceles triangles. - Find the angle sum of squares and rectangles. | -Lesson Plan Manual Class 5 (1 st , 2 nd &3 rd terms). Primary School - -Mathematics Book 5. (MAN). Primary School Mathematics Book 5.(Activity Series). -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |
| Unit 23. Statistics <i>Data Collection Plan</i> | After completing this unit, the pupils should be able to: Plan for data collection and piloting. Put the data collection plan into action. Devise a plan for a statistical report with the findings of the survey. Write a statistical report with the findings of the survey. Present a statistical report. | -Measuring and assessing information. E.g. Number of goals recorded in a league table, -Masses of children at birth in hospitals and clinics. The children to work out the Mean, Mode and Median and to represent their findings in a graph. -The teacher could ask each group to choose a different type of graph (bar, pictogram etc.) on which to display their findings. | Teachers should assess pupils by asking them to: -Collect discrete or continuous data. -organise and display data in a suitable form, and answer questions on the data. -Giving class exercise and do corrections where necessary. -Giving assignment. | -Lesson Plan manual-class 5. -Mathematics Book-5. |
| Unit 24. Statistics <i>Mean/Mode/Median</i> . | After completing this unit, the pupils should be able to: Calculate Mean of data. median mode | -Lead pupils to find the mean of data by adding the values and dividing the sum by number of items. E.g. the mean of 3, 2, 3, 4, 6, 8, 9, is 5 -Revise finding the median as the middle value of a set of data when arranged in ascending or descending order. -Guide pupils to review finding the mode as the most frequent occurring item in data. | Teachers should assess pupils by asking them to: • Find the mode as the most frequent occurring item in the data. • Set the median as the middle value of a set of data when arranged in ascending or descending order. • Calculate the mean of a set of data by adding the values and dividing the sum by number of items. | -Lesson Plan Manual Class 5 1 st ,2 nd &3 rd terms). Primary School Mathematics Book 5. (MAN) -Primary School Mathematics Book 5. (Activity Series) Selective Common Entrance (B A Brown) -Concrete materials (manipulative) |

| | Give class exercise and do | |
|--|------------------------------|--|
| | corrections where necessary. | |
| | Give out assignment. | |

| | <u>MATHEMATICS</u> OUTLINE TEACHING SYLLABUS FOR BASIC EDUCATION CLASS 6. | | | | | | |
|---|--|--|--|--|--|--|--|
| Suggested Topics/Themes /Units | Specific Learning Outcomes | Recommended Teaching Styles or Pedagogical Approaches | Assessment Methods | Suggested Learning & Teaching Resources | | | |
| Unit 1. Number and Numeration <i>COUNTING</i> | After completing this unit, the pupils should be able to: Count Forwards and Backwards from any number in multiples of power of 10 up to 10,000,000. Use place value system up to 10,000,000. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation -Number game. -More Exercises. | Teacher assess pupils by: -Questioning -Class participation -Class exercises. -Feedback from group work | -Lesson Plan Manual Class 6 (1 st , 2 nd & 3 rd terms). Primary School -Mathematics Book 6. (MAN). Primary School -Mathematics Book 6. (Activity Series). - Selective Common En- trance (B A Brown) | | | |
| Unit 2. Number and Numeration <i>Reading And</i> <i>Writing</i> | After completing this unit, the pupils should be able to: Read and Write Numbers in Numerals Up to 1,000,000. Read and Write Numbers in Words Up to 1,000,000. Compare and Order numbers up to 1,000,000 using place value and the number line. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation -More Exercises. | Teacher assess pupils by: -Questioning. -Class Participation. -Choral/Individual Reading. -Class Exercises. -Assignment | -Lesson Plan Manual Class 6 (1 st , 2 nd & 3 rd terms). Primary School -Mathematics Book 6. (MAN). Primary School -Mathematics Book 6.(Activity Series) -Selective Common En- trance (B A Brown) | | | |
| Unit 3. | After completing this unit, the pupils should be able to: | Teacher introduces lesson by: -Demonstration | Teacher assess pupil by: -Questioning | -Lesson Plan Manual | | | |

| Number and Numeration. <i>Reading And</i> <i>Writing</i> | Read and Write Numbers Up to 100,000. Read and Write Numbers Up to 10,000,000. Compare and Order numbers up to 10,000,000 using place value and the number line. | -Group Work activities -Explanation - Number game. -More Exercises. | -Class Participation. -Choral/Individual Reading. -Class Exercises. -Assignment | -Lesson Plan Manual Class 6 (1 st , 2nd & 3 rd terms). Primary School -Mathematics Book 6. (MAN). Primary School -Mathematics Book 6.(Activity Series) |
|---|--|---|--|---|
| Unit 4. Number and Numeration <i>APPROXIMATION</i> | After completing this unit, the pupils should be able to: • Round Numbers up to 100,000 to the nearest 10, 100, 1,000, and 10,000. • Round Numbers up to 1,000,000 to the nearest 10, 100, 1,000, and 10,000 ,100,000 and 1,000,000. • Round Numbers up to 10,000,000 to the nearest 10, 100, 1,000, and 10,000 ,100,000 and 1,000,000. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation - Number game. -More Exercises. | Teacher assess pupils by: -Questioning -Class participation Class Exercises. -Assignment -Feedback from group work | -Lesson Plan Manual Class 6 (1 st ,2 nd & 3 rd terms). -Primary School Mathe- matics Book 6. (MAN) -Primary School Mathe- matics Book 6.(Activity Series) |
| Unit 5. Number and Numeration <i>TYPES OF FRACTION</i> . | After completing this unit, the pupils should be able to: -Review Fraction -Work like fractions with denominators up to 12 -Identify equivalent fraction. -Convert mixed fraction to improper fraction -Convert improper fraction to mixed fraction -Express fractions in their lowest form. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation -number game. -More exercises | Teacher assess pupils by: -Questioning. -Class Participation. -Choral/Individual Reading. -Class Exercises Assignment | -Lesson Plan Manual Class 6 (1 st ,2 nd & 3 rd terms). Primary School -Mathematics Book 6. (MAN) Primary School - -Mathematics Book 6 |
| Unit 6. Number and Numeration <i>Operation on</i> <i>Fraction</i> . | After completing this unit, the pupils should be able to: -Add and Subtract fractions. Multiply and divide fraction. Combine 2 or more operations in fractions. Solve word problems in fraction involving multi - step problems. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation - Number game. -More exercises. | Teacher assess pupils by: -Class Participation. -Choral/Individual Reading. -Class Exercises. -Assignment | -Lesson Plan Manual Class 6 (1 st ,2 nd & 3 rd terms). Primary School -Mathematics Book 6. (MAN) |
| Unit 7. | After completing this unit, the pupils should be able to: | Teacher introduces lesson by: -Demonstration -Poster presentation. | Teacher assess pupils by: -Class Participation -Class Exercise. | -Primary School Mathe- matics Book 6.(Activity Series) |

| Number and Numeration Fraction and Decimal | -Revise fraction with denominators of 10 or 100. -Work fraction with denominators of 1000. -Convert fractions as decimals and vice versa. -Order fractions and decimals. -Show Equivalence between fractions and decimals. | -Discussion -Manipulative -Questioning -More Exercise. | -Observation -Home Work Activities | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) |
|--|---|---|--|--|
| Unit 8. Number and Numeration <i>Conversion of</i> <i>Numbers</i> (fraction, decimal & percentage) | After completing this unit, the pupils should be able to: Convert from fractions to decimals and from decimals to fractions. Convert from fractions to percentage and from percentages to fractions Convert from decimals to percentage and from percentages to decimals Solve percentage of a quantity from simple problems to more complex problems. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation -number game for learning -More Exercises. | Teacher assess pupils by: -Questioning -Class participation -Class Exercises. -Assignment -Feedback from group work | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 9. Number and Numeration Word Problems (fraction,decimal & percentage) | After completing this unit, the pupils should be able to: Devise word problems involving fractions Solve word problems involving decimals and percentages Device word problems involving decimals and percentages | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation - Number game for learning -More Exercises. | Teacher assess Pupils by: -Questioning -Class participation -Class Exercise. -Assignment -Feedback from group work | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 10. Number and Numeration <i>NUMBER PATTERN</i> | After completing this unit, the pupils should be able to: -Increase number patterns without a common difference -Decrease number patterns with a common difference -Decrease number patterns without a common difference -Multiply number patterns with a common ratio. -Multiply number patterns without a common ratio. -Divide number patterns with a common factor. -Divide number patterns without a common factor. Write sequences with multiples of 2,3,4, and 5 | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation -Number game for learning -More Exercise | Teacher assess pupils by: -Questioning -Class participation -Class Exercises -Assignment -Feedback from group work | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 11. Number and Numeration DECIMALS | After completing this unit, the pupils should be able to: Work place value of decimal numbers up to thousandths Work place value of whole and decimal numbers up to thousandths | Teacher introduces the lesson by: -Demonstration -Group Work activities -Explanation -Number game for learning -More Exercises. | Teacher assess the pupils by: -Questioning -Class participation -Class Exercises Assignment Feedback from group work. | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
|---|--|---|--|---|
| Unit 12. Number and Numeration <i>NUMBER</i> <i>PATTERN</i> | After completing this unit, the pupils should be able to: locate sequence of square numbers Identify rule to sequences involving square numbers Identify rule to sequences involving cube numbers Locate sequences involving triangular numbers. | Teacher introduces the lesson by: -Discussion -Problem Solving -Game for Learning -Chart Making {Square Numbers) -More Exercises. | Teacher assess pupils by: -Class Participation -Question and Answer. -Class Exercises -Assignment | -Lesson Plan Manual Class 6 (1 st , 2nd & 3 rd terms). -Primary School Mathe- matics Book 6. (MAN) -Primary School Mathe- matics Book 6.(Activity Series) -Selective Common En- trance (B A Brown) |
| Unit 13. Number and Numeration <i>TYPES OF</i> <i>NUMBERS</i> | After completing this unit, the pupils should be able to: -Identify and add even and odd numbers -Identify prime and composite numbers -Identify factors and multiples -Identify prime factors. -Identify common factors and common multiples | Teacher introduces the lesson by: -Discussion -Problem Solving -Game for Learning -Questioning -More Exercises. | Teacher assess pupils by: -Class Participation -Question and Answer. -Class Exercises -Assignment | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 15. Everyday Arithmetic <i>Multiplication</i> | After completing this unit, the pupils should be able to: -Multiply 3-digit numbers by 2-digit numbers. -Multiply 4- and 7-digit numbers by 2-digit numbers. -Multiply 1- and 2-decimal-place numbers by a 1-digit number. -Multiply 3 to 4 decimal-place numbers by a 2-digit numbers. -Multiply 1 decimal-place numbers by 1 decimal place numbers. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation - Game for Learning, and -More exercises | Teacher assess pupils by: -Questioning -Class participation -Class Exercise. -Assignment -Feedback from group work | -Lesson Plan Manual Class 6 (1 st ,2 nd & 3 rd terms). -Primary School Mathe- matics Book 6. (MAN) -Primary School Mathe- matics Book 6.(Activity Series) -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) |

| | -Multiply 2 decimal-places numbers by 1 decimal place numbers. - Multiply 3 decimal-place numbers by 2 decimal place numbers. | | | -Supplementary activity books for mathematics |
|---|---|---|---|--|
| Unit 16. Everyday Arithmetic <i>Multiplication and</i> <i>Division</i> | After completing this unit, the pupils should be able to: Multiply whole numbers by 10, 100 and 1000 Divide whole numbers by 10, 100 and 1000 | Teacher introduces the lesson by: -Demonstration -Group Work activities -Explanation - Game for Learning, and • More exercises | Teacher assess pupils by: -Questioning -Class participation -Class Exercise -Assignment -Feedback from group work | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 17. Everyday Arithmetic <i>DIVISION</i> | -After completing this unit, the pupils should be able to: -Divide 3 and 4-digit numbers by 2-digit numbers. -Divide 5 and 6 digit numbers by 2-digit numbers. -Divide 1- decimal place number and 1-decimal-place numbers. -Divide 2 decimal-place numbers by 1-decimal place numbers. -Divide 2 decimal-place numbers by 2 decimal place numbers. -Divide 3 decimal-place numbers by 2 decimal place numbers. | Teacher introduces lesson by: -Demonstration -Group Work activities -Explanation - Game for Learning, and - More exercises | Teacher assess pupils By: -Questioning -Class participation -Class Exercises -Assignment -Feedback from group work | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 18. Everyday Arithmetic <i>MONEY</i> (Profit and Loss) | After completing this unit, the pupils should be able to: -Calculate profit and loss -Solve word problems involving profit and loss as a percentage. -Calculate Simple Interest on investment. | Teacher introduces the lesson by: -Group work -Discussion -Manipulative -Questioning -More Exercises. | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 19. Everyday Arithmetic Ratio and Proportion | After completing this unit, the pupils should be able to: Solve problems on proportion and fraction Solve problems on proportion and ratio. Solve problems on equivalent Ratio. | Teacher introduces lesson by: -Problem Solving -Discussion -Manipulative -Questioning | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) |

| | Write ratio in the simplest form. Share quantities using ratio. Word problems with ratio. Direct proportion. | -More Exercises | -Question and Answering | -Supplementary activity books for mathematics |
|--|---|--|---|---|
| Unit 20. Measurement And Estimation <i>LENGTH</i> | After completing this unit, the pupils should be able to: -Measure lengths of objects in feet and inches. -Measure lengths of objects in millimetres and centimetre -Convert length from inches to feet and feet to inches. -Convert length from centimetre to millimetre, and from millimetres to centimetre. -Convert length from meter to kilometre, and from kilometres to meter. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning -More Exercises. | Teacher assess pupils by: -Class Participation -Class Exercises Observation Home Work Activities. | -Primary School Mathematics Book 6. (MAN) -Primary School Mathematics Book 6.(Activity Series). -Selective Common Entrance (B A Brown). -Concrete materials, (manipulative) -Supplementary activity books for mathematics |
| Unit 21. Measurement and Estimation. Perimeter and Area. | After completing this unit, the pupils should be able to: -Find perimeter of shape. -Find the perimeter of irregular shapes. Area of squares and rectangles. Area of triangles. Area of composite shape | Teacher introduces the lesson by: -Chart Making -Discussion -Manipulative -Questioning -More Exercises. | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 22. Measurement and Estimation TIME | After completing this unit, the pupils should be able to: -Differentiate between 12- hour and 24-hour clock -Differentiate between A.M and PM -Add and Subtract with time -Tell time intervals in hours, months, weeks, and days. Solve word problems involving time between two events. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning -More Exercises | Teacher assess pupils by: -Class Participation -Class Exercise -Observation -Home Work Activities. | -Selective Common En- trance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 23. | After completing this unit, the pupils should be able to: | Teacher introduces lesson by: -Chart Making | Teacher assess pupils by: -Class Participation | -Selective Common En- trance (B A Brown) |

| Measurement and Estimation GEOMETRY <i>Angle Theorem</i> | Find unknown angles in a triangle Find Angles in quadrilaterals Identify types of angles Find angles on a straight line Find angles in composite shapes. | -Discussion -Manipulative -Questioning -More Exercises | -Class Exercise -Observation -Home Work Activities. | -Concrete materials (manipulative) -Supplementary activity books for mathematics |
|--|--|---|--|--|
| Unit 24. Measurement and Estimation GEOMETRY Triangles | After completing this unit, the pupils should be able to: -Identify properties of right-angled triangles. -Identify Properties of isosceles triangles. -Identify Properties of equilateral triangles. -Compare right-angled triangles and isosceles triangles. -Compare isosceles triangles and equilateral triangles. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning -More Exercises. | Teacher assess pupils by: -Class Participation -Class Exercise -Observation -Home Work Activities. | -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 25. Measurement and Estimation GEOMETRY Angles in triangles | After completing this unit, the pupils should be able to: Calculate sum of angles in a triangle. Find unknown angles in a triangles Calculate sum of angles in a quadrilateral. Identify angles in a composite figure. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning -Problem Solving More Exercises. -Group Work | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. -Feedback from group work | -Selective Common Entrance (B A Brown) -Concrete materials (manipulative) -Supplementary activity books for mathematics |
| Unit 26. STATISTICS Data Collection Plan | After completing this unit, the pupils should be able to: Make up a plan for data collection Put the data collection plan into action. Devise a plan for a statistical report with the findings of the survey. Write a statistical report with the findings of the survey. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning -Problem Solving -More Exercises. -Group Work | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. -Feedback from group work | -Lesson Plan Manual Class 6 (1st, 2nd & 3rd terms). -Primary School Mathematics Book 6. (MAN) -Primary School Mathematics Book 6.(Activity Series) |
| Unit 27. STATISTICS Data Handling | After completing this unit, the pupils should be able to: -Present a statistical report. -Present discrete data. -Present continuous data. | Teacher introduces lesson by: -Chart Making -Discussion -Manipulative -Questioning | Teacher assess pupils by: -Class Participation -Class Exercises -Observation -Home Work Activities. | -Lesson Plan Manual Class 6 (1st ,2nd & 3rd terms). Primary School |

| | -Interpret bar chart, histogram, pie chart. -Solve word problems involving pie chart, | -Problem Solving -More Exercises -Group Work | -Feedback from group work | -Mathematics Book 6. (MAN). Primary School – Mathematics Book 6.(Activity Series) |
|---|--|--|---|--|
| Unit 28. STATISTICS Centre Tendency | After completing this unit, the pupils should be able to: Calculate Mode, Median and Mean of Discrete data Find appropriate average. | Chart Making Discussion Teacher introduces lesson by: -Manipulative -Questioning -Problem Solving -More Exercises -Group Work | Class Participation Class Work Teacher assess pupils by: -Observation -Home Work Activities. -Feedback from group work -Class Exercises | -Lesson Plan Manuel Class 6 (1st ,2nd & 3rd terms). -Primary School Mathematics Book 6. (MAN) -Primary School Mathematics Book 6.(Activity Series) |

MATHEMATICS

OUTLINE TEACHING SYLLABUS FOR THE THIRD STAGE OF BASIC EDUCATION - JSS 1

| SUGGESTED TOPICS/UNITS | SPECIFIC LEARNING OUTCOMES | RECOMMENDED TEACHING STYLES OR PEDAGOGICAL APPROACHES | ASSESSMENT METHODS | SUGGESTED LEARNING AND TEACHING RESOURCES CORE / SUPPLEMENTARY |
|-------------------------------------|--|---|---|--|
| UNIT 1. Number and numeration | At the end of the lesson, pupils should be able to: -Count to 100,000,000 forwards and backwards. | Teacher introduces lesson by: -Revising to count 100,000,000 forwards and backwards extend to 100,000,000 by counting in multiples of 100's, 500's, 1.000.000 and 10.000.000. | Teacher assesses pupils by : -Questioning -Giving class exercises. -Observation | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -New General Mathematics Book 1 |

| | from any number, in multiples of a given number using whole numbers, decimals and powers of 10. -Acquire the understanding of place value to identify, read and write whole numbers, fractions and decimals in expanded form. | -Revising place value. -Using place value to expand whole numbers and decimals. -Demonstrating conversion of fractions to decimals and vice versa. -Using number line to compare and order 4, 5, and 6 digit numbers, fractions and decimals. | -Giving out assignment such as: -fill in missing numbers in a set of numbers e.g 30,000, 60,000, 60,000 20,000 in ascending or descending order. -write integers and decimals in expanded form. -compare and order integers and decimals. | -Junior Secondary Mathematics for Sierra Leone Book 1 -The Abacus -Number Line Chart -Place value trays. -Strips of number line. |
|------------------------------|--|--|---|---|
| UNIT 2. Number Value | At the end of the lesson, pupils should be able to : -Understand and use place value to identify, read and write whole numbers and decimals up to 100,000,000. -Use place value to compare and order integers i.e. positive, negative and 0, and locate them on the number line. | Teacher introduces the lesson by: -Using place value models to revise place value for whole numbers and decimals up to 10,000,000; giving the numerals and names of the numbers. -Extending place value to the left and right. -Illustrating movement to the left of the place value and multiplying by 10, and moving to the right and dividing by 10. -Using different sections of a number line to position new numbers on a number line. -Discussing the movement of numbers as increasing or decreasing, locating their position on the number line. -Using place value and number line, compare and order new numbers. -Investigating the least and the greatest number in different sets of numbers. | Teacher assess pupils by : Questioning. Giving class exercises and do corrections where necessary. Observation. Giving out assignment. -write integers and decimals in expanded form using place value. -identify the place value. -identify the place value of different digits in a given numbers. -determine the number of numerals that can be formed using given number of digits. | -Number trays single digit number cards. -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| UNIT3. FRACTONS/DECIMALS. | At the end of the lesson, pupils should be able to: -Use equivalent fractions to compare and order fractions. -Reduce fractions to their lowest terms. | Teacher introduces the lesson by: -Revising fractions done at Primary level. -Discussing the names for the different parts of a fraction and the different types of fractions. -Introducing fractions as rational numbers. -Showing that by multiplying numerator and denominator of any fraction by the same number an equivalent fraction is obtained. | Teacher assesses lesson by: Questioning Giving class exercises and do corrections where necessary. Observation. Giving out assignment. | -The Lesson Plan Manual JSS1 (1st, 2nd and 3rd Terms) -Junior Secondary -Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |

| UNIT 4. APPROXIMATION/HCF and LCM. | -Identify and calculate equivalences between fractions and decimals. At the end of the lesson, pupils should be able to: -Round whole numbers and decimals up to 100,000,000 to a required degree of accuracy. E.g. number of decimal places, significant figures. -use the concept and vocabulary of factors, prime and composite numbers. -Determine prime factors of whole numbers. -Determine prime factors of whole numbers. -Use prime factorization to determine Highest Common Factor (H.C.F) and Lowest Common Multiple (L.C.M). -Calculate squares, cubes, square roots and cube roots. At the end of the lesson, | Similarly dividing numerator and denominator by the same number until operation cannot be continued, reduces the original fraction to its lowest term. The fraction is reduced to its lowest term when numerator and denominator cannot be divided by the same number without a remainder. Showing that fractions can be converted to decimals by dividing numerator by denominator. Useing conversion of fractions to decimals to determine terminating or recurring decimals. Teacher introduces the lesson by: Comparing pairs of numbers referring to the place value of the digits that make each number. Discussing significant figures. Demonstrating the need to consider the digit 'N' after the required degree of accuracy and to add one to the digit before 'N' if 'N' is greater than 5. Eg. 367.26 to 1 decimal place. 6 the digit in the second decimal place is greater than 5 So 2 in the first place is changed to 3. Therefore, 367.2 = 367.3 to 1 decimal place. Reviewing factors, multiples prime and composite numbers. Illustrating how to determine factors, prime factors, composite numbers using divisibility rules and factor trees. Explain prime factorization and its use to determine Highest Common Factor (H.C.F), Lowest Common Factor (L.C.M), square cubes, square roots and cube roots. | Teacher assesses pupils by: Questioning. Giving class exercises and do corrections where necessary. Giving out assignment. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
|--|--|---|---|--|
| INDEX NOTATION. | pupils should be able to: -Write index notation for positive whole numbers and use rules of indices to | -Discussing the value of the powers of a rational number and index notation as its symbolic representation. e.g. $5 \times 5 \times 5 = 5^3$ 5^3 is the index notation. | by: Questioning | Manual JSS1(1 st ,2 nd and 3 rd Terms) |

| | multiply and divide large numbers. | 5 is the base and 3 is the index. -Demonstrating the laws of indices as a shortened form of operation with powers of numbers. -Illustrating the addition and subtraction laws of indices as multiplying and dividing numbers. e.g. $4^2 \times 4^3 = 4^2 + 4^3 = 4^5$ $3^5 + 3^2 = 3^5 - 2 = 3^3$ | Giving class exercise and do corrections where necessary. Giving out assignment. -ask pupils to use the law of indices to multiply large numbers leaving the answer in index notation. | -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
|--|---|--|--|---|
| UNIT 6. EVERYDAY ARITHMETIC. (1)The four mathematical operation signs with numbers. | At the end of the lesson, pupils should be able to: - Recall and use addition, subtraction, multiplication and division facts for integers and decimals to 100,000,000 including multiplying and dividing by powers of 10. - Recall and use mental, informal and formal written methods for the four operations with integers and decimals. - Recall and use the basic number properties of the four operation signs including identity properties to solve multi word problems. -Determine which operations and methods to use when solving problems applying the order of operations as required. | Teacher introduces the lesson by: Revising work done on the four operation signs at primary level using mental, formal and informal strategies for the four operations. Discussing strategies for solving real life problems involving integers, decimals and fractions both positive and negative. Using examples to revise the basic number properties. i.e. commutative, associative, distributive and the identity properties of addition and multiplication. Discussing the relationship between the identity properties and the additive and multiplicative inverses of numbers. Demonstrate which operations to use when solving problems and the order of operations (BODMAS) | Ask pupils to: -solve a range of problems involving integers, decimals and fractions. -solve various problems including word problems involving different operations. -determine the identity for addition and multiplication giving examples. -give answers to required degree or occurrence and check for reasonableness using concepts of rounding. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 - The Abacus -Number Line Chart |
| UNIT 7. EVERYDAY ARITHMETIC. | At the end of the lesson, pupils should be able to: -Identify some basic keys on the calculator. -Use the four operation signs to solve problems | Teacher introduces the lesson by: -Examining and discussing a calculator, pointing out some basic keys and their functions. -Building multi-step word problems from the environment which involve a mixture of | -Ask pupils to find the sum, difference, product and quotient of different numbers using the calculator efficiently. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 |

| The Four mathematical operation signs with numbers. | including multi-step word problems involving a mixture of integer's fractions and decimals to the thousandths. -Solve problems with percentages including percentages greater than 100 on word problems. | integer's fractions and decimals to the thousandths and solve using the four operations. | -Give class exercises to pupils and do corrections where necessary. -Give out assignment | -New General Mathematics Book 1 -The Abacus -Number Line Chart -Calculators |
|---|--|---|--|--|
| UNIT 8. RATIOS/PERCENTAGES | At the end of the lesson, pupils should be able to: -Compare two or more quantities in ratio and percentages. -Solve problems involving ratios, rates, direct and indirect proportions, expressing answers in lowest terms. | Teacher introduces the lesson by: -Revising work done on ratio at primary level. -Reinforcing the idea of ratio by comparing two more quantities. -Demonstrating how ratio can be expressed as a fraction, a decimal and a percentage using examples. -Solving a range of problems with ratio using fractions, decimals and percentages to compare two or more quantities. -Showing how ratio can be used to solve problems involving rates, scale factor, diagrams and maps, expressing answers in lowest form. -Discuss the concept of equal ratios and solve direct or inverse proportions. | Ask pupils to: -write a ratio comparing two or more quantities using the symbol for ratio a/b and as a fraction. -share a quantity in a given ratio. Ask pupils to: -calculate the total cost of items bought from a market/shop. -Give class exercises to pupils and do corrections where necessary. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| UNIT 9. MEASUREMENT AND ESTIMATION. | At the end of the lesson, pupils should be able to: -Use and convert between the different units of measurement for length, area, mass and volume/capacity. -Recall and use appropriately the formulas for perimeter and area of squares, rectangles and triangles. | Teacher introduces the lesson by: Guiding pupils to use and convert between the different units of measurement for length, area mass and volume/capacity. Guiding pupils to recall and use appropriately the formulas for perimeter and area of squares, rectangles and triangles. | Teacher assesses pupils by: Questioning Giving class exercise and do corrections where necessary. Giving assignment. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| UNIT 10. MEASUREMENT AND ESTIMATIN. | At the end of the lesson, pupils should be able to: | Teacher introduces the lesson by: -Reviewing units of measurement for length, area, volume/capacity and mass determining which to choose for large and small objects. | Ask pupils to: -Measure the length of different objects in the | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) |

| | Derive and use the general formula for the area of parallelograms. Use the formulas for circumference and area of circles. Use formula to calculate the volume of rectangular prisms. (cubes and cuboids) Solve multi-step word problems involving perimeter, circumference and area of rectangles squares, triangles and circles. | -Using examples to illustrate conversion between units of measurement for length, area, volume/capacity and mass. -Explaining the difference between volume and capacity and their units of measurement. -Reviewing and recalling the formulas for finding the perimeter and area for squares, rectangles and triangles. -Using pictorial representation to derive the general formula for the area of parallelograms. -Using the base of any cylinder to show that the circumference of circle is its perimeter. -Directing pupils to draw circles and practically measure the distance round to show that the circumference of a constant and twice its radius i.e. 2∏r - ∏ is the constant. -Dividing a circular template into sectors. -Using sectors to form a rectangle, and the area of the rectangle formed is the area of the circle, i.e. product of the the length of rectangle and radius use half circumference multiplied by radius = ∏r x r = ∏r². | classroom, choosing the most appropriate unit to use. -Calculate the perimeter and area of squares, rectangles and triangles. -Find the perimeter and area of parallelograms using the general formula. -Find the perimeter and area of a kite, rhombus. Giving out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 - The Abacus -Number Line Chart Measuring Tools |
|--|---|---|---|--|
| UNIT 11. MEASUREMENT AND ESTIMATION. | At the end of the lesson, pupils should be able to : -Recall and use the relationship between the various units of time. -Solve multi-step word problems involving time. -Name and measure different types of angles including angles formed by parallel and intersecting lines. -Use the properties of angles in triangles and rectangles to find unknown angles. | Teacher introduces the lesson by: Revising the formula for finding the volume of a cuboid. Relating the cuboid to a rectangular prism. Solving various problems in finding the volume of a rectangular prism. Discussing and building multi-step word problems involving perimeter, circumference and area of triangles, parallelograms and circles. Illustrating using examples the method for solving multistep word problems on perimeter, circumference and area of triangles, circles and parallelograms. Reviewing various units of time second, minute, hour, day, week etc. Discussing the relationship between the units of time. Introducing the 12-hour and 24 hour clocks. Using timetables to solve problems involving duration of events within a single time zone. Reviewing and revising work on angles at the primary level. Recalling properties of angles formed with parallel and intersecting lines. Describing the properties of angles in triangles, squares and rectangles and use it to find unknown angles. | Ask pupils to: -Find the area of different triangles, circles and parallelograms. -Find the volume of different rectangular prisms, composite solids. -Give class exercises and do corrections where necessary. -Give out assignment. | Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -Concrete materials -Digital clocks |

| UNIT 12. MEASUREMENT AND ESTIMATION. | At the end of the lesson, pupils will be able to: -use drawing tools to construct triangles, parallel and perpendicular lines and circles. -Do more calculations on triangles and circles. | Teacher introduces the lesson by: -Discussing the use of each instrument in a geometry set. -Providing opportunities for pupils to practice using the instruments. -Using ruler and set square to construct parallel and perpendicular lines. -Using ruler and compasses to construct a circle given the radius or diameter. -Illustrating using examples facts needed to construct different types of triangles. -Constructing circles with a given radii and diameters to draw patterns. | Teacher assesses pupils by: Questioning Giving class exercise and do corrections where necessary. Giving assignment. | The Lesson Plan Manual JSS1 (1st, 2nd and 3rd Terms) Junior Secondary Mathematics for Sierra Leone Book 1 New General Mathematics Book 1 The Abacus Number Line Chart Pictorial representation. Geometry set, ruler. |
|--|--|--|---|---|
| UNIT 13. ALGEBRA | At the end of the lesson, pupils should be able to: -Identify, describe and complete simple arithmetic patterns. -Determine the rule in the number pattern and identify it as the n th term to generate a number or sequence. -Use letters as variables to represent number. -Collect like terms. -Simplify, expand and factorize simple algebraic expressions. | Teacher introduces the lesson by: -Demonstrating how to use concrete materials e.g. two dimensional shapes, match sticks, and pictorial or symbolic representations how to create simple arithmetic patterns. -Discussing the n th term and the common difference of the pattern and the general rule for a number pattern. -Introduce letters as variables to represent numbers. -Discussing like and unlike terms. -Using examples to Simplify algebraic expressions by collecting like terms and expanding by removing brackets and factorizing by finding common factors. | Asks pupils to: -create simple arithmetic pattern. -complete a table of values and describe pattern in words. -determine the rule, the nth term and common difference. Use the rule to predict other values of the pattern. Ask pupils to -simplify expressions by (i) collecting like terms. (ii) removing brackets. (iii) factorize given expressions. factorizing | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| UNIT 14. ALGEBRA. | At the end of the lesson, pupils should be able to: -Evaluate algebraic expressions by substituting given values. -Construct and solve simple linear equations in one variable. -Read, write and plot coordinates in all four | Teacher introduces the lesson by guiding pupils to: -Use examples to show that the value of an expression can be determined. -Evaluate simple expressions by substituting given values for different variables. -Use concrete materials e.g. balance model and their pictorial or symbolic representations to construct and solve simple linear equations in one variable. | Teacher assesses the lesson by: -ask pupils to solve a variety of simple equations in one variable. E.g. $x + 3 = 5$ -ask pupils to give the coordinates of given points. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus |

| | quadrants of the Cartesian plane. | -Use drawing to introduce the Cartesian plane as consisting of two number lines drawn at right angles one to another. The number lines are known as axes. | -ask pupils to plot different points in the four quadrants of the Cartesian plane. | -Number Line Chart |
|--|--|---|---|--|
| UNIT 15. STATISTICS. | At the end of the lesson, Pupils should be able to: -Collect, organize, display, extract and interpret discrete and continuous data using pictograms, lists, frequency tables, bar charts, and line graphs and pie charts including multi-step word problems. | Teacher introduces the lesson by guiding pupils to: -Learn that the x-axis is the horizontal number line. -Learn that the y-axis is the vertical number line. -Show that the axes divide the plane into 4 sections known as quadrants. -Describe the coordinates of points in the four quadrants. -Describe with examples the difference between discrete and continuous data. Discrete - can be counted Continuous – cannot be counted but measured. -Use examples to organize and display data using lists, pictograms, frequency tables, bar charts/graphs, line graphs and pie charts. -Solve problems which involve extracting and interpreting data from lists, tables, bar charts etc. | Ask pupils to: -Collect discrete or continuous data. -Organize and display data in a suitable form. -Answer questions on the data. -Give class exercises and do corrections where necessary. Give out assignment. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| UNIT 16. STATISTICS AND PROBABILITY. | At the end of the lesson, Pupil should be able to: -Calculate the mean, median and mode and range of discrete or continuous data. -Use the language of probability to state the chance of events occurring in everyday life. -Conduct simple probability experiments. | Teacher introduces the lesson by guiding pupils to: -Illustrate the different measures of central tendency, mean, median and mode. -Use examples to show how each can be calculated. -Explain that the values may be the same or different. -Explain the range as the measure of the spread of a set of data. -Discuss the language of probability by giving the different terms and their meaning e.g likely, unlikely, certain, impossible, possible. -Use the vocabulary to state the chance of events occurring in everyday life, e.g. the chance of snow in Freetown in June. -Use concrete materials in the classroom to conduct simple probability experiments. | -Ask pupils to find the mean, median and mode of a given set of discrete or continuous data. -Ask pupils to find the range and calculate it as the difference between the highest and lowest value in the data set. -ask pupils to use the appropriate vocabulary to describe the probability of a variety of events. | -The Lesson Plan Manual JSS1 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 1 -New General Mathematics Book 1 -The Abacus -Number Line Chart |

| | | -Represent probabilities pictorially and symbolically. | -Give class exercise and do corrections where necessary. -Give out assignment. | |
|--|--|---|--|---|
| UNIT 17. BASIC COMPUTING SKILLS. | At the end of the lesson, Pupils should be able to: -Use general ICT software packages e.g. spreadsheets, videos etc. to illustrate mathematics concept. -Use computer games and other mathematics teaching software packages to introduce, practice and simplify mathematics concept. | Provide opportunities for pupils to: -Use ICT software packages to practice and analyze a range of numerical skills. -Explore number patterns to Investigate and analyze data handling strategies. | Ask pupils to use and explore a variety of ICT software packages to explore all aspects of mathematics. -Give class exercise and do corrections where necessary. -Give out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 1 -Computer games, videos, interactive white boards. |

MATHEMATICS – JSS 2

| FORM 2 THEMATIC AREA | SPECIFIC LEARNING OUTCOMES | RECOMMENDED TEACHING STYLES OR PEDAGOGICAL APPROACHES | ASSESSMENT METHODS | SUGGESTED LEARNING AND TEACHING RESOURCES |
|----------------------------|--|---|---|--|
| THEMATIC AREA: Number | At the end of the lesson,Pupils should be able to: | Teacher introduces the lesson by: - Guiding pupils to briefly review some work done on place value in Form 1. | Ask pupils to: -Write 7-digit numbers. | -The Lesson Plan Manual JSS11(1 st , 2 nd and 3 rd Terms) |

| and Numeration | -use place value to identify, read, write, count, order and compare a mixture of integers, fractions and decimals of any size both positive and negative and locate them on a number line. -identify terminating and recurring decimals and their associated fractions. | Guiding pupils to discuss integers as positive and negative whole numbers. Explaining to pupils that numbers on the right of '0' increase - positive whole numbers and numbers on the left of '0' decreases- negative whole numbers and that '0' is the reference point. Guiding pupils to give the name for place values after the 'point' in decimals. Guiding pupils to use number lines to show the location of integers, fractions and decimals. Guiding pupils to use examples to compare and order a mixture of integers, fractions and decimals. | -Give place value of digits in decimal numbers. -Give class exercises and do corrections where necessary. -Give out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 2 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
|---|--|--|---|---|
| THEMATIC AREA: Number and Numeration | At the end of the lesson, pupils should be able to: -Round numbers to a required degree of accuracy including number of decimal places and significant figures. -Use the concept and vocabulary of factors, multiples, prime and composite numbers, highest common factor (HCF), Lowest common multiple (LCM) and prime factorization. | Teacher introduces the lesson by: Guiding pupils to explain 'rounding' as giving a number a value close to the original number but not exactly the same. Demonstrating the different degrees of accuracy that can be required, e.g. whole number, significant figures, decimal places. Guiding pupils to use examples to illustrate the method for rounding to the required degree of accuracy. Giving quick mental tests on factors, multiples, prime and composite numbers to revise work done in Form 1. Guiding pupils to list factors of 2, the highest factor that is common to all 2 or 3 numbers. Guiding pupils to list multiples of 2 or 3 numbers. Guiding pupils to review prime factorization of numbers. Discussing various methods to do prime factorization. | Teacher assesses pupils by: Questioning Give class exercise and do corrections where necessary. Give out assignment. | -The Lesson Plan Manual JSS11 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 2 -New General Mathematics Book 1 -The Abacus -Number Line Chart |
| Everyday Arithmetic | At the end of the lesson, pupils should be able to: -Use the basic number properties of the four operations on integers, fractions and decimals. -Determine which operations and methods to use when solving such problems. | Teacher introduces the lesson by: -Reviewing work done on index notation and laws of indices in Form 1. -Revising the idea of standard form done in form 1. -Using standard form to simplify very large and very small numbers. -Revising the strategies for the four operations involving integers, fractions and decimals. | Teacher asks pupils to: - find the value of the powers of integers. - Let them solve examples of various problems in real-life context, to illustrate the use of the four operations involving integers, fractions | -The Lesson Plan Manual JSS11 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 2 -New General Mathematics Book 1 -The Abacus |

| | -Use the order of operations as required. -Give answers to a required degree of accuracy and use estimation or inverse operation to check answers for reasonableness. -Solve problems with percentages including percentages greater than 100 and in multi-step word problems. -Use index notation and laws of indices for integers. -Convert very large and very small numbers to standard form. | -Revising using mental, informal and formal strategies of the basic number properties of the four operations on integers, fractions, decimals. -Guiding pupils to establish the conventional order of the four operations i.e. BODMAS -Guiding pupils to solve problems involving a mixture of operations and demonstrate how BODMAS can be applied. - Guiding pupils to calculate very large and very small numbers using the four operations. Illustrate giving answers to the required degree of accuracy, and by using estimation or inverse operations, check answers for reasonableness. - Guiding pupils to solve problems which include using percentages greater than 100. -Calculating percentage increase and decrease of a given quantity. -Using word problems as examples to determine original quantities before increase or decrease percentage. | find the value of the powers of integers. Let them solve examples of various problems in real-life context, to illustrate the use of the four operations involving integers, fractions and decimals | -Number Line Chart |
|-------------------------|--|--|--|--|
| Ratios and Fractions | At the end of the lesson, pupils should be able to: -Solve problems involving ratios, rates, direct and indirect proportions. -Express answers in lowest terms. | Teacher introduces the lesson by: -Guiding pupils to explain the meaning of ratio, using real- life context. -Guiding pupils to give the different ways a ratio can be expressed e.g. (i) as a fraction in its lowest form, (ii) a division when a quantity is divided into two parts -Discussing unit rate as a ratio which compares different units of measurement e.g. (i) Speed - distance and time. (ii) Number of pupils to number of desks. E.g. unit price of goods. | Teacher assesses pupils by: Questioning Give class exercise and do corrections where necessary. Give out assignment. . | -The Lesson Plan Manual JSS11 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 2 -New General Mathematics Book 1 The Abacus -Number Line Chart |

| | | -Use equal ratios to introduce proportion and define the statement of proportionality eg. Yy=ykx -Symbol for proportionality k- the constant. | | |
|----------------------------------|--|---|---|---|
| Measurement and Estimation | At the end of the lesson, pupils should be able to: -Use the formulas for perimeters and areas of quadrilaterals. -Calculate the volume of three-dimensional shapes such as rectangular, triangular prisms and cylinders. | Teacher introduces the lesson by: -Guiding pupils to go over the formulas used for finding perimeters and areas of triangle, rectangle and square. -Extending the formulas to that of finding perimeter and area of quadrilaterals including parallelograms, trapeziums, kites and rhombuses. Guiding pupils to calculate the circumference and area of circles. -Using concrete objects to describe different solid objects as rectangular and triangular prisms. -Using experiment to develop the general formula for finding the volume of a rectangular prism. -Demonstrating that the volume of a rectangular prism is the product of the area of a face and the length of a perpendicular height to the face. -Illustrating surface area as the sum of the areas of flat faces of the prisms. -Making up and solving multi-step word problems involving perimeters and areas of two-dimensional shapes including circles. -Calculating the volume and surface area of rectangular prisms, cylinders, cones and spheres. -Demonstrating the efficient use of calculators to calculate the areas and volumes of shapes. | Ask pupils to: -Find the volume of rectangular and triangular prism. -Calculate the surface area of different three dimensional shapes including composite shapes. -Give class exercise and do corrections where necessary. -Give out assignment. | -The Lesson Plan Manual JSS11 (1 st , 2 nd and 3 rd Terms) -Junior Secondary Mathematics for Sierra Leone Book 2 -New General Mathematics Book 1 -The Abacus -Number Line Chart |

| Geometry | At the end of the lesson, pupils should be able to: -State angle properties to investigate and find the sum of the interior angles of a polygon of 'n' sides. -Describe transformations of two-dimensional shapes. -Identify line and rotational symmetries -Recall and use scale factor in scale drawings and maps. | Teacher introduces the lesson by: -Guiding pupils to review work done on the properties of angles in triangles, squares and rectangles. -Guiding pupils to use practical representations to describe angles on a straight line, angles at a point, vertically opposite angles, corresponding and alternate angles and examine their properties. -Guiding pupils to use concrete materials or practical representations to find the sum of the interior angles of a polygon of 'n' sides. -Explaining transformation as a process of changing the position of an object. -Describing with practical examples the four simple transformations - translation, reflection, rotation and enlargement. -Illustrating the characteristics of each transformation, identifying similarities and differences. Identifying line and rotational symmetries. -Examining the number of line or rotational symmetry of such shapes e.g. square, equilateral triangle or composite shape. -Describing the use of scale factor. -Making scale drawing of a shape using a given scale factor on the board. -Illustrating the use of scale factor in making enlargements e.g. ground plan etc. -Using scale factor and center of enlargement to enlarge two-dimensional shapes. | Teacher assesses pupils by: -asking them to recall the sum of interior angles of a triangle, a rectangle, square. -asking them to determine the image of a two-dimensional shape under a given transformation. -asking them to enlarge a two-dimensional shapes using a given scale factor and center of enlargement. -Give out assignment to pupils. | The Lesson Plan Manual JSS11 (1st, 2nd and 3rd Terms) Junior Secondary Mathematics for Sierra Leone Book 2 New General Mathematics Book 2 The Abacus Number Line Chart Concrete materials Pictorial representation. Number Line Chart |
|------------------------------|---|--|--|---|
| Basic computing skills | At the end of the lesson, pupils should be able to: -Use computer games and other mathematics teaching software packages to introduce, practice and consolidate mathematics concepts. | Teacher introduces the lesson by: -Guiding pupils to use ICT software packages to practice and acquire a range of numerical skills. -Guiding pupils to explore number patterns. -Guiding pupils to investigate and analyze data handling strategies. | Teacher asks pupils to: - use a variety of ICT software packages to explore all aspects of mathematical concepts. -Give them class exercise and do | -Junior Secondary Mathematics for Sierra Leone Book 2 -Computer games, videos interactive, white boards etc. |

| | corrections where | |
|--|-------------------|--|
| | necessary. | |
| | -Give out them | |
| | assignment. | |

MATHEMATICS - JSS 3

OUTLINE TEACHING SYLLABUS FOR THE THIRD STAGE OF BASIC EDUCATION

| SUGGESTE D THEMES/T OPICS | SPECIFIC LEARNING OUTCOMES | RECOMMENDED TEACHING STYLES OR PEDAGOGICAL APPROACHES | ASSESSMENT METHODS | SUGGESTED LEARNING AND TEACHING RESOURCES |
|---------------------------------------|--|---|--|---|
| Number and Numeration (SET). | At the end of the lesson, pupils should be able to: -Use set language and notation to describe collections of distinct objects. -Investigate the real number system. | Teacher introduces the lesson by: -Guiding pupils to discuss a set as a well-define collection of things. And that, all members of a set must have a common property. The members are called elements. -Guiding pupils to give examples of well-defined sets. E.g. A = {a, e, i, o, u} the set of vowels, no other element belongs to the set. -Showing that for a well-defined set, no element of the set should be repeated. -Explaining that a set can be described using capital letters, listing the elements within curly brackets by stating the common property or the elements. e.g. A = [a, e, i, o, u) or A = {vowels of the English Alphabet}. -Introducing 'E' as the symbol used to indicate that an element belongs to a set. E.g. U & A or U& of the set of vowels and that Venn diagrams can also be used to represent sets. -Using real-life contexts and numbers to distinguish between different types of numbers. E.g. (pupils age 13 in Form 3) -Infinite set - a set with unlimited number of elements. e.g. (set of even numbers) -unit set (a set with a single member/element). -Empty (null) set - a set with no member or element. -Illustrating the difference between equal and equivalent sets, pointing out that equal sets can be equivalent, but equivalent sets are not always equal. -Giving the notation for a number of elements in a set as n(A) where A is the set under consideration. -Using examples to introduce the universal set 'U' as the set of all the elements under consideration. -Indicating that some elements from a universal set is called a subset. e.g. if U = {even numbers between 0 and 11) then B = {2, 4, 6,) is a subset of 'U' that is B C U The notation for subset is 'C' | Ask pupils to: -Describe and list elements of different set of numbers. -Ask pupils to: -Use set notation to describe elements of given sets. -Monitor pupils to list with examples different types of sets. Ask pupils to: -Choose from given sets, equal and equivalent sets. -List sets that are equivalent but not equal -Write subsets of given sets with members up to 10. Ask pupils to: -Write the union or intersection of given sets. -Use Venn diagrams to show the union or intersection of given sets. -Give class exercise and do corrections where necessary. -Give out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Concrete materials -Pictorial representation. |

| | | -Introducing the union 'U' and intersection 'n' of two or more sets. | | |
|------------|-----------------------------------|---|--------------------------------|-----------------|
| | | -Union 'U is the set combining two or more sets with no repeating | | |
| | | -Intersection 'n' of two or more sets is the set of elements they have in | | |
| | | common. | | |
| | | -Using examples to consolidate the set notation | | |
| | | \mathcal{E} , C, U, n, \otimes introduced. | | |
| | | -Identifying subsets or the set of real numbers. | | |
| | | E.g. natural numbers as the set of counting numbers. (1, 2, 3, 4, 1) | | |
| Number | At the end of the | Teacher introduces the lesson by: | | - lunior |
| and | lesson | -Guiding pupils to consider whole numbers as a set of natural | Ask pupils to: | Secondary |
| Numeration | Pupils should be | numbers plus 0 | -Identify subsets of a given | Mathematics for |
| (SFT) | able to: | $F_{\alpha} (0 1 2 3 4 5)$ | universal set | Sierra Leone |
| (0=1) | | -Guiding pupils to consider Integers as a set of whole numbers and | -List subsets of the set of | Book 3 |
| | -Use set language | negative whole numbers. | real numbers. | -New General |
| | and notation to | E.g. (, -3, -2, -1, 0; 1, 2, 3, 4). | -Compare order and locate | Mathematics |
| | describe collections | -Guiding pupils to consider rational numbers as set of numbers that | numbers on the number line. | Book 3 |
| | of distinct objects. | can be expressed in the form a/b where 'a' and 'b' are integers and | -Give class exercise and do | -The Abacus |
| | , | 'b' = 0 | corrections where | -Number Line |
| | | $(-\frac{1}{3}, -\frac{1}{2}, \frac{1}{3}, \frac{1}{3}, \frac{1}{2}, \frac{2}{5}, \frac{4}{1})$ | necessary. | Chart |
| | | -Guiding pupils to consider irrational numbers as set of numbers | -Give out assignment. | -Concrete |
| | | that cannot be expressed in the form ^a / _b | | materials |
| | | $(\sqrt{2}, -\sqrt{3}, \sqrt{2}, \sqrt{3})$ | | -Pictorial |
| | | -Indicating that all sets of numbers described above are subsets of | | representation. |
| | | the set of the real number system which is an infinite set. | | -Number Line |
| | | -Using Venn diagrams to illustrate the real number system and its | | Chart |
| | | subsets. | | |
| Number | At the end of the | Teacher introduces the lesson by: | Ask pupils to: | -Junior |
| and | lesson, Durrile chauld he chle | -Guiding pupils to discuss number systems different from the real number | -Identify subsets of a given | Secondary |
| Numeration | Pupils should be able | system. E.g. Hindu-Arabic, Babylonian Egyptian and Roman, Bring out their | universal set. | Mathematics for |
| (Set) | -Use set language and | different symbols and base for counting purposes | -List subsets of a set of real | Sierra Leone |
| | notation to describe | -Guiding pupils to use concrete materials, pictorial representation and | numbers. | Book 3 |
| | collections of distinct | symbols to identify, read, write, count, order and compare the number | -Compare order and locate | -New General |
| | objects. | systems mentioned above. | numbers on the number line. | |
| | -Develop knowledge | -Demonstrating how to convert from base 10 to these system and vice- | -Give class exercise and do | BOOK 3 |
| | of other number | Versa. | -Give out assignment | - The Abacus |
| | systems. | -Reviewing work done on index notation in (Forms 1 & 2). | | -Number Line |
| | notation and extend | indices with rational numbers (integers the zero index positive and | | Concrete |
| | | negative fractional indices). | | -concrete |
| | | | | materials. |

| | the laws of indices to rational numbers. -Use index notation to identify very large and very small numbers. -Use standard form (scientific) notation. | -Using examples to express very large and very small numbers in standard form. -Interpreting and compare numbers in standard form a $\times 10^{n}$ where $1 \le a = 10$ and 'n' is a positive or negative integer or zero. | | -Pictorial representation. -Number Line Chart |
|-----------------------------------|--|---|--|---|
| Everyday Arithmetic | At the end of the lesson, Pupils should be able to: -Use efficient methods for the four operation signs to solve problems with real numbers including multi-step word problems. | Teacher introduces the lesson by: -Guiding pupils to use appropriate examples to practice work on the four operation signs. -Guiding pupils to solve multi-word problems involving the four operation signs. -Reminding pupils of the order of operations by solving problems involving mixed operations. -Using examples to solve: (i) Profit or loss and percentage of the cost of an article. (ii) Simple or compound interest given, the loan amount, period and rate. -Discussing personal wage, expenditure, rates of home utilities and with examples to show how utility bills can be interpreted and prepared. -Guiding pupils with examples to calculate foreign exchange transactions giving the rate of conversion. | Ask pupils to: -Identify subsets of a given universal set. -List subsets of the set of real numbers. -Compare order and locate numbers on the number line. -Give class exercise and do corrections where necessary. -Give out assignment. -Solve problems on profit or loss percentage for variety of transactions. -Calculate simple or compound interest on given amounts. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Concrete materials -Pictorial representation. |
| Measureme nt and estimation | At the end of the lesson, Pupils should be able to: -Recall and use appropriately the formulas for perimeter, circumference/ area, volume and surface area of two and three dimensional shapes including multi-step word problems and composite shapes. | Teacher introduces the lesson by: -Guiding pupils to review exercises including word problems, on topics previously treated. Guiding pupils to find the perimeters and areas of squares and triangles. -Guiding pupils to find the circumference and area of circles. -Guiding pupils to find the volume of rectangular prism e.g. cuboid. Using formulae to : (i) Find the area of parallelograms, trapeziums and rhombuses. (ii) Find the volume and surface area of triangular prisms, cylinders, cones and spheres. -Using examples to solve composite shapes. | Teacher assesses pupils by: Questioning Giving class exercise and do correction where necessary. Giving out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Concrete materials -Pictorial representation. |
| | At the end of the lesson, pupils will be able to: | Teacher introduces the lesson by: | Ask pupils to construct: | -Junior Secondary |

| GEOMETR Y | -Use drawing tools | -Guiding pupils to use drawing tools for the construction of triangles, | (i) Triangles given, the lengths of the three sides. | Mathematics for Sierra Leone |
|--------------|------------------------|--|--|---------------------------------|
| | constructions. | -Guiding pupils to use ruler and compass to: | (ii) Two sides and the angle | Book 3 |
| | -Discuss Pythagoras | (i) Bisect lines and angles | between them. | -New General |
| | Theorem and use it | (ii) Construct angles of 30, 45, 60 and 90 degrees. | (iii) Parallel and perpendicular | Mathematics |
| | to solve simple | (iii) Copy given angles. | lines. | Book 3 |
| | problems involving | -Guiding pupils to use the appropriate vocabulary to describe the | (IV) Circles. | -The Abacus |
| | right angled | sides and angles of a right angled triangles viz: | -Ask pupils to: | -Number Line |
| | triangles. | -Hypotenuse - the longest side in any right angled triangle and the | (i)Bisect straight line. | Chart |
| | | side opposite the right angle, the Adjacent and the Opposite. | (ii) Bisect a given angle | -Concrete |
| | | | segment. | materials |
| | | -Using concrete material and pictorial representations to | (iii) Construct angles of 30, 40, | -Pictorial |
| | | demonstrate Pythagoras Theorem which states that the areas of | 60, and 90 degrees and | representation. |
| | | the square on the hypotenuse is the sum of the areas of the | combination of them. | |
| | | squares drawn on the other two sides. | -Ask Pupils to: | -Number Line |
| | | i.e. $a^{2+}b^2 = C^2$ where 'C' is the hypotenuse and 'a' and 'b' are the | -(I) Illustrate Pythagoras | Chart |
| | | other two sides.(The adjacent and the opposite). | I neorem to: | |
| | | | (II) Calculate the length of the | |
| | | -Stating and using Pythagoras Theorem to solve problems involving | hypotenuse of right angled | |
| | | right angled triangles including problems in real –life contexts. | the other two sides | |
| | | | (iii) Calculate the length of | |
| | | | (iii) Calculate the length of | |
| | | | given the lengths of the other | |
| | | | side and the hypotenuse | |
| Geometry | At the end of the | Teacher introduces the lesson by: | -Ask pupils to determine if | - Junior |
| Coomony | lesson, pupils will be | -Guiding pupils to use concrete materials to identify congruent | two shapes are congruent | Secondary |
| | able to : | figures by imposing them through a combination of rotations. | after a combination of | Mathematics for |
| | -Explore congruency | reflections and translations. | rotation, reflection and | Sierra Leone |
| | of plane shapes | -Demonstrating that the areas and lengths of matching sides and | translation. | Book 3 |
| | using | angle sizes are preserved in congruent figures. | | -New General |
| | transformations. | -Showing that polygons can also be congruent. | | Mathematics |
| | | -Illustrating that two figures are similar if an enlargement of one is | -Ask pupils to determine | Book 3 |
| | -Use enlargement to | congruent to the other. | whether after enlargement | -The Abacus |
| | explain similarity in | -Using the enlargement transformation and measurement to | the two shapes are similar | -Number Line |
| | two-dimensional | determine that the size of matching angles and the ratio of matching | by considering the size of | Chart |
| | shapes. | sides are preserved in similar figures. | matching angles and the | -Concrete |
| | | | ratio of matching sides. | materials |
| | | | -Give class exercise and do | -Pictorial |
| | | | correction where necessary. | representation. |

| | | | -Give out assignment | |
|-----------------------------|--|--|--|---|
| Money and Money Usage | At the end of the lesson, pupils should be able to: -Use the four operation signs to calculate money including wage and tax calculations and in multi-step word problems. | Teacher introduces the lesson by: -Guiding pupils to show the use of the four operation signs in solving problems with money in real-life context. e.g. selling and purchasing goods Making bills etc. -Guiding pupils to discuss the concept of personal expenditure, wage and income tax. -Introducing simple and compound interest by illustrating their use in banking transactions. -Guiding pupils to calculate foreign exchange transactions when the rate of transaction is given. | Teacher assesses the pupils by: Questioning Giving class exercise and do corrections where necessary. Giving out assignment. Observing them to give the difference between simple and compound interest on a given loan at the same rate and time. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus Number Line -Chart -Concrete materials -Pictorial representation. |
| GEOMETR Y. | At the end of the lesson, pupils should be able to: -Determine the constant ratios for the sine, cosine and tangent of a given angle in a right angled triangles. -Use trigonometry to solve problems with right-angled triangles. | Teacher introduces the lesson by: -Guiding pupils to use concrete materials or symbolical representations to identify the sides and angles of right angled triangles i.e. The hypotenuse, the adjacent side and the side opposite the other two angles of right angled triangles in any rotation. -Using the sides of right angled triangles to define the sine, cosine and tangent ratios for angles in the right angled triangles. For angle A Sine A = opposite side hypotenuse Cosine A = adjacent side adjacent side -Using the ratios above to find the sines, cosines and tangents for angles. -Using the ratios above to find the sines, cosines and tangents for angles in right-angled triangles. -Guiding pupils to use the trigonometric ratios to solve problems with right-angled triangles. E.g. selecting the appropriate trigonometric ratio to find an unknown side including the hypotenuse and an unknown angle correct to the nearest degree. -Guiding pupils to use calculator in solving trigonometric problems. | Teacher Assesses the pupils by: Questioning Giving class exercise and do corrections where necessary. Giving out assignment. | -New General Mathematics Book 3 -Junior Secondary Mathematics for Sierra Leone Book 3 -The Abacus -Number Line Chart -Concrete materials -Pictorial representation. |
| Algebra | At the end of the lesson, pupils should be able to: | Teacher introduces the lesson by: -Guiding pupils to briefly revise simplifying, expanding, factorizing and evaluating simple algebraic expressions. | | -Junior Secondary Mathematics for |

| | -Expand and factorize binomials (quadratics) -Construct and solve linear equations where the variable appears on both sides of the equal to sign and verify solution by substitution. -Draw and explore graphs of linear equation on the Cartesian plane. -Construct and solve linear inequalities and illustrate solutions on the number line. -Change the subject of a formula substitute values for given variables and simplify. | -Guiding pupils to Use pictorial or symbolic representations to expand and factorize binomial expressions. -Using examples to develop the standard binomial expression. a² + b² + c where 'a', 'b' and 'c' are constants. -Guiding pupils to use the balance model to construct and solve simple linear equations when the variable appears on both sides of the equal to sign. -Guiding pupils to draw graphs of linear equations and explore their features. -Using the balance model or other representations to construct and solve examples of linear inequalities. -Verifying solutions by substituting on both sides of the inequality. -Representing solutions on the number line. -Guiding pupils to substitute values of given variables and simplify. | Teacher assesses the pupils by: Questioning Giving class exercise and do corrections where necessary. Giving out assignment. Expanding given expressions. Factorizing simple binomial expressions Solving linear inequalities and represent solution on a number line. Determining values for given expressions when values of variables are given. Giving class exercise. Giving out assignment | Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Concrete materials -Pictorial representation. |
|----------------------------------|--|--|---|--|
| Statistics and probability | At the end of the lesson, Pupils should be able to: -Extract, collect, organize, display and interpret discrete, continuous and grouped data using pictograms, lists, frequency tables, bar charts, line graphs and pie charts including multi-step word problems. | Teacher introduces the lesson by: -Guiding pupils to briefly review some exercises covered in statistics in form1&2 on discrete and continuous data. -Guiding pupils to organize and display grouped data using frequency tables, pictogram, histogram, bar chart and pie-chart, pointing out which display is suitable for discrete, continuous and grouped data. -Guiding pupils to solve problems which involve extracting and interpreting data from lists, tables, bar-charts, line graphs and/or pie-charts. -Guiding pupils to do more exercises on calculating mean, median and mode using different examples. -Illustrating the calculation for grouped data. -Discussing with pupils that the range is the measure of the spread of any set of data and demonstrate method for determining the range of grouped data. -Discussing with pupils the concept of probability, revise work done on probability through languages of probability. Guiding pupils to Conduct simple probability experiment by representing them pictorially and symbolically. -Walking with pupils to represent probabilities pictorially and symbolically. | Ask pupils to: -List all possible outcomes when a dice is thrown and the outcomes of a special number shows up. -Find the sample space of selecting 2 red pens at random from 2 different boxes each containing 2 red and 2 blue pens. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Concrete materials. -Pictorial representation. |

| | -Calculate the mode, median, mean and range of a given set of discrete, continuous or grouped data. -Conduct experiments and solve problems involving the probability of single and independents (combined) events including multi-word problems. | -Walking with pupils to determine the theoretical probability, p(^A) of successful outcomes occurring for a given probability experiments as <u>number of successful outcomes</u> total number of possible outcomes. -Illustrating the difference between theoretical and experimental probabilities. -Guide pupils to show that probabilities are represented on a 0 -1 scale known as the probability line and on Venn diagrams. -Demonstrate how probabilities are represented by sign, ratio fractions, decimals or percentages and that the probabilities of all possible outcomes sum up to 1. -Guide pupils to solve word problems with probability. | | -Number Line Chart |
|------------------------------|--|---|--|---|
| Basic Computing Skills | At the end of the lesson, Pupils will be able to: -Use general ICT software packages e.g. spreadsheets, videos etc. to illustrate mathematics concepts. -Use computer games and other mathematics teaching software to introduce, practice and simplify mathematics concepts. | Teacher introduces the lesson by: -Guiding pupils to revise some exercises done on basic computing skills in Forms 1 & 2. -Encouraging pupils to practice and acquire a range of software numerical skills. -Illustrating the use of computer to estimate and compare data and, explore properties of shapes and number patterns. -Working with pupils to Investigate and analyze data handling strategies. | Teacher assesses the pupils by: -Ask pupils to use a variety of ICT software packages to explore all aspects of mathematics. -Give class exercise and do corrections where necessary. -Give out assignment. | -Junior Secondary Mathematics for Sierra Leone Book 3 -New General Mathematics Book 3 -The Abacus -Number Line Chart -Computer games or software videos Interactive whiteboards etc. |