MESSAGE FROM THE MINISTER OF EDUCATION

I wish to extend my thanks and appreciation to ECSEL, UNESCO and all our partners for their immense contribution to this important task of revising and strengthening of the National Curriculum. Special thanks to USAID through LTTP for their funding and technical support in the harmonization or realignment of the curriculum. We extend sincere thanks and appreciation to the Bureau of Curriculum Development and Textbook Research, the National Curriculum Taskforce, and the subject specialists from various institutions for the level of professionalism that went into this exercise.

The revision and strengthening of our National Curriculum comes at a time when our nation is faced with the Herculean task or challenge of education transformation, national reconstruction, recovery and renewal in the aftermath of a devastating civil war. Hence, critical to this national challenge is the rebuilding of the education sector as Liberians can not achieve the desired socio-economic progress in the absence of a strong, vibrant and productive education and training system.

The revised national curriculum has two features which include the regular core subject areas of Mathematics, Science, Language Arts and Social Studies and emphasis is being given to the global challenge of HIV/AIDS, Peace, Citizenship, Human Rights and Environmental education. Secondly, the new curriculum is developed in line with international standards especially those practiced and enshrined in the curriculum of our sisterly Republic of Nigeria and Ghana who are also members of the West African Examinations Council (WAEC).

We wish to urge all our education partners including students, teachers, principals, proprietors of schools and members of school boards to use this curriculum in our schools to enhance quality and relevant instruction and to enable our students to be adequately prepared to take the West African Senior Secondary Certificate Examinations (WASSCE) come 2013 as envisaged by us in the education sector.

May I conclude by once again saying big thank-you to all those who contributed to make this project a success.

Hon. E. Othello Gongar
MINISTER
General Objectives:

To develop students Knowledge and skills in:
1. Sets and numbers;
2. Numeration;
3. Structures and properties;
4. Operation;
5. Measurement;
6. Geometry;
7. Graphing and Statistics; and
8. Probability, in order to reinforce students’ basic numeric skills.

Intended Learning Outcomes: Students will appreciate and develop interest in the computation numeric skills, graphing and probability.
Grade One Mathematics  First Marking Period  First Semester

General Objectives: To develop students’ knowledge and skills in order to acquire or reinforce basic numeric skills

Unit topic: Sets and numeration
Specific Objectives: Upon completion of this unit, students will be able to:
1. Define, sets and give examples of boys and girls in their families as sets;
2. List the number of males and females in the family;
3. Identify and recognize addition and subtraction symbols up to 10
4. Solve problems involving addition and subtraction symbols up to 10.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will: 1. Relate numbers with objects up to 10 2. Recognize addition and subtraction facts up to 10 3. Accept the fact that boys and girls are both important to family.</td>
<td>1. Identifying objects in a set 2. Match sets with numerals vice versa 3. Order and compare sets of objects to 10 4. Making fives 5. Making tens 6. Other facts up to 10 7. Set of boys and girls in a given Family 8. Number of males and females in a family</td>
<td>1. Organize several activities involving the:  - Identification of objects as sets;  - Matching sets with numerals vice versa;  - Ordering and comparing sets of objects to 10;  - Making fives, and tens;  - Using boys and girls as sets from a given family;  - Using of males and females in a given family as sets.  - Identification of additions and subtractions facts up to 10.</td>
<td>1. Local counters (rocks, stones) 2. Cups, chairs 3. Copy books 4. Flash cards 5. Revised edition elementary mathematics for Liberia – book 1, page 1-2.</td>
<td>Exercises on sets formation using several figures or objects.</td>
</tr>
</tbody>
</table>
Grade One Mathematics  
Second Marking Period  
First Semester

Unit Topic: Numeration
Specific Objectives: Upon completion of the unit, students will be able to:
1. Count objects up to 20
2. Read and write numbers up to 20
3. Compare and order numbers up to 20
4. Identify additions and subtractions facts up to 20
5. Solve problems involving basic addition facts

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will:  
1. Identify and write number up to 20  
2. Recognize basic addition and subtraction facts up to 20 | 1. Reading and writing numbers up to 20  
2. Compare and order numbers up to 20  
3. Double  
4. Other addition facts up to 20  
5. Solving problem involving addition and subtraction facts up to 20 | Various activities on:  
- Matching objects with numbers up to 20;  
- Using marked flash cards up to 20 for reading and writing;  
- Comparing and ordering numbers up to 20  
- Solving problems using addition and subtraction facts up to 20 | Local counters (leaves, rocks, sticks, stoppers)  
Flash cards | Exercises involving solutions of addition and subtraction facts and ordering numbers up to 20. |
Unit Topic: Place value

Specific Objectives: Upon completion of this unit, the students will be able to:
1. Read and write two-digit numbers
2. Compare and order numbers up to 10
3. Find numbers before, after, and between
4. Count by 2’s, 5’s, and 10’s up to 100

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will Count and write whole numbers up to 100, and apply counting skills to recognize the amount, (goods, bottles, people)</td>
<td>1. Counting ones and tens</td>
<td>Various activities involving:</td>
<td>1. Place value to models</td>
<td>Exercises on counting and writing numbers.</td>
</tr>
<tr>
<td></td>
<td>2. Comparing and ordering numbers up to 100</td>
<td>▶ Counting groups of objects in ones and tens;</td>
<td>2. Bundles of stick in tens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Reading and writing number up to 100</td>
<td>▶ Identification of numbers up to 100 on number chart;</td>
<td>3. Sack of stick in tens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Numbers before after, and between</td>
<td>▶ Writing of numbers using the value models;</td>
<td>4. Sack of rocks in tens</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Skip counting</td>
<td>▶ Skip counting of numbers before, after and in between;</td>
<td>5. Number chart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Ordinal number to 10</td>
<td>▶ Counting by 2s, 5s, and 10s up to 100.</td>
<td>6. Abacus counters</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Using of place value model</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade ONE Mathematics  

Fourth Marking Period  

Second Semester

Topic: Adding and subtracting 2-Digits numbers

Specific Objective: Upon completion of this unit, students will be able to:
1. Add tens
2. Subtract tens
3. Add 2-digit numbers without regrouping
4. Subtract 2-digit numbers without regrouping
5. Add 2-digit numbers regrouping ones
6. Solve problems involving addition and subtraction

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| 1. Apply addition and subtraction skills to solve real-life problems | 1. Adding multiples of ten 2. Subtracting multiples of ten 3. Adding 2-Digit numbers without regrouping 4. Subtracting multiples of 10 without regrouping 5. Regrouping ones (renaming) 6. Subtracting 2-Digit numbers 7. Solve problems involving addition and subtraction of 2-Digit | Organized activities on:  
- Additions and subtractions of multiple of tens;  
- Using base 10 models;  
- Counting, adding and subtracting multiple of tens mentally;  
- Regrouping ones;  
- Adding or subtracting 2-Digit numbers using trading;  
- Adding and subtracting 2-Digit numbers using place value chart | 1. Sticks, rocks, counters and other local materials 2. Place value chart, base 10 models | Exercises involving addition, subtraction and multiplication games on multiple of tens. |
Grade ONE Mathematics

Fifth Marking Period

Second Semester

Topic: Measurement

Specific objectives: upon completion of this unit, the students will be able to:
1. Define measurement
2. Define and describe weight
3. Estimate length, weight using selected units of measure
4. Tell time for different times of the day
5. Identify Liberian Money in terms of unit value
6. Define and describe capacity (space-within/volume)
7. Measure an area using non-standard units

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will recognize and develop interest in the concepts of measurement and its application</td>
<td>1. Ideas of length</td>
<td>Various Activities involving:</td>
<td>Rocks, rope, string, clock if available</td>
<td>Exercises on the measurement of weight, capacity and length using non-standard units.</td>
</tr>
<tr>
<td></td>
<td>2. Estimating length of objectives</td>
<td>◆ Grouping objects of varying sizes according to their lengths;</td>
<td>Money (Liberia)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Ideas of weight and capacity</td>
<td>◆ Measurement of objects using non-standard units;</td>
<td>Local materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Using standard units of length</td>
<td>◆ Measurement of weight, capacity and length using standard unit;</td>
<td>Sticks, Paper seal, Clock,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Telling hourly time</td>
<td>◆ The use of paper clock to tell hourly time;</td>
<td>Paper clock</td>
<td></td>
</tr>
</tbody>
</table>
**Grade ONE Mathematics**  
**Sixth Marking Period**  
**Second Semester**

**Topic:** 1. Geometric shapes  
2. Fractions

**Specific Objectives:** Upon completion of this unit, the students will be able to:
1. Sort out plane figures according to shapes  
2. Identify triangles, rectangles, circles  
3. Draw triangles, rectangles, circles  
4. Identify halves, thirds, or fourths

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| 1. Students will differentiate shapes of geometric figures (triangles, rectangles, and circles) | 1. Sorting shapes  
2. Concepts (ideas) of triangles  
3. Concepts (ideas) of rectangle  
4. Concepts (ideas) of circle  
5. Draw shapes (triangle, rectangle, circle)  
6. Identifying halves, thirds, fourths | Organize activities on:  
- sorting shapes of geometric figure;  
- identification and drawing shapes of triangles, rectangles and circles;  
- drawing wholes, showing halves, thirds, fourths using fractional chart or number line | 1. Straight edge paper shapes of triangles rectangles, squares  
2. Poster sheets showing halves, thirds, fourths  
3. Number lines | Exercises on identify halves, thirds, fourths after few days of the class activity |
Grade Two Mathematics  

**First Marking Period**  

**First Semester**  

**Unit Topic:** Sets and Numbers  

**Specific Objectives:** Upon completion of this unit, students will be able to:  
1. Match objects to whole numbers  
2. Add numbers by using the union of two disjoint sets e.g. Use family members (set of boys and girls.) to describe disjoint set.  
3. Count by twos, fives, tens up to 100  
4. Compare parts of a whole  

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>Set and numbers</td>
<td>Initiating activities on:</td>
<td>1. Set of different numbers</td>
<td>Exercises involving sets, number sequences, and parts of a whole.</td>
</tr>
<tr>
<td>1. match objects with whole numbers;</td>
<td>Sets of disjoint sets</td>
<td>❖ Comparing sets and naming its members;</td>
<td>2. Number chart</td>
<td></td>
</tr>
<tr>
<td>2. form addition sentences using two or more disjoint sets;</td>
<td>Number sequences</td>
<td>❖ Forming additions sentences using two or more disjoint sets;</td>
<td>3. Greater than &gt; and less than &lt; symbols</td>
<td></td>
</tr>
<tr>
<td>3. Master the counting of numbers by 2s, 5s, and 10s up to 100;</td>
<td>Parts of a whole</td>
<td>❖ Counting of numbers by 2s, 5s, 10s up to 100;</td>
<td>4. Objects</td>
<td></td>
</tr>
<tr>
<td>4. recognize symbols of greater than (&gt;) and less than (&lt;).</td>
<td></td>
<td>❖ Comparing parts of a whole.</td>
<td>5. Flash cards</td>
<td></td>
</tr>
</tbody>
</table>
## Grade Two Mathematics

### Second Marking Period

#### First Semester

**Unit II – Topic: Numeration**

**Specific Objectives:** Upon completion of this unit, the students will be able to:

1. Read and write numbers up to 200
2. Recognize and name place value of digit of a given number.
3. Write a given number in expanded form
4. Read and write names for fractional number

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>1. Reading and writing numerals</td>
<td>Activities involving:</td>
<td>1. Numbers chart</td>
<td>Exercises involving Reading and writing numerals individually;</td>
</tr>
<tr>
<td></td>
<td>2. Place value</td>
<td>- Reading and writing numeral up to 200;</td>
<td>2. Place value chart</td>
<td>Expressing three digit numerals in expanded notation.</td>
</tr>
<tr>
<td></td>
<td>3. Standard-digit &amp; expanded number</td>
<td>- Writing digit from place value concepts of a given number;</td>
<td>3. Shaded functional illustrations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Numerals</td>
<td>- Reading and writing fractional numbers;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Fractional numbers</td>
<td>- Expressing of three digits numerals in expanded forms or notation.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Grade Two Mathematics

### Third Marking Period

#### First Semester

**Unit Topic: Operation Part I**

**Specific Objectives:** Upon completion of this unit, the students be able to:
1. Find the sum of three or more two-digit numerals without regrouping
2. Use equality and inequality in addition
3. Subtract one digit number from two digit numbers and two digit numbers from two digit numbers without regrouping, using population concept as specific example.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will solve addition and subtraction problems involving 2-digit numbers without regrouping</td>
<td>1. Addition of 3 or more two-digit numbers without regrouping</td>
<td>Designing activities covering the:</td>
<td>1. Numbers counter, 2. Wall charts, 3. Abacus</td>
<td>Exercises involving 2-digit numbers.</td>
</tr>
<tr>
<td></td>
<td>2. Subtraction of 2-digit numerals without regrouping</td>
<td>- Additions of 3 or more two-digit numerals without regrouping;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Equality and inequality</td>
<td>- Subtractions of 2-digit numerals without regrouping.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Addition and subtraction of number of males and females in a Family</td>
<td>- Additions of equality and inequality (&gt; &lt;, =, ) using 1 or 2-digit numerals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Addition and subtraction of the two sexes in a given family</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Specific Objectives: Upon completion of this unit, students will be able to:
1. Solve addition problem using regrouping
2. Solve subtraction problem using regrouping
3. Multiply 1-digit numerals

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will adopt skills of solving addition and subtraction involving 2-digit numbers without regrouping | 1. Addition of 3 or more two-digit numbers without regrouping | Organizing activities on:  
   1. Additions of 3 or more two-digit numbers without regrouping;  
   2. Subtractions of two digit numerals without regrouping  
   3. Multiplication games of one-digit numerals. | 1. Numbers counters, bundles of sticks  
   2. Wall charts  
   3. Abacus | Problem-solving involving:  
   1. Calculation of 2 and 3-digit numbers in additions and subtractions  
   2. Multiplication games of one-digit numerals |
### Grade Two Mathematics

**Fifth Marking Period**

**Second Semester**

Unit V – Topic: Measurement

Specific Objectives: Upon completion of this unit, Students will be able to:

1. Describe weight and capacity
2. Measure lengths, balancing weights and capacity using local units
3. Use standard units of measurement
4. Tell time for different times of the day
5. Use the currency in circulation

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will do measurement of objects.</td>
<td>1. weight and Capacity</td>
<td>Initiating activities around:</td>
<td>1. Cut out an inch, foot, card, yard stick, strings</td>
<td>Exercises or games involving:</td>
</tr>
<tr>
<td>2. Students will tell time.</td>
<td>2. Measurement of lengths (heights)</td>
<td>- The description of weight and capacity;</td>
<td>2. bottles of sizes found in the localities, quarts, containers of different sizes</td>
<td>5. Measurement of length, width, distance, and weight;</td>
</tr>
<tr>
<td></td>
<td>4. Time telling</td>
<td>- Using of paper clocks or watches to tell time and describing the property of clock;</td>
<td>3. clock of varying sizes</td>
<td>7. Calculation of Money</td>
</tr>
<tr>
<td></td>
<td>5. Monetary value or Currency</td>
<td>- Calculation of monetary value of Liberian currency</td>
<td>4. Small sand bag, scale, graduated bottles, etc.</td>
<td></td>
</tr>
</tbody>
</table>
**Grade Two Mathematics**

**Sixth Marking Period**  
**Second Semester**

Unit Topic: 1. Ordinal Numbers  
2. Geometry

Specific Objectives: Upon completion of this unit, students will be able to:
1. Demonstrate or use games to identify position (ordinals)
2. Identify and give simple properties of line segment, square, rectangle, triangle circles and quadrilaterals (Geometry)

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will distinguish the difference between ordinal numbers and cardinal numbers. | 1. Ordinal numbers $1^{st}$, $2^{nd}$, $3^{rd}$, $4^{th}$, $5^{th}$, $6^{th}$, etc. | Activities involving the:  
  ❖ Arrangement of ordinal numbers;  
  ❖ Simple properties of line segments;  
| Students will recognize the shapes of a square, rectangle, triangle and a circle. | 2. Simple properties of line segments,  
3. Circular shapes  
4. Triangular and rectangular shapes | | 2. Wall chart with geometric shapes including square, rectangles, triangle, circles and quadrilaterals | 2. Recognition of Geometry Figures |
# Grade Three Mathematics

## First Marking Period

### First Semester

### Unit Topic: Review of Operations

Specific Objectives: Upon completion of this unit, students will be able to:

1. Add one and two digit numerals
2. Subtract one and two digit numerals
3. Subtract two digit numerals using regrouping
4. Add two digit numerals
5. Multiply one and two digit numerals
6. Identify symbols such as > < or =
7. Name parts of a whole

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will communicate in number accurately</td>
<td>Addition, Subtraction, Multiplication, Fractions, Geometry</td>
<td>A variety of activities involving: additions and subtraction of one or two digit numerals; shading of fractional parts of a whole (1/2; 1/3; ¼ etc); identifying and describing geometry figure; identification of mathematical symbols (&gt; &lt; , =)</td>
<td>Counter, rocks, sticks and cut paper; Use other local material to teach</td>
<td>Problems solving on the solutions of digits numbers. Exercises on shading fractional parts and identifying geometry figures and mathematical symbols.</td>
</tr>
</tbody>
</table>
### Grade Three Mathematics

#### First Marking Period

#### First Semester

Unit II Topic: Sets and numbers

Specific Objectives: upon the completion of this unit, students will be able to:

1. Identify the properties of sets and subsets using population data with specific reference to family members.
2. Identify disjoints sets, union of sets as they relate to addition
3. Compare and order fractions

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will demonstrate skills of forming sets by numbers as it relates to addition.</td>
<td>1. Sets and properties</td>
<td>Activities involving:</td>
<td>Rocks, sticks, Counter, Flash cards, chart etc.</td>
<td>Exercises or games using the property of sets; and comparing and ordering of fractions.</td>
</tr>
<tr>
<td>2. Students will accept the fact that boys and Girls are both important members (subset) of a family.</td>
<td>2. Union of set</td>
<td></td>
<td>Elementary mathematic for Liberia revised edition book 2, unit-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Sub-sets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Intersection of set.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Disjoint sets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Fractions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Three Mathematics

Unit 3: Topic: Numeration

Specific Objectives: Upon completion of this unit, students will be able to:
1. Read numerals up to 1000
2. Write numerals up to 1000
3. Recognize and write place value for given numerals (ones, tens, hundreds and thousands).
4. Write three digit numerals to expanded notation
5. Compare and order unit fraction such as ½, 1/3, 1/4, etc.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| 1. Students will read and write numbers | ▪ Whole number up to 1000  
▪ Place value (ones, tens, hundreds, and thousands)  
▪ Expanded notation  
▪ Fraction in order ½, 1/3, ¼, etc. | Organize activities involving:  
❖ reading and writing numbers up to 1000;  
❖ identification of place values;  
❖ Using three or four digit numerals to show expanded notation;  
❖ Comparing and ordering units of fractions such as ½, 1/3, 1/4, 1/6, etc. | 1. Rocks, stone counter, place value chart, place value strips | Exercises on:  
1. reading and writing numbers up to 1000;  
2. Solving expanded notations;  
3. Ordering of fractions. |
Grade Three Mathematics  | Third Marking Period | First Semester
--- | --- | ---

Unit 4: Topic Operation of whole numbers

Specified Objectives: Upon completion of this unit, students will be able to:
1. Demonstrate the basic combination of additions, subtraction, division and multiplication in solving whole number problems.
2. Solve simple open sentence problems with one variable.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students understand the skills and computation of addition, subtraction, multiplication, and division in real life situation.</td>
<td>• Addition and Subtraction of whole numbers  • Simple open sentence problems  • Addition and subtraction of whole number with 1-4 digit number  • Multiplication of 2-4 digit numbers by 1-2 digit whole numbers  • Division of one to three digit whole number by one to two digit whole numbers</td>
<td>Activities involving:  ❖ Addition of 3 or more digit numbers with renaming as ones, tens and hundreds.  ❖ Subtraction of 3 digit numbers with renaming  ❖ Solving of subtraction, addition, multiplication, and division words problems  ❖ Dividing and adding numbers to find the missing number with various symbols and number facts.</td>
<td>1. Use any local materials that will make the teaching/learning effective.  2. Teacher-made materials</td>
<td>Exercises on solving problems with 3-digits</td>
</tr>
</tbody>
</table>
Grade Three Mathematics  
Third Marking Period  
First Semester

Unit Topic: Structure and properties of numbers

Specific Objectives: upon completion of this unit, students will be able to:
1. A. Apply the associative property of addition and multiplication
   B. commutative property of addition and multiplication
   C. Distributive property of multiplication over addition and subtraction
   D. Zero as the identity element for multiplication
2. Perform multiplication with factor less than 100.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| 1. Students will apply commutative and associative properties to real life situation. | ▪ Commutative and Associative properties  
 ▪ Properties of zero and one  
 ▪ Closure property  
 ▪ Multiplication with factor less than 100. | Activities involving
 ▪ Computation of commutative and associative properties of addition and multiplication;
 ▪ Demonstration of property of zero and one using multiplication;
 ▪ Use whole numbers in addition and multiplication (with factor less than 100) | Stick, stones, oranges, paw paw  
 Use local material to best explain the activities. | Problems solving showing the solutions of commutative, associative properties; and properties of zero and one. |
| 2. Students will recognize the properties of zero as identity element of addition and one as identity element of multiplication. | | | | |
Grade Three Mathematics  

fourth Marking Period  

First Semester  

Unit 6 Topic: Fractions  

Specific Objectives: Upon completion of this unit, students will be able to:  
  1. Identify parts of a whole and its shaded parts  
  2. Identify and count the divided parts  
  3. Name each fractional part  
  4. Change a given fraction to equivalent ones.  
  5. Solve addition of fractions  
  6. Multiply fraction by whole numbers showing the two parts (numerators and denominators)  
  7. Use >, < or = to have sentence true  

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Student will appreciate fractional parts of a whole number in real life situation showing fractional parts of a whole in real life situation. | ▪ Fraction  
▪ Definition of fraction  
▪ Comparison of fraction  
▪ Equivalent fractions  
▪ Addition of from fraction  
▪ Mixed fraction  
▪ Subtraction of like fraction  
▪ Multiplication of a whole number by a fraction. | Activities:  
▪ showing the shaded part of a whole  
▪ naming fractional parts  
▪ showing fraction on the number line  
▪ solving few addition of fraction problems  
▪ using symbols to make sentence true. | Rulers, geometric set, orange, paw paw, and other local materials. | Give assignments to students to determined what they have learned or achieved the objectives. |
Grade Three Mathematics  |  Fifth Marking Period  |  Second Semester
---|---|---
Unit Topic: measurement  
Specific objectives: By the end of this unit, students will be able to:  
1. Recognize and use the standard unit of measurement in English and the metric system such as capacity, weight, and linear measurement.  
2. Measure the length of an object.  
3. Compare height with bar graph.  
4. Compare and calculate the parameter, areas, volume of an objects.  
5. Tell time, add and subtract unit of time.  
6. Add, Subtract, multiply, and divide unit of money.  
7. Add, subtract, multiply, and divide unit of volume and weight in English and Metric system.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will distinguish English system from metric system in converting one system to another.  
Students will use acquired skills of addition, subtraction, multiplication, and division when dealing with money. | Measurements length, capacity, weight and height in English and metric system.  
Unit of time, Unit of money.  
Basic operations on volume, weight, areas and parameters. | Activities involving:  
- Measurement of length, capacity weight, height and volume in metric and English system;  
- Telling of times using minute and hour hands;  
- Solving of words problem involving Liberian money;  
- Using the basic operations concepts to measure volume weight, areas, and perimeter. | Cup, pint, quart, gallon, ounce, hundred, weight, inch, foot, yard,  
Liberian banknotes and coins  
Clock or clock drawn on postal sheet or chalk board. | Exercises involving:  
- solutions of length, capacity and weight in English and metric systems;  
- Telling of times;  
- Calculation of money |
**Grade Three Mathematics**  
**Sixth Marking Period**  
**Second Semester**

**Unit Topic:** Geometry

Specific Objectives: Upon completing this unit, students will be able to:

6. Identify simple geometric figures of line segments, square, cone, right angle, rectangles, triangles, and vertex.
7. Identify and draw various type of angles.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will recognize the importance of the use of geometric figures in the design of structures (bridges, houses, etc.) | Measurement of geometric figures  
Identification of geometric figures  
Kind of angles. | ❖ Measuring of line points, line segment and angles;  
❖ Identifying some geometric figures such as: Cube, Sphere, Rhombus, Cylinder, Cone, Pyramid, Trapezoids, Prism, Rectangle, and Solid.  
❖ Identifying and drawing of angles. | Geometry set  
Any appropriate local material available to make teaching learning effective.  
Teacher-made materials | Exercises involving recognition and measurement of line points, segments and angles. |
Grade Four Mathematics

**first Marking Period**

Topics: Numeration, Addition and Subtraction

Specific Objectives: At the end of this unit, the students will be able to:

8. Read and write whole numbers up to hundred thousand
9. Compare and order whole numbers to hundred thousand
10. Round whole numbers up to thousand
11. Add and Subtract whole numbers using population data on births, deaths, and migration

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Students will understand place value</td>
<td>Place value to hundred thousand&lt;br&gt;Comparing and Ordering whole number&lt;br&gt;Round whole number to thousand&lt;br&gt;Adding and subtracting of whole numbers&lt;br&gt;Addition and subtraction of population data&lt;br&gt;Solution of word problems</td>
<td>▪ Reading and writing whole numbers up to hundred thousand;&lt;br&gt;Comparing and Ordering whole numbers up to hundred thousand;&lt;br&gt;Adding the numbers of births and deaths within a given time and interpreting the result;&lt;br&gt;Adding the numbers of immigration and out-migration within a given time and interpreting the result.</td>
<td>▪ Place value chart&lt;br&gt;▪ Place value strips&lt;br&gt;▪ Life skills POPFLE Resource book</td>
<td>Exercises involving:&lt;br&gt;▪ Reading and writing whole number up to hundred thousand;&lt;br&gt;▪ Rounding up whole numbers&lt;br&gt;▪ Problem solving on births, deaths and migration.</td>
</tr>
</tbody>
</table>
**Grade Four Mathematics**  
**Second Marking Period**  
**First Semester**

Topic: Multiplication and Division of whole numbers  
Specific Objectives: At the end of this unit, the students will be able to:

1. Identify multiplication facts and properties  
2. Multiply multiples of 10’s, 100’s, 1000’s  
3. Multiply 2, 3, or 4 Digits by 1-Digit  
4. Solve problems involving multiplication  
5. Divide multiples of them by 1-Digit Divisor  
6. Divide 2, 3, or 4-Digit numbers by 1-Digit Divisor  
7. Divide whole numbers with zero in the quotient  
8. Solve problem involving division

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>Multiplication facts and properties</td>
<td>Using flash cards, doubles, or graph paper for multiplication facts and properties;</td>
<td>Flash cards with basic multiplication Facts</td>
<td>Exercises involving multiplication games on concepts of 2,3,or 4 digits.</td>
</tr>
<tr>
<td>1. Apply computational skills about multiplication and division to read life situation</td>
<td>Multiply multiples of 10’s, 100’s, 1000,s</td>
<td>Using graph paper to show 4 by 26 rectangle to show multiplication concepts of 2, 3, or 4 digits numerals;</td>
<td>Graph paper</td>
<td></td>
</tr>
<tr>
<td>2. Purchase and distribute items</td>
<td>Multiply 2, 3, 4 digit by 1-digit numbers</td>
<td>Using base 10 counters abacus to illustrate division</td>
<td>Base 10 counters/abacus</td>
<td></td>
</tr>
<tr>
<td>3. Develop skills of critical thinking</td>
<td>Dividing multiples of ten by 1-digit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Divide whole numbers with zeros in the quotient</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Grade Four Mathematics

Third Marking Period

First Semester

Topics: Number Theory and Fraction

Specific Objectives: Upon completion of this unit, the students will be able to:
1. Identify even and odd numbers
2. Identify factors and multiples
3. Find LCM and GCF of numbers
4. Find parts of a set
5. Write equivalent fractions
6. Simplify fractions
7. Add fractions
8. Subtract fractions
9. Solve problems involving multi-step problems

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>Even and Odd numbers</td>
<td>Exploring even and odd numbers on a number chart</td>
<td>A chart of number up to 100</td>
<td>Exercises involving solutions of fractions and factors and multiples.</td>
</tr>
<tr>
<td>- Understand number theory</td>
<td>Factors and Multiples</td>
<td>Finding factors and multiples of a given number</td>
<td>Paper</td>
<td></td>
</tr>
<tr>
<td>- Apply fractional concepts to real-life situations</td>
<td>LCM common multiples</td>
<td>listing multiples of a set of numbers and sort out common</td>
<td>Orange</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greatest common factor</td>
<td>using base 10 counters to illustrate division</td>
<td>Fraction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parts of a set</td>
<td>Adding and Subtracting fractions</td>
<td>Strips</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equivalent fraction</td>
<td>Solving problems involving multi-step problems;</td>
<td>Made from paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simplifying fractions</td>
<td>Simplifying fractions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Topic:** Multiplication and Division of 2-Digits multipliers and Divisors (Decimals to Hundredths)

**Specific Objectives:** At the end of the unit, the students will be able to:
1. Multiply 2-Digits factors of multiples of 10’s, 100’s, 1000’s
2. Estimate products involving 2-Digits multipliers
3. Multiply 2, 3, or 4 – Digits multipliers
4. Divide multiples of 10’s, 100’s, 1000’s by 2-Digit Divisors mentally
5. Estimate quotient of 2-Digit Divisors
6. Divide 2, 3, or 4 – Digit numbers by 2-Digit Divisors
7. Read and write decimal numerals up to hundredths place
8. Compare and order decimal numerals up to hundredths place

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Students will understand multiplication and division of whole numbers</td>
<td>▪ Multiplying multiples of 10’s, 100’s, 1000’s</td>
<td>▪ Multiplying and dividing whole numbers of 2-digit multipliers or divisors</td>
<td>▪ Graph Sheets</td>
<td>▪ Exercises involving solutions of 2-digit multipliers and divisors;</td>
</tr>
<tr>
<td>▪ Develop concepts of decimal number</td>
<td>▪ Estimating products of 2-Digits multiplier</td>
<td>▪ Role playing a shopkeeper ordering and distributing items in multiples of 10’s, 100’s or 1000’s</td>
<td>▪ Place Value models</td>
<td>▪ Exercises on the calculation of money</td>
</tr>
<tr>
<td></td>
<td>▪ Multiplying 2, 3, 4 – digits numbers</td>
<td>▪ Comparing and ordering set of data</td>
<td>▪ Calculator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Numerals by 2 –digits</td>
<td></td>
<td>▪ computer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Estimating quotients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Dividing by 2- Digit divisors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Decimal numerals up to hundredths place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Comparing and Ordering decimal numerals up to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ hundredths place</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Probability of simple events (optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Four Mathematics

Unit Topics: Measurement

Specific Objectives: Upon completion of this unit, students will be able to:

1. Estimate time
2. Find elapsed time
3. Estimate customary units of lengths
4. Measure lengths using customary units
5. Estimate customary units of mass and capacity
6. Estimate metric units of lengths, capacity and mass
7. Convert subunits of lengths and weight in the metric system
8. Perform addition and subtraction of measurement of lengths and weights
9. Find the perimeters and areas of squares and rectangles

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>Estimating time</td>
<td>estimating how long an activity may last (saying the alphabet; cooking rice; length of a school day; to become a doctor)</td>
<td>Toy or paper clock, rulers, meter stick, scale cups, gallons</td>
<td>Exercises involving estimation of time required to do a job</td>
</tr>
<tr>
<td>- Apply skills of estimation in planning activities considering the length of time required.</td>
<td>Finding elapsed time</td>
<td>Demonstration of finding elapsed time using a toy clock and by addition and subtraction (end time, start time)</td>
<td>teaspoon rope, tapeline</td>
<td>Problem solving involving conversion of metric unit of measurement.</td>
</tr>
<tr>
<td>- Appreciate the values of skills acquired in estimating lengths, weights, capacity</td>
<td>Estimating customary units of lengths</td>
<td>Estimating length of a pen, table classroom)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Converting selected units of measure</td>
<td>Measuring classroom objects using customary units of length</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Estimating metric units of measure</td>
<td>Demonstration of converting metric units of weight and capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Converting selected metric units of measure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perimeters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finding areas of squares and rectangles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finding volume</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Four Mathematics  
**Sixth Marking Period**  
**Second Semester**

Topic: Geometry and Statistics

Specific Objectives: Upon completion of this unit, the students will be able to:

1. Identify geometric figures of line, line segments, rays, interesting lines, parallel lines
2. Identify angles by shapes as right angle, less than right angle, or greater than right angle; perpendicular lines
3. Identify triangles, quadrilaterals or pentagon, hexagon as polygon
4. Identify parts of a circle
5. Identify solid figures – spheres, cylinder, cones, cubes, rectangular prisms
6. Read and interpret bar graphs, line graphs, pie chart, mode, mean, median, & Average

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will appreciate geometry as foundation of construction (building) roads, boxes, balls</td>
<td>Geometry concept (ideas)</td>
<td>Identifying and recognizing simple geometric figures; point, lines, rays, line segment; sorting out polygons according to sides and to identify each;</td>
<td>- Geometric set; straight edge, cut paper - computer</td>
<td>Exercises involving: - collection of data - Recognition of simple geometric figures</td>
</tr>
<tr>
<td>Analyze data collected on varieties of census</td>
<td>Angles</td>
<td>Tracing and cutting out a circular shape in a paper, fold the paper circle in halves to identify parts of a circle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will protect themselves against major causes of death i.e. HIV/AIDS, etc.</td>
<td>Polygons</td>
<td>Collecting data about family size and displaying the data on a bar graph</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circle</td>
<td>solving word problems involving drawing of diagrams</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Five Mathematics  First Marking Period  First Semester

Subject: Mathematics  
Period Two  
Topic: Multiplication and Division of whole numbers and Decimals number theory  
Specific Objectives: At the end of the unit, the pupils will be able to:
1. Identify properties of operation (commutative, associative, distributive zero and Identity)  
2. Multiply and divide whole numbers and decimals  
3. State the divisibility rules for 1-5  
4. Identify prime and composite numbers  
5. Find ECF and LCM  
6. Write factor for parts of a set  
7. Find equivalent fraction  
8. Simplify fraction  

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will:  
1. Apply their knowledge and skills of operations of whole numbers and decimal to real life situations  
2. Develop their understanding of number theory and fractions | 1. Properties of multiplication  
2. Multiplying and dividing whole numbers and decimals  
3. Divisibility rules  
4. Prime and composite numbers  
5. LCM and GCP  
6. Equivalent fractions  
7. Simplifying fractions | 1. Students should use graph paper to show multiplication properties  
2. Students multiply whole numbers and decimals  
3. Let students divide whole numbers and decimals  
4. Help students use the sum of Evasthothenes to identify prime and composite numbers up to 50  
5. Guide students to write equivalent fraction and simplifying fraction by using square paper folded to show equivalent fraction | - Graph paper  
- Base 10 models  
- Square paper | 1. Give seatwork to a group to solve problems such as multiplication of whole number and decimal  
2. After group work give take home assignment not less than 5 problems  
3. Make sure you correct the papers to determine students strong and weak points |
Grade Five Mathematics  

Unit Topic: Multiplication and Division of whole numbers and Decimals number theory

Specific Objectives: At the end of the unit, the students will be able to:

9. Identify properties of operation (commutative, associative, distributive zero and Identity)
10. Multiply and divide whole numbers and decimals
11. State the divisibility rules for 1-5
12. Identify prime and composite numbers
13. Find ECF and LCM
14. Write factor for parts of a set
15. Find equivalent fraction
16. Simplify fraction

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will:</td>
<td>Properties of multiplication</td>
<td>Using graph paper to show multiplication properties</td>
<td>Graph paper</td>
<td>Exercises involving:</td>
</tr>
<tr>
<td>Apply their knowledge and skills of operations of whole numbers and decimal to real life situations</td>
<td>Multiplying and dividing whole numbers and decimals</td>
<td>Multiplying and dividing whole numbers and decimals</td>
<td>Base 10 models</td>
<td>1. multiplication of whole number and decimals</td>
</tr>
<tr>
<td>Develop their understanding of number theory and fractions</td>
<td>Divisibility rules</td>
<td>Using the sum of Evasthothenes to identify prime and composite numbers up to 50</td>
<td>Square paper</td>
<td>2. identification of prime and composite numbers up to 50</td>
</tr>
<tr>
<td></td>
<td>Prime and composite numbers</td>
<td>Writing equivalent fraction and simplifying fraction by using square paper folded to show equivalent fraction</td>
<td></td>
<td>3. simplification of fractions.</td>
</tr>
<tr>
<td></td>
<td>LCM and GCP</td>
<td></td>
<td></td>
<td>4. giving a buzz groups(2 persons) assignment to help the weaker students.</td>
</tr>
<tr>
<td></td>
<td>Equivalent fractions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simplifying fractions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Five Mathematics

Third Marking Period

First Semester

Topic: Fractions

Specific Objectives: Upon completion of the unit, the students will be able to:
1. Add and subtract fractions and mixed numbers
2. Multiply and divide fractions
3. Solve word problems involving fractions
4. Convert fractions to decimals and vice versa
5. Compare and order fractions

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will apply the skills and concepts of operations of fraction to daily life situation</td>
<td>1. Adding fractions and mixed numbers with like denominators; 2. Subtracting fractions and mixed numbers with like denominators; 3. Adding and subtracting fractions with unlike denominators; 4. Multiplying fractions and mixed numbers; 5. Dividing fractions; 6. Compare and order fractions; 7. Converting fractions to Decimal; 8. Solve word problems involving fractions</td>
<td>Activities Involving:  - Using of fraction strips to add and subtract fractions with like denominators;  - Making flash cards with pairs of numbers that are potential denominators;  - Using the flash cards number to show the LCM;  - Using of counters to illustrate multiplication and division fraction concepts;  - Using base 10 fraction model to illustrate how fractions and decimals are related;  - Solving word problems involving operations of fractions.</td>
<td>- Fraction strips  - Flash cards  - Counters  - Graph paper  - Base 10 fraction model</td>
<td>Exercises involving the solutions of addition, subtraction, multiplication of fraction, and the conversion of fractions to decimals.</td>
</tr>
</tbody>
</table>
Grade Five Mathematics

**Fourth Marking Period**

**Second Semester**

**Topic: Measurement**

**Specific Objectives:** At the end of the unit, the students will be able to:

1. Find elapsed time
2. Estimate length, weight, capacity using selected units of measure
3. Adding and Subtracting customary units of measure
4. Converting selected units of measure in the metric units (mm; cm; m; km; g; kg; ml; L)
5. Finding perimeters of polygons
6. Finding areas of parallelograms and triangles
7. Finding volume of prisms
8. Estimate temperature

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will apply the skills and concepts of measurement in the homes clinic, industries</td>
<td>1. Finding elapsed time</td>
<td>Activities involving:</td>
<td>- Cut-out paper clock</td>
<td>Exercises on the estimation and finding of temperatures, perimeters, areas and volumes.</td>
</tr>
<tr>
<td></td>
<td>2. Estimating units of measure (English/Metric)</td>
<td>✔ Using cut-out paper clock to find elapsed time;</td>
<td>- Rulers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Adding Metric units of length</td>
<td>✔ Estimation of the lengths of various objects in the classroom through measuring them;</td>
<td>- Meter stick</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Converting Metric units finding perimeters areas, volume</td>
<td>✔ Finding of perimeter and areas using graph paper;</td>
<td>- Cubes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Estimating temperature on the Fahrenheit and Centigrade scales</td>
<td>✔ Finding of volume of local containers using number cubes;</td>
<td>- Graph paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>✔ Estimation of temperature using boiling and freezing room point, normal body and temperature as benchmark to estimate temperature of different activities.</td>
<td>- Thermometer</td>
<td></td>
</tr>
</tbody>
</table>
Grade Five Mathematics  |  Fifth Marking Period  |  Second Semester
---|---|---
**Topic:** Geometry  
**Specific Objectives:** At the end of the lesson, the students will be able to:  
1. Define, identify, construct, and measure angles and geometric figures  
2. Classify triangles by sides and angles  
3. Classify quadrilaterals  
4. Identify congruent figures  
5. Solve multi-step problems  
6. Find circumference of a circle

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will apply geometry skills and concepts in construction of building, roads, chairs and tables | 1. Geometry ideas/points  
2. Lines, rays, line segments, parallel and perpendicular lines  
3. Kinds of angles  
4. Measuring angles  
5. Classifying triangles and quadrilaterals  
6. Solid figures  
7. Problem solving involving multi-step | - Using of rulers, compass, protractor to measure and construct angles and geometric figures;  
- Drawing of different shapes of triangles and quadrilateral and classifying each as a triangle, square; Rectangle, parallelogram, rhombus or trapezoid;  
- Finding of circumference of a circle using diameter;  
- Solving of problems involving 2 different operations | - Geometry set, straight edge rope, paper, Protractor | - Daily seatwork  
- Quiz  
- Assignment |
Grade Five Mathematics

Topic: Ratio, Proportion, Percent, and Statistics
Specific Objectives: At the end of the unit, the students will be able to:
1. Define and write ratio and proportion
2. Write percentage as a ratio
3. Express two or more ratio as proportion
4. Solve problems involving finding percent of a number
5. Read and make bar graphs, line graphs and circle graphs
6. Find the mean of a set of a data
7. Find rates

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will apply ratio and proportion to daily life activities; Students will interpret data presented on a given graph</td>
<td>1. Ratio and proportion 2. Rates 3. Percent and Fraction 4. Finding percent of a number 5. Reading bar, line, pictograph and circle graph 6. Finding mean (averages) 7. Probability</td>
<td>Activities:  ❖ Writing of ratios and proportions;  ❖ Using of proportions to make simple mixture;  ❖ Converting of percents to decimals;  ❖ Solving of problems involving percent of number;  ❖ Collecting of data about favorite color and displaying of data on a bar graph;  ❖ Finding of mean of the data they have collected  ❖ Collecting of different stoppers place in a bag and predict which stopper is more likely to be picked.</td>
<td>- Graph paper - Stoppers - Counters - Bag</td>
<td>Exercises involving:  ❖ Writing of ratio and proportions;  ❖ Conversion of percent to decimal;</td>
</tr>
</tbody>
</table>
Grade Six Mathematics

First Marking Period

First Semester

Unit I: Topic: Exponent in sets, symbols to describe sets

Specific Objectives: By the end of this unit one, students will be able to:
1. Use the power of set method to determine numbers of sets
2. Use set builder notation of describe sets
3. Apply skills and knowledge of intersection and union sets to find solution to daily life problem
4. Classify rational numbers into subset of whole numbers
5. Perform addition, subtraction, multiplication and division of integer

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will apply the skills of exponents to daily life situation</td>
<td>Sets</td>
<td>Disjoint sets of whole numbers and integers</td>
<td>Use local objects to represent sets and symbols</td>
<td>Exercises such as:</td>
</tr>
<tr>
<td>Pupil will translate English sentence to mathematics sentence</td>
<td>Description of sets and examples</td>
<td>Draw Venn diagram of union and intersection sets</td>
<td>Rocks, sticks, picture of objects</td>
<td>1. What is disjoint set?</td>
</tr>
<tr>
<td>Students will apply the knowledge and skills of intersection and union sets to real life in the community</td>
<td>Intersection and union of sets</td>
<td>Using symbols E &amp; to membership and non-membership</td>
<td></td>
<td>2. Instructing students to draw Venn diagram showing the intersection of union set and other sets</td>
</tr>
<tr>
<td></td>
<td>Sets of rational and irrational numbers</td>
<td>Reading Venn diagram</td>
<td></td>
<td>3. Asking students to explain what is subsets</td>
</tr>
<tr>
<td></td>
<td>Sets of points</td>
<td>Identifying replacement of sets</td>
<td></td>
<td>4. Observe class room participation and give point</td>
</tr>
<tr>
<td></td>
<td>Sets of prime numbers</td>
<td>Using symbols of power of sets to determine number of subsets</td>
<td></td>
<td>5. Class work, quizzes, assignment, test and exam</td>
</tr>
<tr>
<td></td>
<td>Replacement sets</td>
<td>Grouping by five</td>
<td></td>
<td>1. What is disjoint set?</td>
</tr>
<tr>
<td></td>
<td>Venn diagram of intersection and union relations</td>
<td>Instruct learners to change base ten to base five numerals and vice versa</td>
<td></td>
<td>2. Instructing students to draw Venn diagram showing the intersection of union set and other sets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adding using base five</td>
<td></td>
<td>3. Asking students to explain what is subsets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Subtracting using base five</td>
<td></td>
<td>4. Observe class room participation and give point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multiplying using base ten and base five</td>
<td></td>
<td>5. Class work, quizzes, assignment, test and exam</td>
</tr>
</tbody>
</table>
Grade Six Mathematics    Second Marking Period    First Semester

Unit Topic: Numeration – Number Base

Specific Objectives: Upon completion of unit two, pupil will be able to:
1. Add and subtract numbers in base ten and five
2. Multiply number in base ten and five

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| 1. Students will apply their knowledge and skills of base to real life situation in any society | Base ten number system  
Change base ten to base five  
Numerals and vice versa  
Add in base five  
Subtract in base five  
Multiply numbers in base ten to base five | Students to count in base ten  
Students to group by five  
To change base ten to base five numerals and vice versa  
To add in base five  
Guide students to subtract in base five  
Multiply base ten and base five | Use sticks, rocks, stones, counters, and other local materials available to make learning effective | Exercises involve:  
Asking students to change base ten to base five  
Evaluating their achievement through quizzes, assignment, test, etc  
Observe classroom participant and give point |
Grade Six Mathematics

Third Marking Period

First Semester

Unit Topic: Operations

Specific Objectives: At the end of unit 3, students will be able to:
1. Add, subtract, multiply and divide decimals
2. Round off decimals to the nearest tenth, hundredths and thousandths

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will apply their knowledge and skills of operation of whole numbers and decimal to real life in their environment or community | ▪ Change fractions to decimals  
▪ Add and subtract decimals  
▪ Add and subtract decimals from the whole numbers  
▪ Multiply decimals numerals by other decimal numerals and vice versa  
▪ Round off decimals to the nearest tenth, hundredth and thousandth | ▪ solving problems in addition and subtraction of decimal numbers  
▪ Multiplying whole numbers by decimal numbers and other decimal numbers  
▪ Dividing whole numbers by decimal numbers and decimal numbers and decimal by another decimal numbers  
▪ Practicing how round off decimal to the nearest 10\textsuperscript{th}, 100\textsuperscript{th} and 1000\textsuperscript{th} | Use orange, paw-paw, sticks, rocks, counter and other local materials can be used | ▪ Find out from students whether they can work square roots and cube numbers problems  
▪ Assignment  
▪ Class work to determine the extent to which the student have achieved the objective |
Grade Six Mathematics  

Fourth Marking Period  

Second Semester  

Unit Topic A: Number Theory  

Specific Objectives: Upon completion of this unit, students will be able to:  

1. Find square and square roots  
2. Find cube of whole numbers using factorization methods  

<table>
<thead>
<tr>
<th>Out comes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Students will use this knowledge and skills to organize and operate business and organization such as credit union, or sales in shops, etc | Number theory  
Square and square roots  
Cubes of whole numbers using factors method  
LCM and GCF | Recognize perfect square (e.g. 4, 9, 16, 25, 36, 49 etc)  
Finding square roots (e.g. \( \sqrt{4} \), \( \sqrt{9} \), \( \sqrt{16} \))  
Fine cubes of whole numbers using factorization method  
Finding prime factor of whole number  
How to find roots using factor method. | Calculator  
Text books  
Geometric set etc use other local materials to solve some of the problems | Exercises involving how to work square roots and cube numbers  
Assignment  
Class work to determine the student to solve the above problems. |
**Unit Topic B: Measurement**

Specify objectives: Upon completion of this unit, students will be able to:

1. Perform the four basic operations on measurement in both English and metric system
2. Convert unit from one system to another
3. Measure areas, volume, perimeter, radii, circumference, square, Rhombuses, circle rectangle, cylinder, sphere, and other geometries shapes.
4. Calculate those in objectives 3 by using appropriate formulae.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Contents</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| ▪ Apply knowledge of size of object in solving some daily problems at home, School, hospitals, industries, and construction. | ▪ Measurement of geometric figures  
▪ Add, subtract, multiply, and divide in English and metric system  
▪ Conversion of unit of measurement, from English to metric, vice versa  
▪ Find areas, volume, perimeter, and circumference by measurement and using formulae.  
▪ Measurement of angles. | ▪ adding, subtracting, multiplying, and dividing unit of measurement in English and metric system.  
▪ Using of formula to calculate areas, volume, perimeter, circumference, radii  
▪ converting from one system to another  
▪ constructing and measuring weight, triangle, acute, obtuse, and reflex angles. | ▪ Geometric sets, string  
▪ Calculators, Protractor  
▪ Use other local materials when those above are not available. | ▪ Give assignments, quizzes, or test  
▪ Find out if pupil were able to carry on the task carefully. Find out whether students were able to find answers to the problem mentioned above.  
▪ Discuss and give correct answer. |
**Grade Six Mathematics**  
**Fifth Marking Period**  
**Second Semester**

Unit Topic A: Operations – Four operations with fractions  
Specific Objectives: Upon completion of this unit, students will be able to:  
1. Add and subtract fractions  
2. Multiply and divide fractions

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| ▪ Students will develop interest in solving problems in fractions  
▪ Students will apply the knowledge of multiplying and dividing fractions  
▪ Students will calculate the family sizes, income, birth rate, death rate especially those in quarter of dollars etc  
▪ Students will understand the method of applying the four operations with fractions | ▪ Add simple fraction of unit numeration and denomination (less than ten)  
▪ Subtraction of fractions  
▪ Add and subtract fractions from whole numbers and fractions  
▪ Multiplication of fractions  
▪ The reciprocals  
▪ Divide whole numbers by fractions and vice versa | ▪ Adding and subtracting of proper, improper and mixed fractions  
▪ Multiplying fraction of unit.  
▪ Numerator and denominator less than ten  
▪ Fraction by changing division sign to that of multiplication, invert the division, carry out multiplication and reduce the product to the lowest term | ▪ Use orange, paw-paw, sticks, rocks  
▪ Other local materials | ▪ Class participations as it relates to adding, subtracting, multiplying and dividing fractions  
▪ Class work, assignment, test and exam will determine the extent to which the students have achieve the objective |
**Grade Six Mathematics**  
**Fifth Marking Period**  
**Second Semester**

Unit Topic B: Geometry – Geometric figures and angles

Specific Objectives: By the end of this unit 8, students will be able to:
1. Recognize and explain the concept of space as the set of all points
2. Define, identify, construct, measure angles and geometric figures

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| ▪ Apply acquired geometric skills in the construction of things in our community and environment (e.g. houses, tables, chairs, bridges roads etc)  
▪ Students will use the construction skill to construct simple geometric figures such as rays, lines, line segment, angles using rulers, compass and protractor | ▪ Concept of space  
▪ Measure lines and rays  
▪ Construct angles and geometric figures  
▪ Measure angles  
▪ Polygon (triangles rectangles and square)  
▪ Angles, perimeter and areas  
▪ Touching and intersection circles  
▪ Circumference, area of a circle  
▪ Cubes - volume | ▪ Using ruler, compass and protractor to measure and construct angles and geometric figures of all kinds  
▪ measuring lines rays and angles  
▪ constructing angles and closed geometric figures  
▪ Measuring dimension and areas of:  
  - Triangles;  
  - Cubes;  
  - Circles  
  - Quadrilateral | - Use rulers, compass, protractor to construct geometric figures  
- Use other local materials to evaluate students learning | ▪ Give assignment  
▪ Ask them to identify and name the figure they have drawn  
▪ The extent to which the students have achieved the objectives of this unit will be determined by their ability to perform in quizzes, assignment, tests and exams |
Unit 6: Topic: Ratio, Percentage and Proportion

Specific Objectives: Upon completion of this unit, students will be able to:
1. Define and write ratio and proportion
2. Write ratio as a fraction
3. Write percentage as a ratio
4. Express two or more ratio as proportion
5. Solve stated problems related to ratio and proportion

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Recognize quantities comparison</td>
<td>▪ Define and write ratio</td>
<td>▪ Definition of ratio and proportion</td>
<td>- Games of all types</td>
<td>▪ Exercises such as asking students to define ratio and proportion</td>
</tr>
<tr>
<td>▪ Students will appreciate the application of ratio and proportion to daily life activities</td>
<td>▪ Write fractions as ratio</td>
<td>▪ Changing and writing faction as ratio</td>
<td>- Check-up etc</td>
<td>▪ writing fraction as ratio in form of Quizzes, and Test</td>
</tr>
<tr>
<td>▪ Students will interpret data on a given graph</td>
<td>▪ Write percentage as a ratio</td>
<td>▪ Process of defining proportion as equation of two ratios</td>
<td>- Use any local games to explain more about ratio proportion</td>
<td></td>
</tr>
<tr>
<td>▪ ▪ Define proportion as an equation of two ratios</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grade Six Mathematics

Sixth Marking Period

Second Semester

Unit Topic B: Graphs and interpretation of information

Specific Objectives: Upon completion of this unit, students will be able to:
1. Identify elements of graphs
2. Describe kinds of graphs

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Content</th>
<th>Activities</th>
<th>Materials</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will gain skills to compare quantity and height</td>
<td>Identification of elements and kinds of graphs</td>
<td>Drawing of Bar graph, Picture graph, Line graph, and Circular graph.</td>
<td>- Ruler, protractor - Geometric sets - Use other local materials to make teaching/learning effective</td>
<td>Give assignment</td>
</tr>
<tr>
<td>Students will understand how to interpret events in their school and community</td>
<td>Define and differentiating graphs</td>
<td>Making graph tables and chart</td>
<td>- Give assignment, assignment, quizzes, test and exams to determine whether the objectives have been achieved</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bar graph</td>
<td>using different graphs to compare quantities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Picture graph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Line graph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circular graph</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bibliography
The printing of the National Liberian Curriculum is provided by ECSEL - European Commission Support for Education in Liberia