MINISTRY OF EDUCATION

MATHEMATICS PRESCRIPTION

CLASSES 3 - 4

REVISED 1996

CURRICULUM DEVELOPMENT UNIT
SUVA, FIJI.

PRIMARY MATHEMATICS PRESCRIPTION

CLASS 3

1.0 PREAMBLE

1.1 Mathematics in the primary schools is principally a body of knowledge, skills and attitudes which school assist pupils to cope confidently with the mathematics of everyday life.

1.2 The course emphasises an activity-oriented approach where the children are encouraged to discuss mathematical ideas, use structured and common materials and carry out a variety of activities involving investigations and discovery.

1.3 At this level lays many concepts are introduced more formally and focus is given to problem solving, estimation, reasoning and communication skills which are applied in all the topics

1.4 The course lays a sound foundation of the Mathematics that will be taught in Class 4.

2.0 AIMS AND OBJECTIVES

2.1 AIMS

2.1.1 The aims of the course are to help pupils to develop

(a) develop their knowledge and understanding of the properties of the operations and their relationships using 2 and 3 digit numbers
(b) apply their knowledge of basic facts and principles to develop facility in computation
(c) develop their knowledge and understanding of simple fractions
(d) develop their understanding of the use of money
(e) develop the knowledge, skills and understanding required for estimating and measuring length, mass and capacity
(f) develop their knowledge and understanding of geometrical shapes and their properties
(g) develop the knowledge skills and understanding required to interpret and construct simple tables and graphs
(h) develop their skills and ability to communicate mathematical ideas
(i) develop their skills and ability in estimating and solving problems
(j) develop positive attitudes towards, and a continuing interest in Mathematics
(k) develop confidence in their ability to do Mathematics

2.2 OBJECTIVES

On completing the Class 3 Mathematics course, the pupils should have

2.2.1 acquired the knowledge and understanding required to

(a) read, write, name and order numbers to 999
(b) name the face and place value of numbers to 999
(c) master the basic facts of addition, subtraction, multiplication and division
(d) demonstrate the meaning of the operations by using aids and discussing problem situations
(e) compute using the basic facts and the properties
(f) identify, recognise and work with patterns and relationships
(g) compare fractional numbers with denominators 2, 4, 8, 6, 6, 10
(h) add and subtract simple fractions
(i) recognise and use of Fiji coins and notes
(j) add and subtract money up to $10.00
(k) identify, name and discuss the properties of square, rectangles, triangles, circles, cubes, cones and cylinders
(l) identify, name and explore the properties of points, line, line segments and square corners
(m) measure length, mass and capacity
(n) tell time using 'half past', 'a quarter past', 'a quarter to'
(o) read a calendar and describe the day and date
(p) read the temperature using a thermometer
(q) apply estimation in working with quantities, measurement, computation and problem-solving
(r) interpret and construct simple bar and pictorial graphs and charts

2.2.2 acquired the skills involved in

(a) using mental strategies to recall basic facts
(b) making sensible estimates and checking if the answers to problems are reasonable
(c) compute mentally using appropriate algorithms
(d) interpreting Mathematics presented in written forms
(e) drawing, cutting and constructing shapes
(f) estimating and measuring length, mass and capacity using appropriate tools
(g) collecting, organising, presenting and interpreting data
(h) expressing ideas using their own language and appropriate mathematical language
(i) listening and responding to the views and ideas of others
(j) recording and discussing about the results of mathematical explorations
(k) translating problems into mathematical sentences

(l) applying mathematical ideas, rules and strategies in solving problems arising in everyday situations
(m) generalising from patterns and relationships

2.2.3 developed the values and attitudes which help them to

(a) appreciate that Mathematics is a creative, relevant and useful activity
(b) become aware that learning of Mathematics includes processes of enquiry, investigation, discovery and verification
(c) appreciate that Mathematics is an interesting, enjoyable and a chanllenging subject
(d) gain confidence in their ability to do Mathematics
(e) be resourceful, self-reliant and perservering in doing mathematical activities
(f) work co-opreatively with others
(g) exercise self-discipline
(h) achieve a sense of self-worth through success in doing Mathematics.

3.0 COURSE CONTENT : OUTLINE

The course is divided into 7 sections :-

1. Number and Numeration
2. Addition and Subtraction
3. Multiplication and Division
4. Money
5. Geometry
6. Measurement
7. Graphs and Statistics

4.0 COURSE CONTENT : DETAILS

4.1 NUMBER AND NUMERATION

4.1.1 **Whole Numbers** : to 999
(a) Sets; numbers, names and symbols
(b) Place value
(c) Regrouping
(d) Patterns

4.1.2 **Fractions**
(a) Part/whole relationships
(b) Fraction names – half to tenths
(c) Symbolic recording
(d) Equivalent fractions
(e) Comparing and ordering

4.2 ADDITION AND SUBTRACTION

4.2.1 Whole Numbers

(a) Addition of 2-digit, and 3-digit numbers without and with regrouping
(b) Subtraction of 2-digit and 3-digit numbers without and with regrouping
(c) Properties : commutative and associative
(d) Addition and subtraction as inverses
(e) Estimation
(f) Problem Solving

4.2.2 Fractions

(a) Addition of like fractions
(b) Subtraction of like fractions
(c) Problems

4.3 MULTIPLICATION AND DIVISION

4.3.1 Whole Numbers

(a) **Concepts**
- (i) Repeated addition
- (ii) Array
- (iii) 'x' symbol
- (iv) Repeated subtraction
- (v) Sharing
- (vi) '÷' and ' √ ' symbols
- (vii) inverse

(b) **The Facts**
- (i) Vertical form
- (ii) Thinking strategies
- (iii) Memorization

(c) **Algorithms**
- (i) Multipiication of 2-digit by 1-digit numbers
- (ii) Division of 2-digit numbers by 1-digit divisors

(d)
- (i) Properties : commutative, associative and distributive
- (ii) Estimation
- (iii) Problems

4.4 **MONEY**

(a) Compare value of notes
(b) Reading prices
(c) Record and interpret symbols and the separating point
(d) Total value of a set of notes and coins
(e) Giving change
(f) Adding and subtracting sums of money
(g) Multiplying and dividing with money
(h) Estimation
(i) Problems

4.5 **GEOMETRY**

(a) Shapes and solids : squares, rectangles, triangles, circles, cubes, cones and cylinders; some of their properties
(b) Points, lines, line segments, parallel lines, curves and circles
(c) Angles

4.6 **MEASUREMENT**

4.6.1 **Length**

(a) Measuring with non-standard units
(b) Metre and centimetre
(c) Measuring in metres and centimetres and to the nearest metre and centimetre
(d) Estimating

4.6.2 **Capacity**

(a) Measuring using non-standard units
(b) Measuring using litres and half litres; comparing
(c) Estimating

4.6.3 **Mass**

(a) Measuring with non-standard units
(b) Kilogram
(c) Measuring and comparing masses

4.6.4 **Time and Calendar**

(a) Sequencing events
(b) Reading clocks : half past, a quarter past, a quarter to
(c) Calendar : day, date, months

4.6.5 **Temperature**

(a) Reading temperature
(b) Comparing temperature

4.7 **GRAPHS AND STATISTICS**

(a) Picture graph
(b) Bar graph
(c) Construction and interpretation

5.0 TIME ALLOCATION

5 periods of 45 minutes each should be allocated to Mathematics in class 3 on the timetable.

6.0 EVALUATION

6.1 INTERNAL

Assessment should be **continuous**, and at all times emphasis should be on assessing the full range of processes and skills.

A variety of strategies may be used to assess pupils' needs, strengths, progress and achievements in mathematics.

(a) **Informal assessment** can be carried out through observing and interacting with pupils as they go about their activities, through interviews and setting appropriate tasks.

(b) **Formal assessment** involves administering **diagnostic tests** that provide information on the strengths and weaknesses of pupils. Diagnostic testing thus enables teachers to plan further learning activities designed to meet the needs of individual pupils.

Summative assessment could be carried out by giving mid-year and annual (or term) examinations to measure pupils' overall achievements.

(c) An important aspect of assessment is **keeping records of pupils' progress** in Mathematics. These records will serve as a basis for reporting.

7.0 TEACHER'S NOTES

(a) Teachers need to prepare and continually revise the **scheme of work** to suit the classes they are teaching.

(b) Suggestions for teaching each lesson are provided in the Teacher's Guide Teachers may supplement these with their own ideas.

(c) Teachers are advised to use **group work on a regular basis**. Group work provides pupils with a chance to agree, disagree, solve problems, find out what others think and to clarify their own points of view.

(d) Pupils should be encouraged to use **physical objects** to gain a better understanding of Mathematics. Teachers are advised to keep a collection of common materials. Some materials such as popscicle sticks, offcuts and cardboard boxes can be used to prepare other teaching and learning aids.

(e) **Problem-solving** should be the focus of the mathematics curriculum. Problem-solving is not a distinct topic but a process that should permeate the entire mathematics programme.

(f) The key **communication skills** are explaining, discussing, recording and presenting mathematical ideas and results to others. Teachers should view these as an integral part of mathematics teaching. Children must be encouraged to think and explain what they are doing and why, and listen critically to the views of others as they engage in mathematical activities.

(g) Teachers must emphasise the **application** of Mathematics if children are to view Mathematics as a practical and useful subject. Pupils must understand that it can be applied to a wide variety of real-world problems.

(h) Special provision must be made for the **high attaining pupils and under-achievers**. For the talented pupils appropriate extension and enrichment activities will need to be prepared. Different teaching approaches including giving varied practical and oral work and simpler activities will be needed for the slow learners.

(i) Teachers need to **integrate** the teaching of Mathematics in other subject areas, for example science and art and craft.

(j) Daily lessons should include revision of concepts and skills related to any new lesson. Teachers should systematically carry out reviews of the concepts and skills which are required for the introduction of the new topic. Short reviews of selected topics are important as they help improve performance and retention, and contribute to higher levels of learning.

8.0 RESOURCES

8.1 PRESCRIBED TEXTS FOR PUPILS

Mathematics 3 (Revised 2000) – Ministry of Education, Fiji.

8.2 PRESCRIBED TEXTS FOR TEACHERS

Teacher's Guide – Mathematics 3 (Revised 2000)
Ministry of Education, Fiji

8.3 MATERIALS

The materials for teaching Mathematics in Class 3 are listed in the Teacher's Guide.

PRIMARY MATHEMATICS PRESCRIPTION

CLASS 4

1.0 PREAMBLE

1.1 Mathematics in the primary schools is principally a body of knowledge, skills and attitudes which school assist pupils to cope confidently with the mathematics of everyday life.

1.2 The course emphasises an activity-oriented approach where the children are encouraged to discuss mathematical ideas, use structured and common materials and carry out a variety of activities involving investigations and discovery.

1.3 Four-digit numbers are introduced at this level and concepts introduced in class 3 are further extended. The mathematical process skills (problem solving, logical reasoning and communicating mathematical ideas) are taught within the context of the individual topics and are emphasised throughout the course.

1.4 The course lays a sound foundation of the Mathematics that will be taught in Class 5.

2.0 AIMS AND OBJECTIVES

2.1 AIMS

2.1.1 The aims of the course are to help pupils to develop

(a) extend their knowledge and understanding of the properties of the operations and their relationships using up to 4-digit numbers
(b) develop appropriate computational skills
(c) develop their knowledge and understanding of simple fractions and decimals
(d) extend their understanding of the use of money
(e) develop their knowledge and understanding of geometrical shapes and their properties
(f) develop their knowledge, skills and understanding required for estimating and measuring length, mass and capacity
(g) develop the knowledge, skills and understanding required to read, interpret and construct simple tables and graphs
(h) develop their skills and ability to communicate mathematical ideas
(i) develop their skills and ability in estimating, reasoning and solving problems
(j) develop positive attitudes towards, and a continuing interest in Mathematics
(k) develop confidence in their ability to do Mathematics

2.2 OBJECTIVES

On completing the Class 4 Mathematics course, the pupils should have :

2.2.1 acquired the knowledge and understanding required to

(a) read, write, name and order numbers to 9999
(b) name the face, and place value of any digit in a numeral to 9999
(c) state various names for the same number
(d) demonstrate the meaning for the operations by modelling and discussing problem situations
(e) use appropriate algorithms to compute with 2-, 3- and 4- digit numbers
(f) identify, describe and extend patterns
(g) add and subtract fractions with the name denominators, and decimals to tenths
(h) recognise and use Fiji coins and notes
(i) add and subtract money up to $20.00
(j) identify, name and illustrate simple curves, closed curves, parallel lines and right angles
(k) explore the properties of geometrical shapes and solids
(l) measure length (in metres and centimetres), capacity (in litres), mass (in kilograms) and temperature (in celcius)
(m) tell the time using 'minutes to', 'minutes past', am and pm
(n) read a calendar and describe the day and date
(o) interpret and construct simple bar and pictorial graphs
(p) solve problems
(q) estimate quantities, length, weight and capacity

2.2.2 acquired skills involved in

(a) classifying objects, numbers and ideas
(b) recognising and working with patterns
(c) using mental strategies to recall the basic facts
(d) computing using basic facts and appropriate algorithms
(e) computing mentally using appropriate techniques
(f) tracing, drawing and constructing models of geometric figures
(g) performing a range of measuring tasks involving length, mass and capacity
(h) collecting, organising and displaying data
(i) interpreting data presented in tables and graphs
(j) applying mathematical ideas, rules, techniques and strategies to solve mathematical problems
(k) translating problems into mathematical sentences
(l) applying estimating in working with quantities, measurement, computation and problem-solving
(m) using estimates to check if the answers to problems are reasonable
(n) interpreting and using mathematical symbols
(o) generalising from patterns

(p) presenting and explaining mathematical ideas and results to others
(q) listening and responding to the views of others.

2.2.3 developed the values and attitudes which help them to :

(a) appreciate that Mathematics is an interesting, enjoyable and a challenging subject
(b) become aware that the learning of Mathematics includes processes of enquiry, investigation, discovery and verification
(c) appreciate that Mathematics is a creative, relevant and useful activity
(d) gain confidence in their ability to do Mathematics
(e) be resourceful, self-reliant and perservering in doing mathematical activities
(f) work co-operatively with others
(g) exercise self-discipline
(h) achieve a sense of self-worth through success in doing Mathematics

3.0 COURSE CONTENT : OUTLINE

The course is divided into 7 sections :-

1. Number and Numeration
2. Addition and Subtraction
3. Multiplication and Division
4. Money
5. Geometry
6. Measurement
7. Graphs and Statistics

4.0 COURSE CONTENT : DETAILS

4.1 NUMBERS AND NUMERATION

4.1.1 **Whole Numbers** : to 9999
(a) Number, names and symbols
(b) Place value
(c) Regrouping
(d) Sets
(e) Patterns

4.1.2 **Fractions**
(a) Part/Whole relationships
(b) Fraction names – half to tenths
(c) Symbolic recording
(d) Equivalent fractions
(e) Comparing and ordering

4.1.3 **Decimals**
- (a) Tenths
- (b) Place Values
- (c) Converting to Fractions

4.2 ADDITION AND SUBTRACTION

4.2.1 **Whole Numbers**
- (a) Addition of 2-, 3- and 4-digit numbers without and with regrouping
- (b) Subtraction of 2-, 3- and 4-digit numbers without and with regrouping
- (c) Properties : commutative and associative
- (d) Addition and subtraction as inverses
- (e) Estimation
- (f) Problem solving

4.2.2 **Fractions**
- (a) Addition of like fractions
- (b) Subtraction of like fractions
- (c) Problems

4.2.3 **Decimals**
- (a) Addition and subtraction of ones and tenths

4.3 MULTIPLICATION AND DIVISION

4.3.1 **WHOLE NUMBERS**

(a) **Concepts**
- (i) Repeated addition
- (ii) Arrays
- (iii) 'x' symbol
- (iv) Repeated subtraction
- (v) Sharing
- (vi) '÷' and ' √ ' symbols
- (vii) Inverse

(b) **The Facts**
- (i) Meaning
- (ii) Thinking strategies
- (iii) Memorization

(c) **Algorithm**
- (i) Multiplication of 2-digit and 3-digit numbers by 1-digit numbers
- (ii) Division of 2-digit and 3-digit numbers by 1-digit and 2-digit divisors

(d) (i) Properties : Commutative, Associative and Distributive
(ii) Estimation
(iii) Problems

4.4 **MONEY**

(a) Compare value of notes
(b) Reading prices
(c) Record and interpret symbols and the separating point
(d) Total value of a set of notes and coins
(e) Giving change
(f) Adding and subtracting sums of money
(g) Multiplying and dividing with money
(h) Estimation
(i) Problem solving

4.5 **GEOMETRY**

(a) Shapes and solids : squares, rectangles, triangles, cubes, cylinders, spheres; some of their properties
(b) Points, lines, parallel lines, line segments
(c) Curves and circles
(d) Angles
(e) Symmetry

4.6 **MEASUREMENT**

4.6.1 **Length**

(a) Measuring with non-standard units
(b) Metre and centimetre
(c) Measuring in metres and centimetres and to the nearest metre and centimetre
(d) Estimating

4.6.2 **Capacity**

(a) Measuring using non-standard units
(b) Measuring using litres and half-litres; comparing
(c) Estimating

4.6.3 **Mass**

(a) Measuring with non-standard units
(b) Kilogram; half a kilogram
(c) Measuring and comparing masses
(d) Estimating

4.6.4 **Time and Calendar**

(a) Sequencing events
(b) Reading clocks (digital and traditional) in 5 minute duration
(c) am and pm
(d) Calendar : day, date, months

4.6.5 **Temperature**

(a) Reading temperature

(b) Comparing temperature

4.7 **GRAPHS and STATISTICS**

(a) Pictorial graph

(b) Bar graph

(c) Construction and interpretation

5.0 TIME ALLOCATION

5 periods of 45 minutes each should be allocated for Mathematics in Class 4 on the timetable.

6.0 EVALUATION

6.1 INTERNAL

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(a) Teachers need to prepare and continually revise the **scheme of work** to suit the classes they are teaching.

(b) Suggestions for teaching each lesson are provided in the Teacher's Guide. Teachers may supplement these with their own ideas.

(c) Teachers are advised to use **group work on a regular basis**. Group work provides pupils with a chance to agree, disagree, solve problems, find out what others think and to clarify their own points of view.

(d) Pupils should be encouraged to use **physical objects** to gain a better understanding of mathematics. Teachers are advised to keep a collection of common materials. Some materials such as popscicle sticks, offcuts and cardboard boxes can be used to prepare other teaching and learning aids.

(e) **Problem-solving** should be the focus of the mathematics curriculum. Problem-solving is not a distinct topic but a process that should permeate the entire mathematics programme.

(f) The **key communication skills** are explaining, discussing, recording and presenting mathematical ideas and results to others. Teachers should view these as an integral part of mathematics teaching. Children must be encouraged to think and explain what they are doing and why, and listen critically to the views of others as they engage in mathematical activities.

(g) Teachers must emphasise the application of **Mathematics** if children are to view mathematics as a practical and useful subject. Pupils must understand that it can be applied to a wide variety of real-world problems.

(h) Special provision must be made for **the high attaining pupils and under-achievers**. For the talented pupils appropriate extension and enrichment activities will need to be prepared. Different teaching approaches including giving varied practical and oral work and simpler activities will be needed for the slow learners.

(i) Teachers need to **integrate** the teaching of Mathematics in other subject areas, for example science and art and craft.

(j) Daily lessons should include revision of concepts and skills related to any new lesson. Teachers should **systematically** carry out reviews of the concepts and skills which are required for the introduction of the new topic. Short reviews of selected topics are important as they help improve performance and retention, and contribute to higher levels of learning.

8.0 RESOURCES

8.1 PRESCRIBED TEXTS FOR PUPILS

Maths 4, Ministry of Education, Fiji

8.2 PRESCRIBED TEXTS FOR TEACHERS

Teacher's Guide for Maths 4, Ministry of Education, Fiji

8.3 MATERIALS

The materials required in Class 4 Mathematics are listed in the Teacher's Guide.