MINISTRY OF EDUCATION

PRIMARY MATHEMATICS SYLLABUS

STANDARDS ONE TO SIX

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Foreword

The development of this new Primary Mathematics Syllabus for Standards One to Six has arisen from a desire to make mathematics teaching and learning more relevant to the needs of children in Solomon Islands.

The syllabus reflects the principle that children learn by being involved in practical activity, for it is only through first hand experience and practical application of mathematics that children can later conceptualise the abstract.

The practical teaching methodology emphasised in the syllabus is of equal importance to the body sf knowledge and skills it contains. A lecturing style of teaching is not an effective approach to teach mathematics concepts at the primary level.

The accompanying teaching and learning materials (teacher's in-sewice course, teacher's guides and pupils' texts, cards and games) place mathematics in a local context, using examples and situations whish are familiar to Solomon Islands children and teachers.

The body of mathematical experiences, skills and knowledge contained in the syllabus is presented in a sequential arrangement, with later stages depending on the successful assimilation of earlier ones. The teacher is urged to carefully monitor the progress of the children, making sure that topics are fully understood before moving on to the next.

The teaching of two mathematics lessons each day has, in the past, led to fragmentation and confusion. The needs of the children have become overlooked by teachers who are more concerned with following the pre-written daily lessons. It is now considered more suitable that there should be one mathematics lesson per day, of about thirty to forty minutes. This will allow time for exposition by the teacher as well as practical activity by the children. The daily lesson is not pre-written in the teacher's guide. Suggested activities are included and the teacher must plan the lesson to meet the specific needs of the class and the individual child.

As the Minister responsible for the provision of education services in Solomon Islands, I now endorse the approval of this syllabus for use in Primary Schools throughout Solomon Islands.

Honourable William Gigini
Minister for Education and Training

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Jacob Zikuli, Senior Curriculum Development Officer
Linda Puia, Senior Curriculum Development Officer
Kevin Walsh, Curriculum Advisor, Primary Education Development Project
Chris Lock, VSO Curriculum Counterpart

Consultants

Peter Pool, Mathematics Education Consultant, Leeds University, England, UK
Nguzu Nguzu Mathematics Teacher Writers
Mathematics Department, School of Education, SICHE

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Contents

Rationale for the inclusion of mathematics in the primary curriculum

A knowledge of mathematics is essential for all Solomon Islands children if they are to fully participate an life both at the present time and in the future.

Mathematics is not just something to be learned by children for later use in adult life. Mathematics is part of everyday life for children today. All children continually make judgements which are based upon their mathematical skills and understanding, such as judgements about quantity, distance, size, time and shape. Many children's games, activities and pastimes involve the use of mathematical skills and concepts

As children grow into adults, *the* level of mathematical skills they require increases in range and sophistication. We do not know what the future holds for children currently in primary schools, but we do know that the world is changing at a rapid rate. In order to cope with these cnanges children must be able to use their mathematical skills with confidence, they must be able to adapt their skills to suit different situations and they must be able to solve problems using many different strategies.

Aims of mathematics education

This syllabus has been developed in accordance with the following aims:

1. to introduce mathematical concepts through relevant first-hand experience in real situations, working from the real to the abstract
2. to make mathematics relevant to the local environment and culture
3. to involve the children in practical activities and games which are most relevant to their age and experience
4. to encourage the planning and presentation of lively, varied and interesting lessons
5. to encourage the children to use their mathematical skills in practical and problem solving situations
6. to encourage children to appreciate the aesthetic nature of mathematics
7. to encourage exploration and investigation
8. to encourage children to talk about their mathematics activities, describing what they do and why they do it, so as to deepen their understanding of mathematical concepts.

Themes and topics

The body of mathematical concepts, skills and knowledge contained in this syllabus is divided into a number of themes. These are:

1. Number
2. Shape
3. Graphs
4. Measurement
5. Time
6. Money

Within each theme there are a number of topics, which are numbered and arranged in sequence.

For example, in Standard One the Shape theme contains three topics:

Topic 10: Three-dimensional shapes
Topic 11: Two-dimensional shapes
Topic 12: Symmetry.

A clear understanding of topic 10 is essential before progression is made to topic 11.

Theme objectives tables showing the knowledge, skills and attitudes expected of children in each theme are included in this syllabus. Also included are tables showing the expected content of the teaching programme. Each topic in the published Teacher's Guides shows the aims and sequence of objectives for that topic.

Scope and sequence

The following pages contain the scope and sequence tables for Standards One to Six. Each scope and sequence table includes theme titles, numbered topics and the recommended teaching and learning objectives for each topic. The teaching methodology and suggested objectives are of equal importance to the content of the syllabus.

Standard One

Number

Topics	Objectives
1. Quantities and symbols up to ten	1. Recognising symbols and saying number names 2. Counting activities to demonstrate the quantities of numbers 3. Ordering numbers up to ten 4. Conservation of number using practical objects
2. Ordinal numbers	1. Recognising first, second, third to tenth 2. Recognising the order of numbers first to tenth 3. Distinguishing quantity from position, *eg 4 from 4th*
3. Addition	1. Putting together two sets to make one new set 2. Finding the components of numbers 3. Writing '+' and '=' in addition sentences 4. Practising single digit additions, including 'one more than'
4. Addition facts	1. Finding the pairs of numbers which add together to make four, five, etc 2. Finding the pairs of numbers which add together to make ten 3. Practising adding the pairs of numbers that make ten
5. Subtraction	1. Taking away objects from a set to make a new set 2. Writing '–' for lake away in subtraction sentences 3. Practising subtractions, including 'one less than' 4. Practising subtraction facts including numbers taken from ten
6. Numbers from 11 to 20	1. Learning the structure and names of numbers through visual representation as a bundle of Ben plus ones 2. Ordering and counting along a number line 3. Doing simple additions, including one more and one less
7. Number facts up to 20	1. Investigating doubles of numbers up to ten plus ten as well as near doubles such as eight plus nine 2. Doing additions up to twenty 3. Doing subtractions from twenty* by counting along a number line and by counting real objects
8. Numbers up to 99	1. Learning number formation in tens and ones 2. Counting in lens 3. Counting in other numbers such as twos and fives
9. Fractions	1. Investigating the concept of half through practical activity and use of diagrams 2. Investigating the concept of quarter through practical activity and use of diagrams

Standard One

Shape

Topics	Objectives
10. Three-dimensional shapes	1. Learning the language of shapes: round, flat, corner, edge, roll, etc 2. Identifying common shapes in the environment: box, ball, tin, cone 3. Comparing shapes in terms of corners, edges, faces, etc
11. Two-dimensional shapes	1. Recognising the names of common shapes: square, rectangle, triangle, circle 2. Identifying shapes in the environment 3. Relating two dimensional to three-dimensional shapes 4. Understanding the properties of two-dimensional shapes, *eg number of corners and sides* 5. Making patterns and pictures from shapes 6. Making tessellations and composite shapes
12. Symmetry	1. Folding and tearing paper 2. Finding reflections in mirrors, water, ink or paint patterns 3. Recognising symmetrical (or nearly symmetrical) objects: children's faces, leaves, butterflies 4. Drawing symmetrical patterns

Graphs

Topics	Objectives
13. Simple graphs	1. Making pictograms using actual objects, such as leaves 2. Reading charts to find the most, least, how many of each 3. Making and reading block graphs and bar graphs

Standard One

Measurement

Topics	Objectives
14 Concept sf length	1. Comparing lengths and heights to introduce language such as longer, shorter, taller 2. Ordering objects such as sticks, leaves and children in the class by length and height 3. Understanding conservation of length by recognising that changing the position of an object does not change its length
15. Measuring length	1. Using non-standard units such as body parts, pencils, etc to measure the length of different objects in the environment
16. Concept of weight	1. Comparing objects by lifting them to introduce language such as heavier, lighter, harder to lift, easier to lift 2. Comparing objects by means of a scale or balance 3. Understanding conservation of weight by recognising that changing the shape of an object does not change its weight 4. Comparing objects of the same size but different weight 5. Comparing small heavy objects and Barge light ones
17. Weighing with non-standard units	1. Weighing objects on a balance using non-standard units sf about the same size, such as stones, shells, etc as units of weight
18. Concept of capacity	1. Filling containers with water, sand or seeds to introduce language such as full, empty, contents, etc 2. Comparing capacity, by practical investigation of containers to find out which holds more, less, the same
19. Conservation of capacity	1. Pouring between different shaped containers to show that a quantity of liquid remains the same even if the containers are different
20. Measuring capacity with non-standard units	1. Comparing the capacities of different containers using non-standard units of about the same size, such as seeds, stones, etc and counting the number of units needed to fill each container

Standard One

Time

Topics	Objectives
21. Awareness of time	1. Learning the names of the parts of the day and knowing what activities take place at each time, such as morning and evening, time to wake up and time to go to sleep 2. Learning the days of the week and the things that happen on each day
22. The clock face	1. Recognising how the clock face looks at different times, such as bed time, school time, meal times

Money

Topics	Objectives
23. Recognising common coins and notes	1. Counting money, playing shop, buying and selling

Standard Two

Number

Topics	Objectives
1. Revision	1. Recognising numbers up to *99 and* understanding that, for example 73 means 7 tens and *3* ones 2. Counting in tens along the number line *3.* Putting numbers on the number line, *eg 25 and 52* 4. Completing sequences of numbers on the number line, *eg 5, 15, 25, 35* *5.* Using a 100 number square to see one more, ten more, one less, ten less, two more, twenty more, etc
2. Numbers up to 999	1. Recognising one hundred as 10 tens, using attribute blocks, ten-sticks, hundred-squares 2, Writing numbers as hundreds, tens and ones, using names and symbols *3.* Knowing the place value of digits 4, Counting in hundreds on a number line 5. Putting numbers in order on *a* number line
3. Addition	1. Revising addition of single digits lo make 10 2. Adding 1-digit and 2-digit numbers without regrouping using the vertical form *3.* Adding 1-digit and 2-digit numbers with regrouping using the vertical form 4. Finding patterns in addition, *eg 5 + 9, 5 + 19, 5 + 29 . . .* 5. Adding 2-digit and 2-digit numbers with regrouping
4. Subtraction	1. Revising single digit subtractions 2. Counting along the number line to find the difference between two numbers 3. Subtracting 1-digit from 2-digit numbers without trading 4. Subtracting from tens using a number line to count back 5. Subtracting 2-digit numbers from 2-digit numbers without trading
5. Pre-multiplication activities	1. Counting along the number line in 2's, 3's, 4's, 5's, 10's 2. Arranging objects in rows such as two rows of four, to illustrate 2 x 4 = 8
6. Fractions	1. Revising Standard 1 work on half and quarter with objects and diagrams 2. investigating fractions from half to tenth with real objects and diagrams

Standard Two

Shape

Topics	Objectives
7. Two and three-dimensional shapes	1. Learning the mathematical names of three-dimensional shapes, including cube, cuboid, sphere and cone 2. Finding examples of three-dimensional shapes in the environment 3. Describing three-dimensional shapes in terms of the number of corners, faces and edges 4. Learning the mathematical names of two-dimensional shapes, including triangle, square, rectangle and circle 5. Finding examples of two-dimensional shapes in the environment 6. Describing two-dimensional shapes in terms of the number of sides and corners 7. Making patterns with two-dimensional shapes
8. Symmetry	1. Making symmetrical shapes by paper folding, drawing patterns and drawing pictures of reflections

Graphs

Topics	Objectives
9. Making and reading block graphs	1. Making block graphs to show information about the class such as the children'' favourite fruits 2. Making horizontal and vertical block graphs 3. Reading information from block graphs

Standard Two

Measurement

Topics	Objectives
10. Non-standard units of length	1. Using non-standard units such as sticks, seeds, parts of the body 2. Recognising the need for big and small units 3. Knowing when to use approximate answers such as 'just less than' or 'just over' 4. Recognising that non-standard units differ slightly
11. Standard units of length	1. Measuring objects using a centimetre ruler 2. Measuring objects in metres and centimetres
12. Concept of area	1. Comparing surfaces in terms of space 2. Measuring areas by covering the surfaces with non-standard shapes of about the same size, such as shells
13. Non-standard units sf capacity	1. Filling containers with non-standard units of capacity such as seeds, shells and stones
14. Standard units of capacity	1. Finding the approximate capacity sf a variety of containers in litres, using a litre or half litre bottle such as an oil bottle
15. Non-standard units of weight	1. Measuring the weight sf objects using non-standard units such as seeds and shells on a simple scale balance
16. Standard units sf weight	1. Recognising the weight of objects from the environment in kilograms and grams such as tins and packets from the local store

Standard Two

Time

Topics	Objectives
17. Measuring time	1. Relating the times of daily activities to the clock face 2. Reading a clock face in hours and half hours at daily activities times 3. Learning the days sf the week and the months of year

Money

Topics	Objectives
18. Simple computation of money	1. Recognising the value of coins and notes 2. Recognising the equivalence of quantities of coins and notes such as that two fifty cent coins equals one dollar 3. Practising computation and giving change through playing shop

Standard Three

Number

Topics	Objectives
1. Revision and extension of Standard 2 work	1. Reading, writing and counting numbers up to 999 2. Recognising the place value of digits 3. Counting in hundreds and tens 4. Putting numbers on the number line
2. Ordering and sequencing of numbers up to 999	1. Putting numbers in order, *eg 251, 152, 512* 2. Making the biggest number using three digits 3. Knowing which number is ten more, one hundred more than, ten less, awe hundred less than a given number
3. Numbers to 9999	1. Reading, writing and counting numbers up to 9,999 2. Recognising the piace value of digits 3. Putting numbers in order on a number line 4. Making the biggest number using four digits
4. Revision of addition of two and three-digit numbers with regrouping	1. Adding 2-digit and 3-digit numbers with regrouping
5. Mental addition	1. Mentally adding 1 digit and 2-digit numbers 2. Recognising how to add the digits that make ten when mentally adding two or mare numbers 3. Mentally adding numbers in tens, hundreds or thousands, *eg 30+40, 58a 60, 200+700, 800+600*
6. Subtraction	1. Revising subtraction without trading 2. Subtracting 2-digit numbers from 3-digit numbers with trading (first in the ones column, then in the tens column)
7. Subtraction 2	1. Solving subtraction problems involving zeros in the ones column and in the kens column, *eg 280 - 45. 208 - 45, 500 - 57*
8. Mental methods in addition and subtraction	1. Memorising and practising useful addition and subtraction facts and processes
9. Multiplication	1. Recognising that multiplication is a short way of writing repeated addition, *eg 2 + 2 + 2 + 2 is '4 lots of 2' written as 4 x 2 = 8* 2. Using practical examples and materials to explore multiplication
10. Patterns and arrays for multiplication	1. Arranging objects or drawing diagrams to show multiplication 2. Writing multiplication sentences 3. Using a number line to show counting in twos, threes fours, etc

Standard Three

Number

Topics	Objectives
11. More multiplication activities	1. Investigating patterns on a hundred square when counting in 2's, 3's, etc 2. Making multiplication tables for 2, 3, 4, 5, 10
12. Early division activities	1. Sharing objects by 'giving out', *eg sharing 14 shells between 2 people by giving one each in turn un8 there are none left* 2. Sharing objects by making groups, *eg putting 14 shells into groups sf 2 to find out how many groups can be made*
13. Fractions	1. Revision of Standard 2 work using diagrams and objects 2. Finding a fraction of a quantity by dividing
14. introducing fractional notation	1. Recognising that ½ means one part out of two equal parts and ¼ means one part out of four equal parts 2. Placing fractions on a number line 3. Using a number line to show 1½, 2½, etc
15. Developing fractions	1. Recognising fractions on a chart, $^1/_2$, $^1/_3$, $^1/_4$, $^1/_5$, $^1/_6$, $^1/_8$, $^1/_{10}$ 2. Knowing the relative sizes sf fractions, *eg that ½ is bigger thaw ¼*

Shape

Topics	Objectives
16. Symmetry	1. Finding lines of symmetry 2. Recognising symmetry in patterns 3. Recognising rotational symmetry
17. Right angles	1. Recognising right angles as square corners 2. Making right angles by folding paper 3. identifying shapes which Rave square corners: triangles, rectangles, squares 4. Making patterns with square corners

Standard Three

Graphs

Topics	Objectives
18. Making graphs	1. Recording information using a tally chart 2. Drawing bar charts

Measurement

Topics	Objectives
19. Scales	1. Reading scales, *eg thermometer, ruler, spring balance*
20. Perimeter	1. Understanding the meaning of perimeter 2. Calculating the perimeters of shapes on square grids by counting 3. Calculating perimeters by measuring
21. investigating perimeters of shapes	1. Making different shapes all with same perimeter 2. Arranging squares to have the largest or smallest perimeter
22. Area of simple shapes	1. Calculating the areas of shapes on square grids by counting 2. Making different shapes, all with the same area 3. Recognising square centimetres
23. Area of irregular shapes	1. Finding the approximate area of irregular shapes such as leaves, hands etc by filling with squares or drawing an outline on a square grid
24. Weight and capacity	1. Knowing the difference between weight and capacity 2. Using standard units of weight 3. Using standard units of capacity

Standard Three

Time

Topics	Objectives
25. Reading clocks	1 Reading minutes to and minutes past the hour 2 Calculating intervals between times in hours and minutes 3. Drawing clock faces to show specific times

Money

Topics	Objectives
26. Computation sf money	1. Adding and subtracting prices 2. Calculating change 3. Expressing amounts in different combinations of coins and notes

Standard Four

Number

Topics	Objectives
1. Revision and extension of Standard 3 work	1. Reading, writing and counting numbers up to 9,999 2. Recognising the place value of digits, *eg that the 4 in 2,417 represents 4 hundreds* 3. Ordering a set of 4 digit numbers 4. Making the biggest number using 4 digits
2. Numbers to 99,999	1. Reading, writing and counting numbers up to 99,999 2. Recognising the place value of digits 3. Making the biggest number using 5 digits 4. Rounding off numbers to the nearest ten, hundred and thousand 5. Recognising add and even numbers
3. Addition	1. Developing strategies for mental addition 2. Adding 3- and 4-digit numbers, with and without regrouping 3. Solving problems using addition
4. Subtraction	1. Developing strategies for mental subtraction 2. Subtracting 3- and 4-digit numbers, with and without trading 3. Solving problems using subtraction
5. Multiplication	1. Revising multiplication tables For 2, 3, 4, 5 and 10 2. Multiplying 2- and 3-digit numbers by a I-digit number without regrouping, *eg 14 x 2, 21 x 4, 231 x 3* 3. Multiplying 2 and 3 digit numbers by a single digit number with regrouping, *eg 25 x 3, 37 x 4, 349 x 2* 4. Multiplying by 10 5. Making multiplication tables for 6, 7, 8 and 9 6. Using multiplication facts when working with larger numbers, *eg knowing that if 3 x 6 = 18 then 3 x 60 = 180*
6. Division	1. Revising division by sharing 2. Revising division by repeated subtraction 3. Understanding the relationship between multiplication and division, *eg knowing that 35 ÷ 5 = 7 because 5 x 7 = 35* 4. Introducing standard notation for division, *eg* $5\overline{)35}^{\,7}$
7. Fractions	1. Revising fractions of an object and sf a quantity, *eg* $^1/_2$ $^1/_{10}$ $^2/_3$ *etc* 2. Finding fractions of a quantity by dividing, *eg* $^1/_3$ *of 45 = 45 ÷ 3 = 15* 3. Introducing mixed number fractions, *eg understanding that* $^4/_3 = 1\,^1/_3$ 4. Introducing decimal fractions and notation, *eg $3.85, 1m 63 cm = 1.63 m, 2 l 250 ml = 2.250 l, etc*

Standard Four

Shape

Topics	Objectives
8. Two-dimensional shapes	1. Introducing more regular shapes: pentagons, hexagons, octagons, etc 2. Finding properties of regular shapes: number of sides and corners, lines sf symmetry, parallel lines, etc 3. Making simple patterns and tessellations with regular shapes
9. 7hree-dimensional shapes	1. Revising properties of three-dimensionalsolids: faces, edges, corners 2. Unfolding three-dimensional solids to form nets 3. Constructing three-dimensional solids such as cubes, cuboids and cylinders from nets
10. Angles	1 Recognising and drawing angles bigger and smaller than a right-angle 2. Understanding angles as the measurement sf *a* turn, including fractions of a turn, *eg complete turns, half turns, quarter turns* 3. Using the words 'clockwise' and 'anti-clockwise' to describe the direction of a turn 4. Recognising the relationship between compass directions, *eg turning from North to East = ¼ turn*
11. Location	1. Locating positions on a map using Better and number co-ordinates, *eg (B,5), (C,8)*

Standard Four

Graphs

Topics	Objectives
12. Bar graphs	1. Making vertical and horizontal bar graphs from data contained in tally charts and information tables

Measurement

Topics	Objectives
13. Length	1. Estimating lengths in cm and m, then measuring to cheek the accuracy of estimates 2. Introducing kilometres 3. Making calculations and solving problems in length, including perimeter
14. Weight and capacity	1. Estimating and measuring weights in kg and g 2. Estimating and measuring capacity in l and ml 3. Making calculations and solving problems in weight and capacity
15. Area	1. Calculating the area of squares and rectangles by measuring and using the formula A = L x W (area = length x width) 2. Using the formula A = L x W to calculate the area sf shapes made up of rectangles and squares
16. Probability	1. Using words such as certain, likely, *unlikely* and *impossible* to describe the likelihood of an event, *eg 'it is unlikely that it will* rain today; *'it* is certain that the *sun will* rise *tomorrow'*

Standard Four

Time

Topics	Objectives
17. am and pm	1. Introducing am and pm time 2, Understanding and using 12 hour timetables and schedules 3. Calculating times, *eg 'what time will it be 40 minutes after 3.30pm?'*
18. Units of time	1. Estimating units of time, *eg counting in seconds and saying when a minute has passed* 2. Recording events within units of time, *eg measuring pulse rates in one minute* 3, Converting units of time: hours to minutes, minutes to seconds

Money

Topics	Objectives
19. Decimal notation	1. Decimal notation of money, *eg 3 dollars and 50 cents is the same as $3.50* 2. Computation sf money (+, -), *eg add the prices of items costing $1.35 and $2.90, and calculate the change from $5.00* 3. Solving problems involving price and quantity

Standard Five

Number

Topics	Objectives
1. Whole numbers up to one million	1. Recognising and identifying place value in numbers up to one million 2. Reading and writing numbers up to one million
2. Number sequences	1. Extending the number line to include negative numbers 2. Recognising and continuing number sequences, including some that have negative numbers, *eg 5, 10, 15, 20, 25, ...* *-7, -3, 1, 5, 9, 13, ...* 3. Recognising square numbers 4. Using words to describe number sequences and patterns, *eg 'add four each time'*
3. Addition	1. Developing and practising strategies for mental addition 2. Adding 5- and 6-digit numbers 3. Making estimates in addition, *eg knowing that 108 + 189 is close to 300* 4. Solving addition problems and puzzles
4. Subtraction	1. Developing and practising strategies for mental sutraction 2. Subtracting 5- and 6-digit numbers 3. Making estimates in subtraction, *eg knowing that 347- 150 is close to 200* 4. Solving subtraction problems and puzzles
5. Multiplication	1. Revising multiplication of 2- and 3-digit numbers by 1-digit numbers 2. Multiplying 2- and 3-digit numbers by 2-digit numbers 3. Revising multiplication tables and using multiplication facts in calculations 4. Solving multiplication problems and puzzles
6. Division	1. Dividing 2-digit numbers with remainders, *eg* $4\overline{)33}$ *8 r1* 2. Dividing 2- and 3-digit numbers by 1-digit numbers 3. Dividing 3- and 4-digit numbers by 1-digit numbers 4. Finding the average of a set of numbers 5. Solving problems involving calculation of average
7. Mixed computation	1. Making calculations involving more than one operation, *eg 27 + 36 - 15 =* 2. Making calculations involving more than one operation where brackets indicate the order of operations, eg *(13 + 35) x 3 =*

Number

Topics	Objectives
8. Fractions and decimals	1. Recognising equivalent fractions, *eg* $^1/_2 = {}^2/_4 = {}^4/_8$ 2. Adding and subtracting fractions with the same denominator 3. Exploring fraction and decimal equivalence, *eg* $^1/_{10} = 0.1$, $^2/_5 = 0.4$, $2\% = 2.5$m 4. Ordering a set of decimal numbers 5. Adding and subtracting decimal numbers
9. Percentages	1. Introducing percentages 2. Investigating fraction and percentage equivalence, eg $^1/_2 = {}^{50}/_{100} = 50\%$

Shape

Topics	Objectives
10. Circles	1. Drawing circles and circle patterns, *eg by using tins and coins* 2. Identifying properties of a circle: radius, diameter and circumference 3. Measuring the diameter and radius of circles 4. Estimating and measuring the circumference of circles
11. Two-dimensional shapes	1. Investigating irregular shapes 2. Identifying properties of irregular shapes, including sides, angles, and symmetry 3. Drawing reflections of irregular shapes using square grids
12. Three-,dimensional shapes	1. Unfolding cartons and boxes to revise nets sf cuboids 2. Investigating pyramids and prisms 3. Making pyramids and prisms from nets
13. Structures	1. Understanding that some two-dimensional shapes are more rigid than others, *eg that for construction, a triangle is stronger than a square* 2. Knowing how to strengthen simple two-dimensional and three-dimensional structures, *eg by adding diagonals*
14. Angles	1. Introducing degrees as the standard measurement of angle, *eg a right-angle = 90°, there are 360° in a circle* 2. Using a protractor to measure angles 3. Classifying angles: acute, obtuse, reflex, etc
15. Location	1. Locating points on a map using number co-ordinates 2. Finding points using 'x' and 'y' axes

Standard Five

Graphs

Topics	Objectives
16. Line graphs	1 Reading and interpreting bar graph 2. Reading and interpreting Bins graphs 3. Constructing Sins graphs from tables of information 4. Constructing line graphs using co-ordinates

Measurement

Topics	Objectives
18. Length	1. Choosing appropriate units when measuring length 2. Calculating length, including cm, m, mm and km 3. Using decimal notation, *eg* 2.5 *m = 2 ½ m* 4. Calculating distance on a map using a scale, *eg 1:20, 1:100* 5. Constructing scale drawings and plans
19. Weight	1. Choosing appropriate units when measuring weight 2. Understanding the relationship between units: grams/kilograms, kilograms/tonnes, 3. Using decimal notation, *eg* 53.5 *kg = 53 ½ kg* 4. Completing practical activities and problem solving using grams and kilograms
20. Volume	1. Introducing the concept of volume 2. Measuring volume using 1 cm^3 units 3. Using the formula for calculating the volume of boxes and containers, ie volume = lenght x breadth x height
21. Area	1. Calculating the area of squares and rectangles in em^2 and m^2 using the formula A = L x W (area = length x width) 2. Calculating the area of a triangle by halving the area of a rectangle 3. Introducing the formula for finding the area of triangles (area = ½ base x height) and parallelograms (area = base x height) 4. Calculating the area of shapes made up sf rectangles and squares and rectangles and triangles
22. Temperature	1. Understanding the use of degrees Celsius as a measure of temperature 2, Using a thermometer to measure and keep a record of air temperature
23. Probability	1. Using fractions to describe the probability of events, *eg when throwing a dice, know that the probability of scoring a six is I in 6 or* $^1/_6$ 2. Understanding that a probability of ½ represents an 'even chance'

Standard Five

Time

Topics	Objectives
24. Twenty-four-hour clock	1. Using 24-hour notation, *eg knowing that 8:15am is written as 08:15 and 3:30pm is written as 15:30 in 24-hour notation* 2. Understanding and using 24 hour timetables and schedules 3. Calculating time intervals, *eg knowing that if a canoe journey begins at 09:45 and ends at 13:15, it has taken 3 hours and 30 minutes*
25. Measuring time	1. Devising non-standard ways of measuring time, *eg making a water clock*

Money

Topics	Objectives
26. Computation of money	1. Solving problems involving computation of money (+ − x ÷), *eg if items cost $1.20 each, working out how many can be bought with $20.00 and calculating the change*

Standard Six

Numbers

Topics	Objectives
1. Whole number calculations	1. Adding and subtracting large numbers, up to 5 and 8 digits 2. Making estimates in addition and subtraction 3. Multiplying, including multiplication of 3 and 4 digit numbers by 2 digit numbers 4. Dividing 3- and 4-digit numbers by 2-digit numbers 5. Making calculations and solving problems involving more than one operation 6. Making calculations which give negative answers. *eg* $25 - 32 = -7$
2. Fractions	1. Recognising equivalent fractions and reducing fractions to their simplest form, *eg* $^8/_{12} = {}^4/_6 = {}^2/_3$ 2. Adding and subtracting fractions with the same denominator, *eg* $^3/_6 + {}^2/_6 = {}^5/_6 \qquad {}^7/_{10} - {}^3/_{10} = {}^4/_{10}$ 3. Adding and subtracting fractions with unlike denominators, *eg* $^2/_3 + {}^3/_9 = {}^6/_9 + {}^3/_9 = {}^9/_9 = 1$ $^5/_8 - {}^1/_4 = {}^5/_8 - {}^2/_8 = {}^3/_8$
3. Decimals	1. Changing common fractions to decimal fractions. *eg* $^3/_4 = 0.75$ 2. Recognising place value in decimal fractions, *eg recognising that the 3 in 2.35 represents 3 tenths* 3. Rounding decimals to the nearest whole number and nearest tenth 4. Adding and subtracting decimal fractions including tenths and hundredths, *eg* $2.53 + 0.75,\ 6.20 - 4.68$ 5. Multiplying decimal numbers by whole numbers 6. Dividing the remainder in division calculations *lo* give an answer including tenths, *eg* $5\overline{)16.00}$ = 3.2, remainder 15, 10 7. Using decimal notation when recording measurements and money, *eg 2.5m, 2.85m, 4.5 kg, etc*
4. Percentages	1. Making simple calculations involving percentages, *eg 17 as a percentage of 50 = 34%* *40 as a percentage of 200 = 20%* 2. Calculating a percentage increase, *eg if the number of children in a school increases from 50 to 60 this is a 20% increase* 3. Solving problems involving percentages
5. Ratios	1. Comparing values by using a number ratio, *eg in a school where there are 75 children and 3 teachers, know that the ratio of children to teachers is 25:1* 2. Knowing that quantities can be expressed as a ratio, *eg the mixture of petrol and oil used in a chainsaw*

Topics	Objectives
6. Angles	1. Measuring and comparing angles using a protractor 2. Investigating the total of the angles inside triangles and quadrilaterals 3. Plotting a course using bearings
7. Triangles	1. Classifying and naming different triangles: right-angled, equalateral, isosceles, scalene 2. Drawing triangles from given instructions, *eg 'draw a right-angled triangle with a base of 12cm and a height of 7cm'*
8. Tessellation	1. Creating tessellating patterns using one or more two-dimensional shapes
9. Three-dimensional shapes	1. Using nets to make three-dimensional solids from two-dimensional drawings

Standard Six

Graphs

Topics	Objectives
10. Pie charts	1. Reading information from pie charts 2. Drawing simple pis charts to display information
11. Bar and line graphs	1. Collecting and showing data on bar and line graphs 2. Reading information from bar and line graphs and calculating a total and average 3. Representing information such as population and weather statistics on bar and line graphs

Measurement

Topics	Objectives
12. Speed, distance and time	1. Introducing the concept sf speed and distance travelled 2. Understanding and using the formula, distance = speed x time 3. Calculating the time taken to cover a distance and the distance travelled in a given time
13. Weight, volume and capacity	1. Recognising commonly used containers and their weight or capacity, *eg know the weight of a bag of rice, the capacity sf a drum of petrol, etc* 2. Calculating and comparing the volumes of different containers 3. Solving problems involving capacity and weight
14. Probability	1. Investigating the probability of events, *eg finding the probability (written as a fraction) of scoring 12 when throwing two dice and adding the numbers*

Standard Six

Time

Topics	Objectives
15. investigating time	1. Using a calendar 2. Understanding longer units of time: years, decades, centuries 3. Investigating time zones: knowing that other parts of the Pacific and the World have different time zones; working out the current time in another country

Money

Topics	Objectives
16. Calculating money	1. Dividing and multiplying of money 2. Solving money problems, *eg finding the average cost* per *kg* of fish sold *at a* market

Recommended four term arrangement of units and topics

The revised mathematics syllabus takes into account the fact that children learn at different rates and in different ways. For this reason, lessons are not pre-written and the four term arrangement gives the teacher enough flexibility to respond to the needs of the children and the circumstances of the class and school.
Four term arrangement tables are to be found in the teacher's guides. The arrangement below shows a suggested plan to cover all standard one topics in each theme over four terms. A period of about two weeks is appropriate for each topic or pair of topics. This arrangement is a suggestion only. It is not meant to be rigidly followed by every school or every class.
It is quite acceptable, for example, for teachers to plan their work around termly topics and to select the mathematics topics which fit with their general topic.
In a term's topic about food, for example, the mathematics content could include work on making graphs of the children's favourite foods, weighing kumara and role-playing buying and selling at the market.

The following is an example of a four term arrangement for Standard One.
Four term arrangements for Standards One to Six are to be found in the Teacher's Guides.

Standard One

Term 1	Term 2	Term 3	Term 4
Unit 1 Number: topic 1	Unit 6 Shape: topic 11	Unit 11 Number: topic 6	Unit 16 Measurement: topic 16
Unit 2 Shape: topic 10	Unit 7 Number: topic 4	Unit 12 Graphs: topics 13	Unit 17 Number: topic 9
Unit 3 Number: topic 2	Unit 8 Measurement: topic 15	Unit 13 Number: topic 7	Unit 18 Shape: topic 12
Unit 4 Measurement: topic 14	Unit 9 Number: topic 5	Unit 14 Time: topics 20 & 21	Unit 19 Measurement: topic 17
Unit 5 Number: topic 3	Unit 10 Measurement: topics 18 & 19	Unit 15 Number: topic 8	Unit 20 Money: topic 22

Suggested timetable for Standards 1 to 6

There should be just one daily mathematics lesson of about 35 to 40 minutes, depending on local circumstances and progress of the children. A lesson of this duration has the advantage over two shorter lessons of allowing more time for teacher presentation and pupil follow-up. One topic should be completed before a new topic is begun. Each lesson should contain a variety of activities to maintain the interest of the children. Teachers should assess the progress of the children and evaluate their lessons. They should plan the next lesson or vary their teaching methods depending on the results of their assessments and lesson evaluations.
The following timetable is recommended.

Mathematics Timetable					
	Monday	Tuesday	Wednesday	Thursday	Friday
7.45 - 8.00	Assembly and Registration				
8.00 - 8.20	Christian Education				
8.20 - 9.00	Mathematics				
9.00 - 10.15	Language activities talking, poems, rhymes, shared reading, guided reading, oral activities, handwriting, spelling, grammar, drama				
10.15 - 10.45	Break				
10.45 - 11.45	Language activities talking, poems. rhymes, shared reading, guided reading, oral activities, handwriting, spelling, grammar, drama				
11.45 - 12.15	Community Studies				
12.15 - 12.40	Health Education	Science and Agriculture	Art and Craft	Science and Agriculture	Health Education
12.40 - 13.00	Physical Education	Health Education	Music	Health Education	Physical Education

Assessment

Teachers should continually assess the progress of the children and bass their lessons on the children's needs rather than on the need to follow the programme.
Assessments should be based on the objectives of the lesson, as written in the Teacher's Guide. The Teacher's Guide contains reminders for teachers to make assessments before moving an to a new objective in each topic
Assessments can be made during lessons by observation of the children as they perform classroom tasks.

Recommended teaching materials

The following recommended teaching materials for Standards Owe to Six are produced by the Curriculum Development Centre.

Primary Mathematics In-sewice **Course.**
This course book forms part sf the in-sewice training offered by the Curriculum Development Centre to launch the new mathematics curriculum, It describes the new materials in detail and offers advice in the planning, delivery and evaluation of mathematics lessons.

Teacher's Guides for Standards One to Six.
These teacher's guides are designed to assist the teacher to plan interesting mathematics lessons containing a variety of practical activities to meet the needs of individual children. Aims, objectives, teacher's activities and children's activities are suggested for each topic.

Children's Books and Materials.
Children's books cards, pictures and games are provided for Standards One to Six. These are designed for the children to practise and consolidate their mathematical skills and knowledge in an active, interesting and relevant way. However, materials from the local environment can supplement varities of resources the teachers and children need to teach mathematic concepts in a practical way.

Games and Puzzles Book.
This is a book of puzzles and games which is designed to make mathematics more interesting for children and teachers alike.

Nguzu Ng Mathematics